Fall 2018 Inforum Economic Outlook

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Opinions on Economic Forecasting

I respect economists, but they're usually wrong.

Donald J. Trump, WSJ

If there is one thing I have learned from a three-decade career as an economist, it is to be skeptical of any economist's forecast, including my own.

Greg Mankiw, Nantucket Magazine

History of Inforum

- **Int**erindustry **For**ecasting at the **U**niversity of **M**aryland.
- 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.
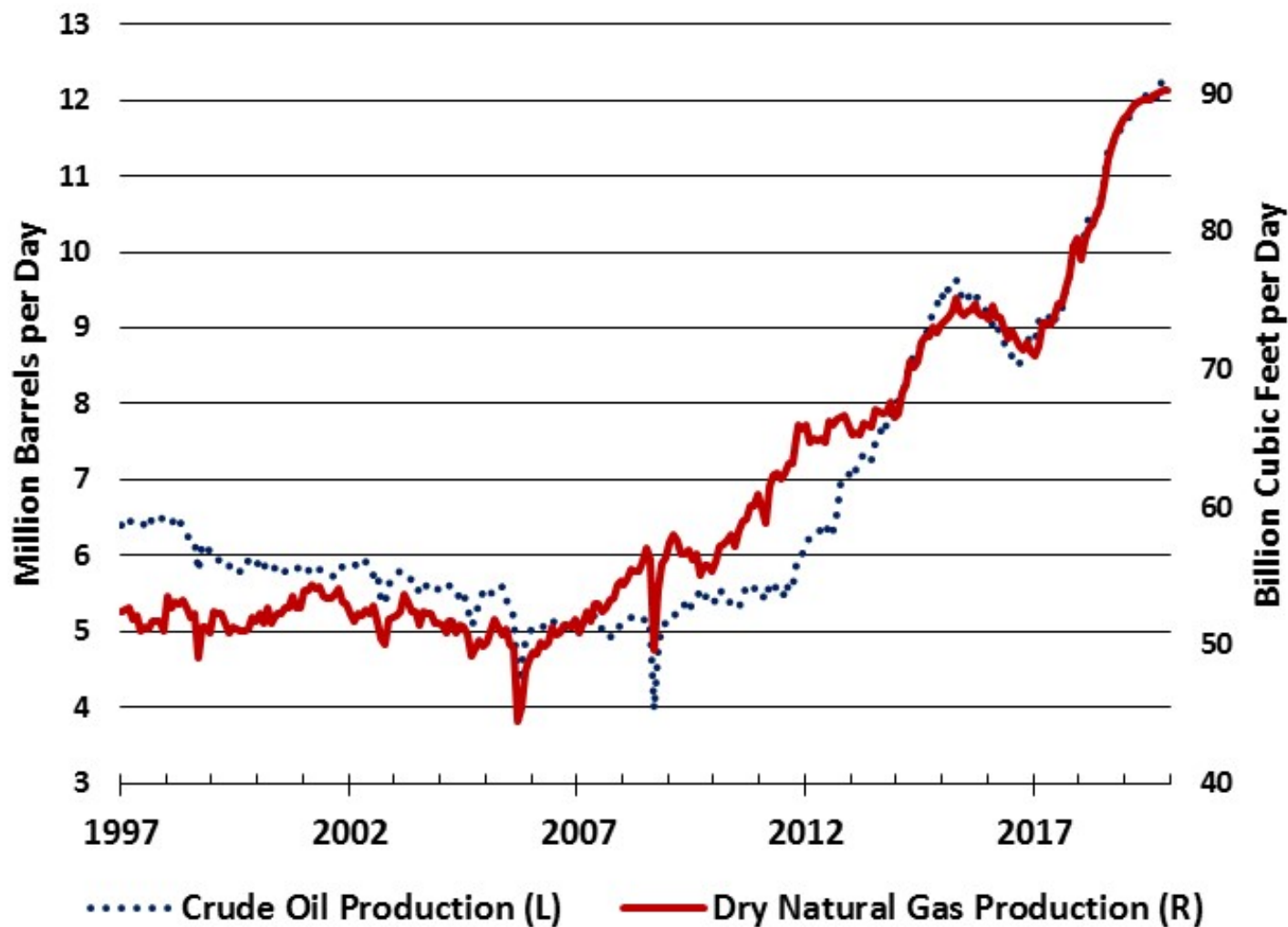
Economic Models: A Comparison

- **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.
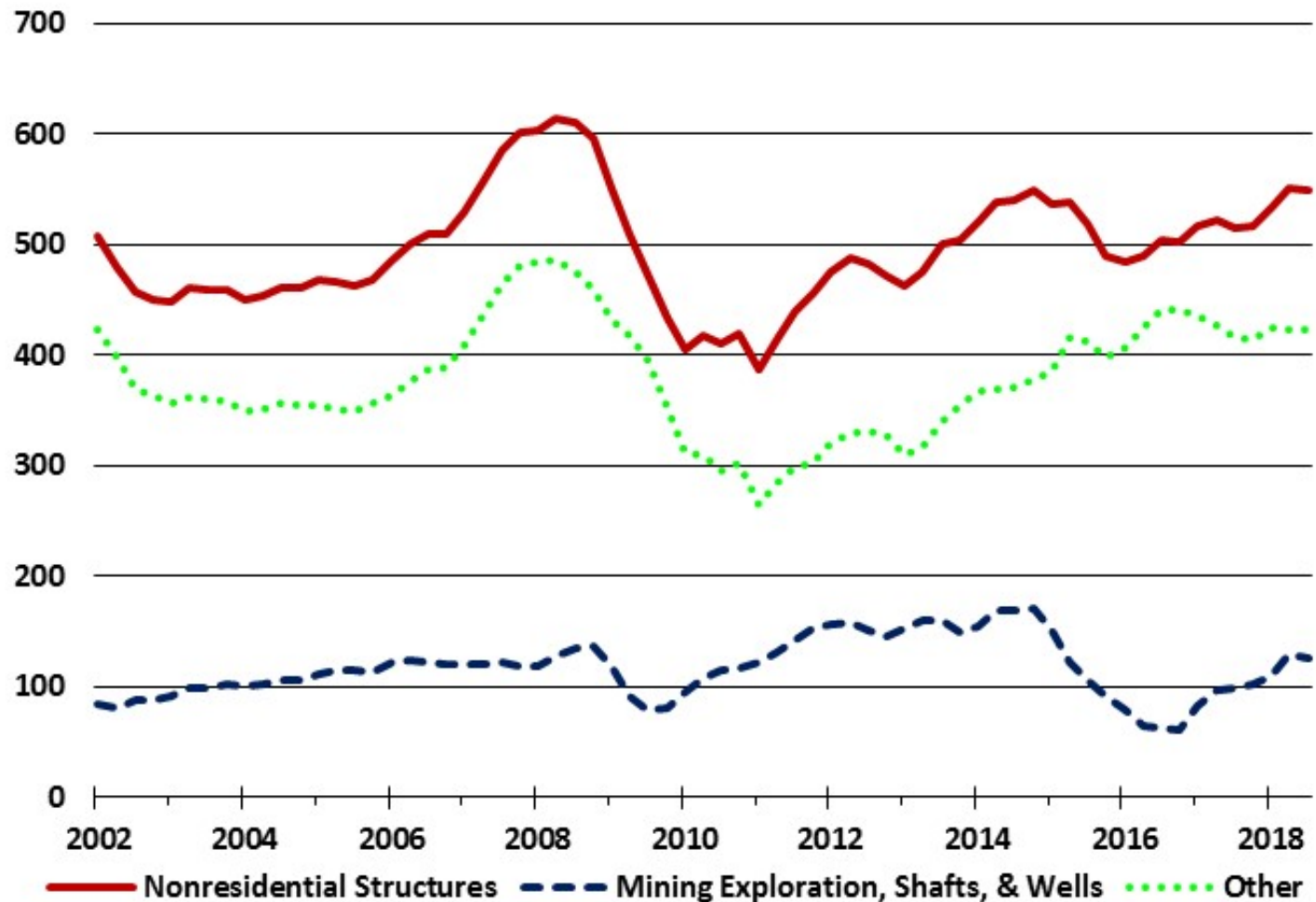 - Example: Inforum Lift model.

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

- **L**ong-term **I**nterindustry **F**orecasting **T**ool (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.
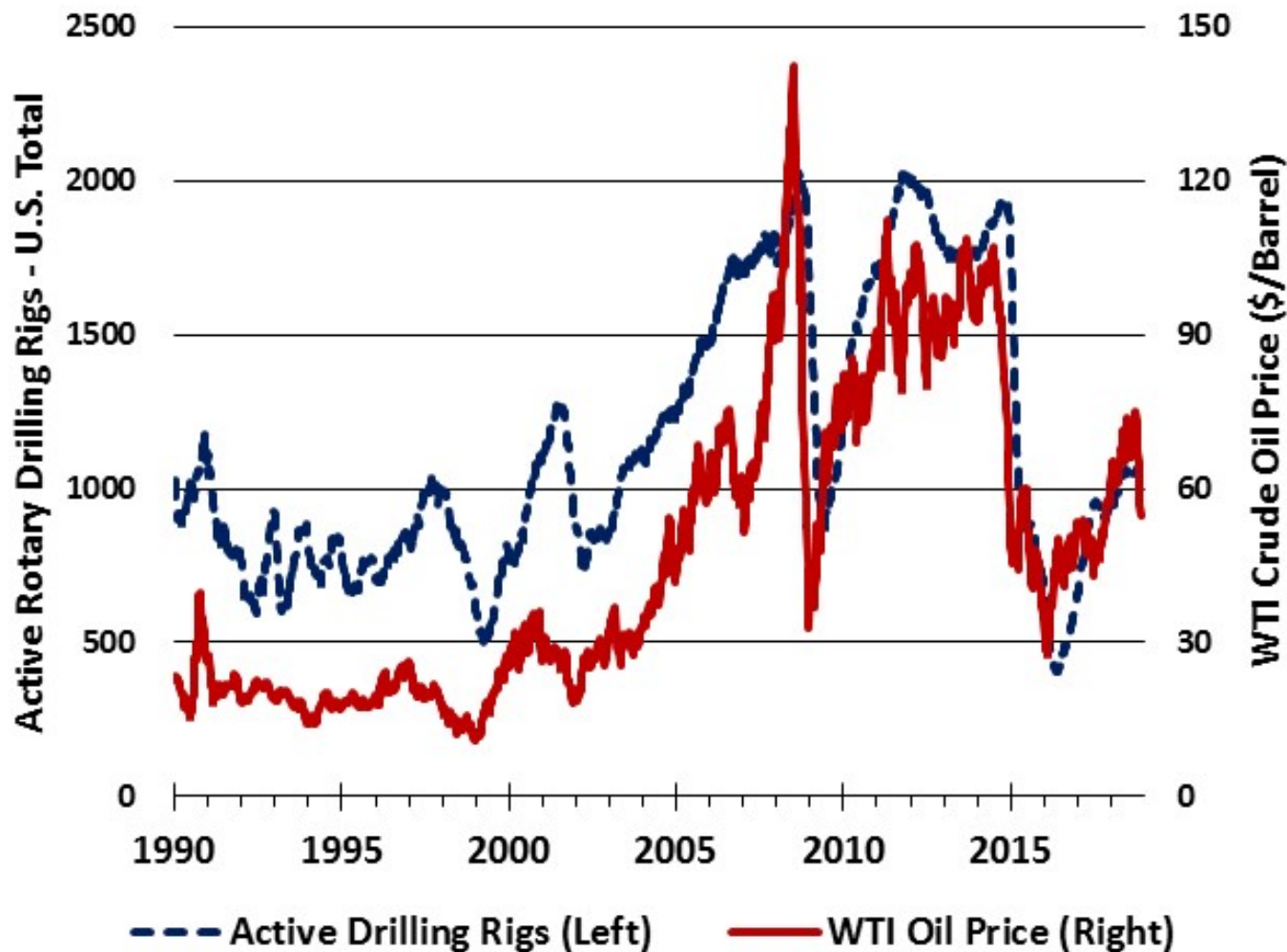
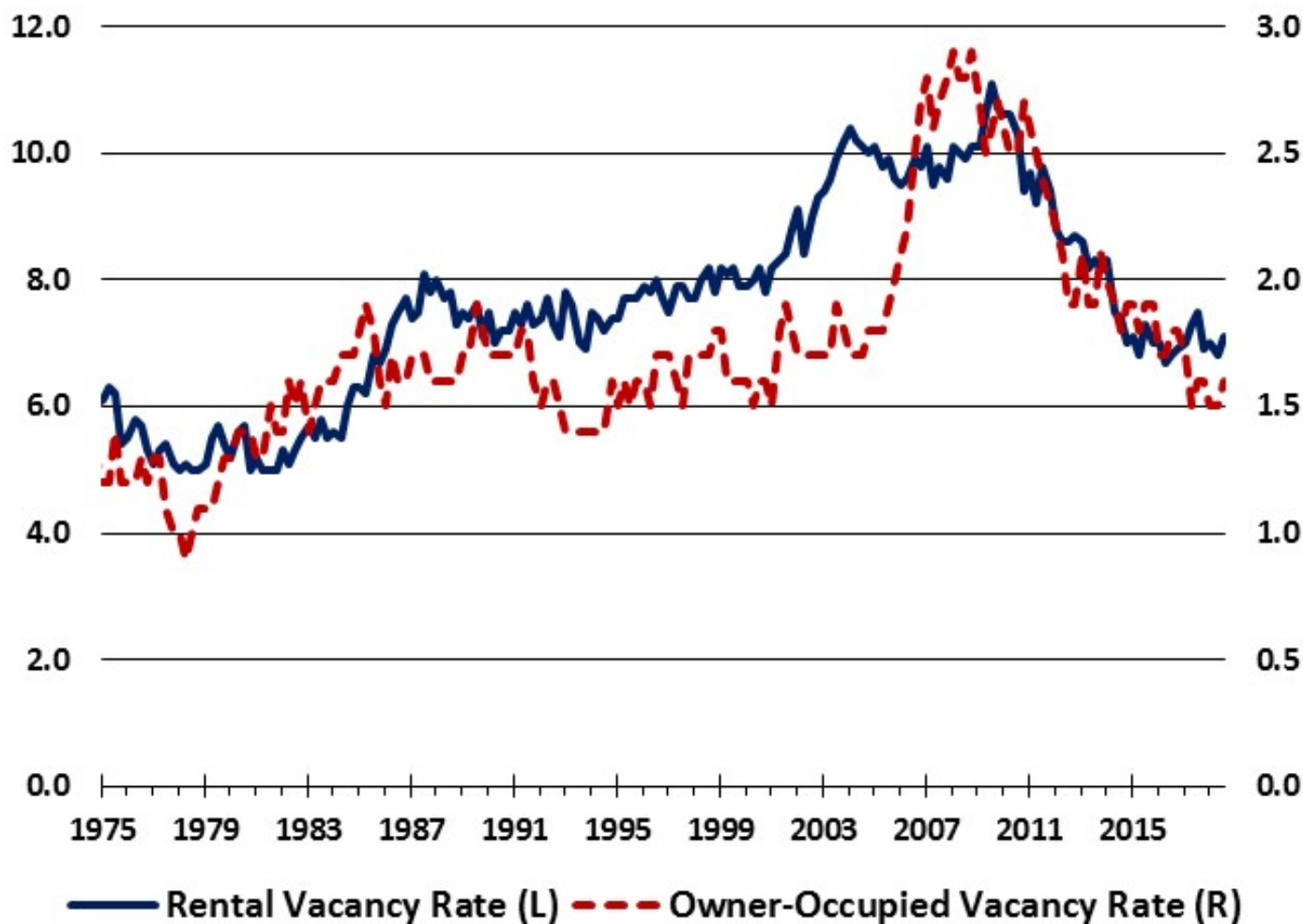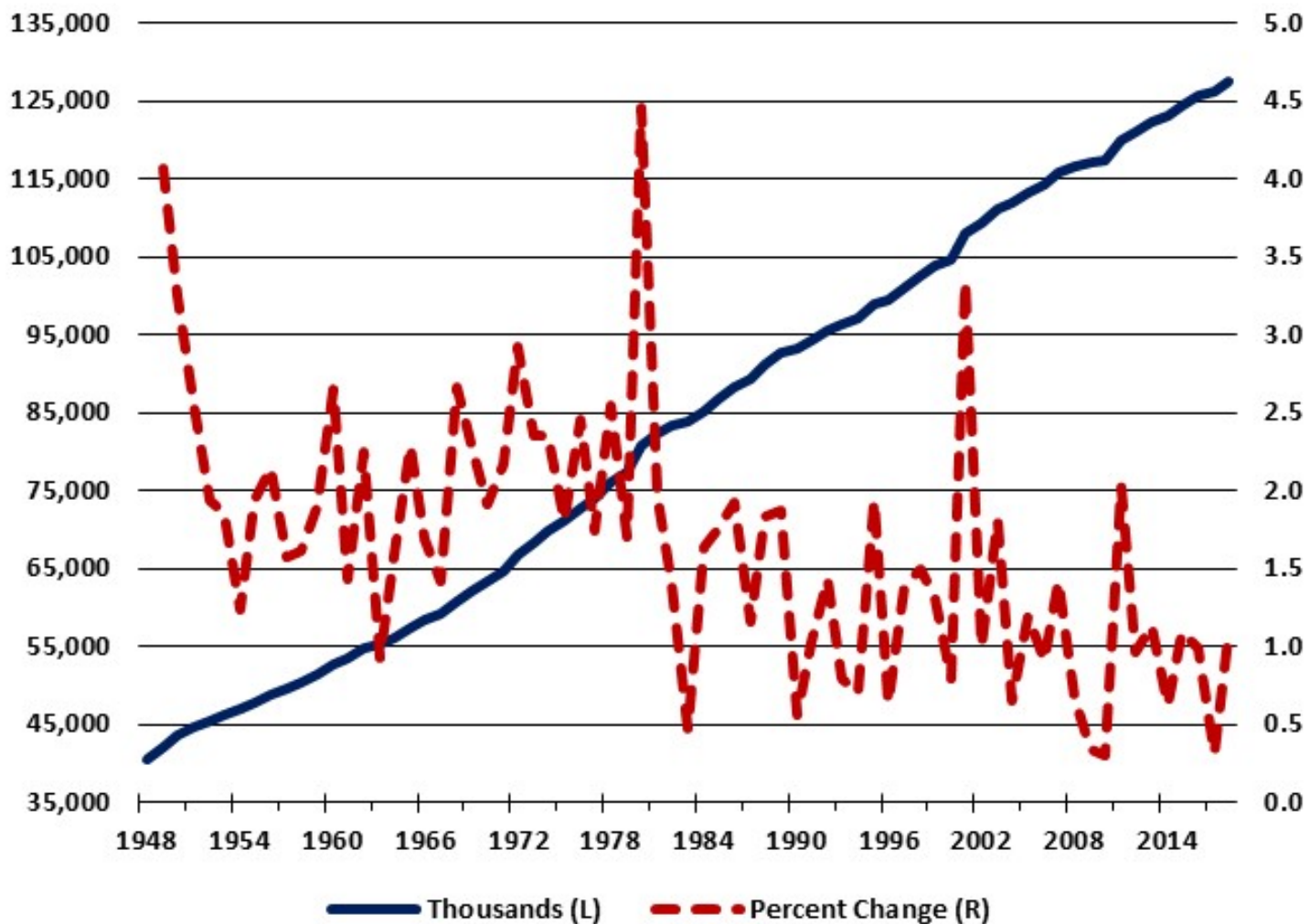# Oil & Natural Gas Production

Boosts Structures Investment

INFORUM

Nonresidential Structures — Mining Exploration, Shafts, & Wells ⋯⋯ Other

Billions of chained (2012) dollars

Oil Prices vs Exploration

Active Rotary Drilling Rigs - U.S. Total / WTI Crude Oil Price ($/Barrel)

- - - Active Drilling Rigs (Left) —— WTI Oil Price (Right)

Residential Vacancies Falling
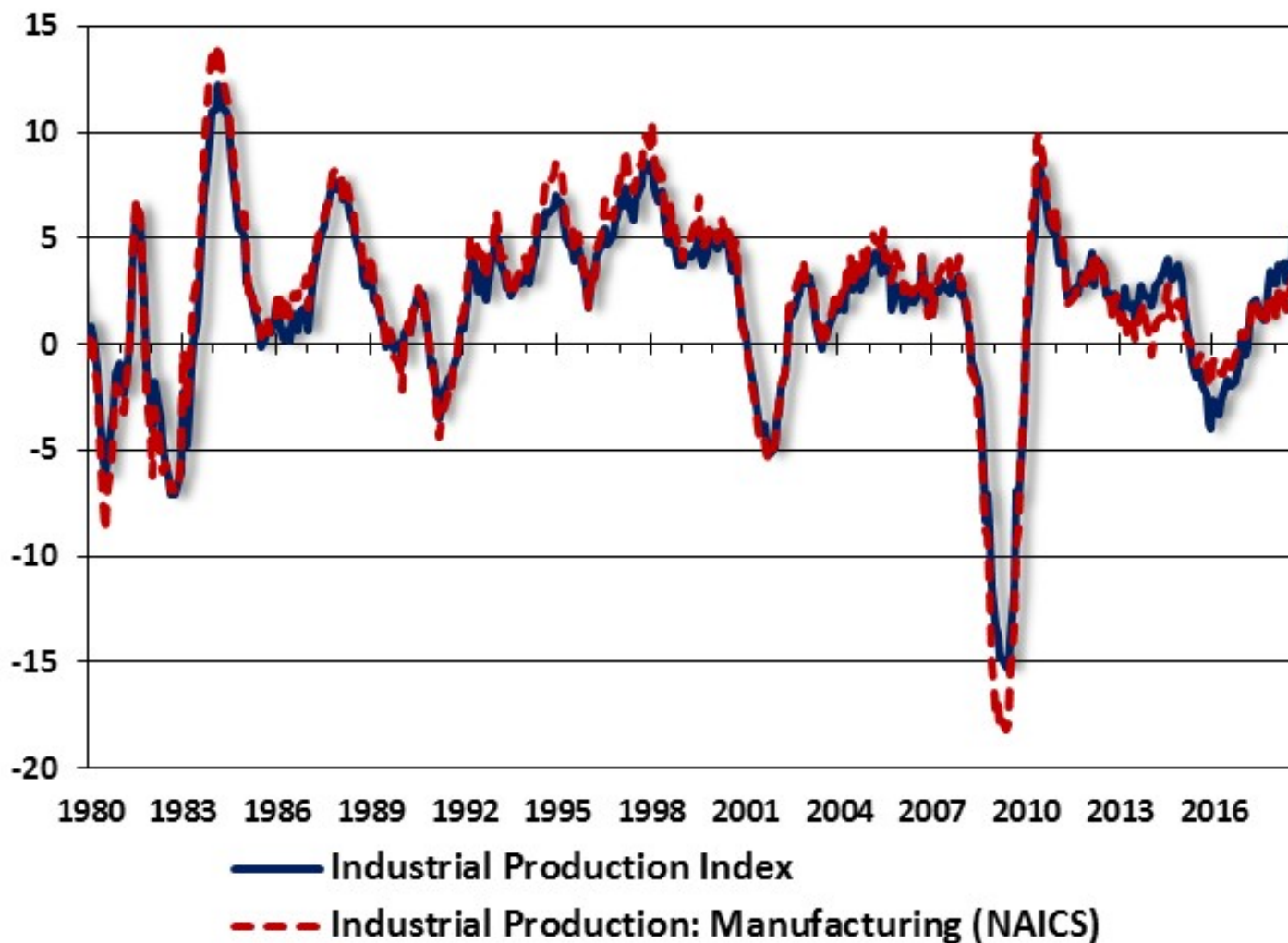

Rental Vacancy Rate (L) — — — Owner-Occupied Vacancy Rate (R)

Low Household Formation

Autos and Housing Starts
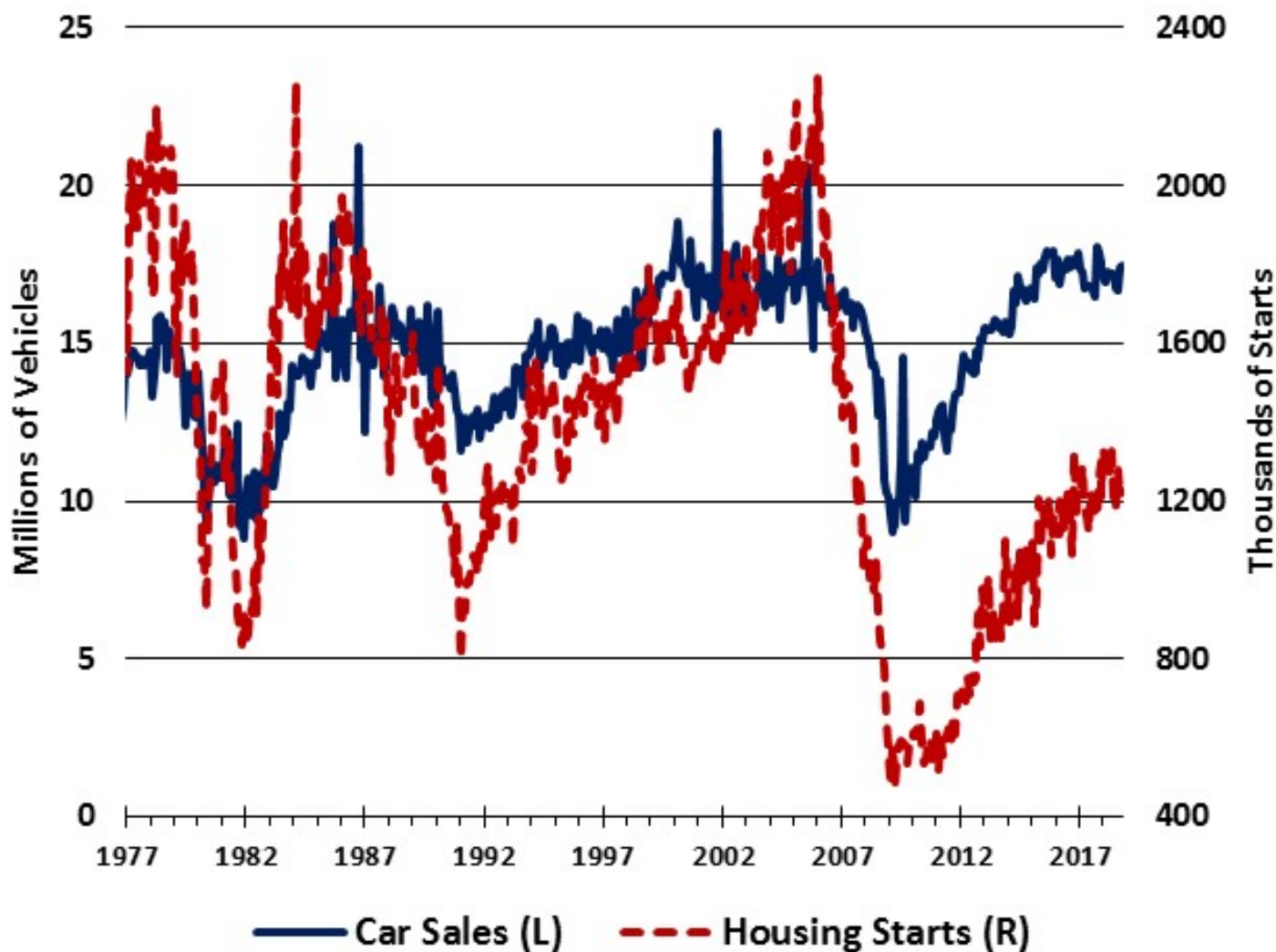
Industrial Production Strong

Industrial Production Index

Industrial Production: Manufacturing (NAICS)
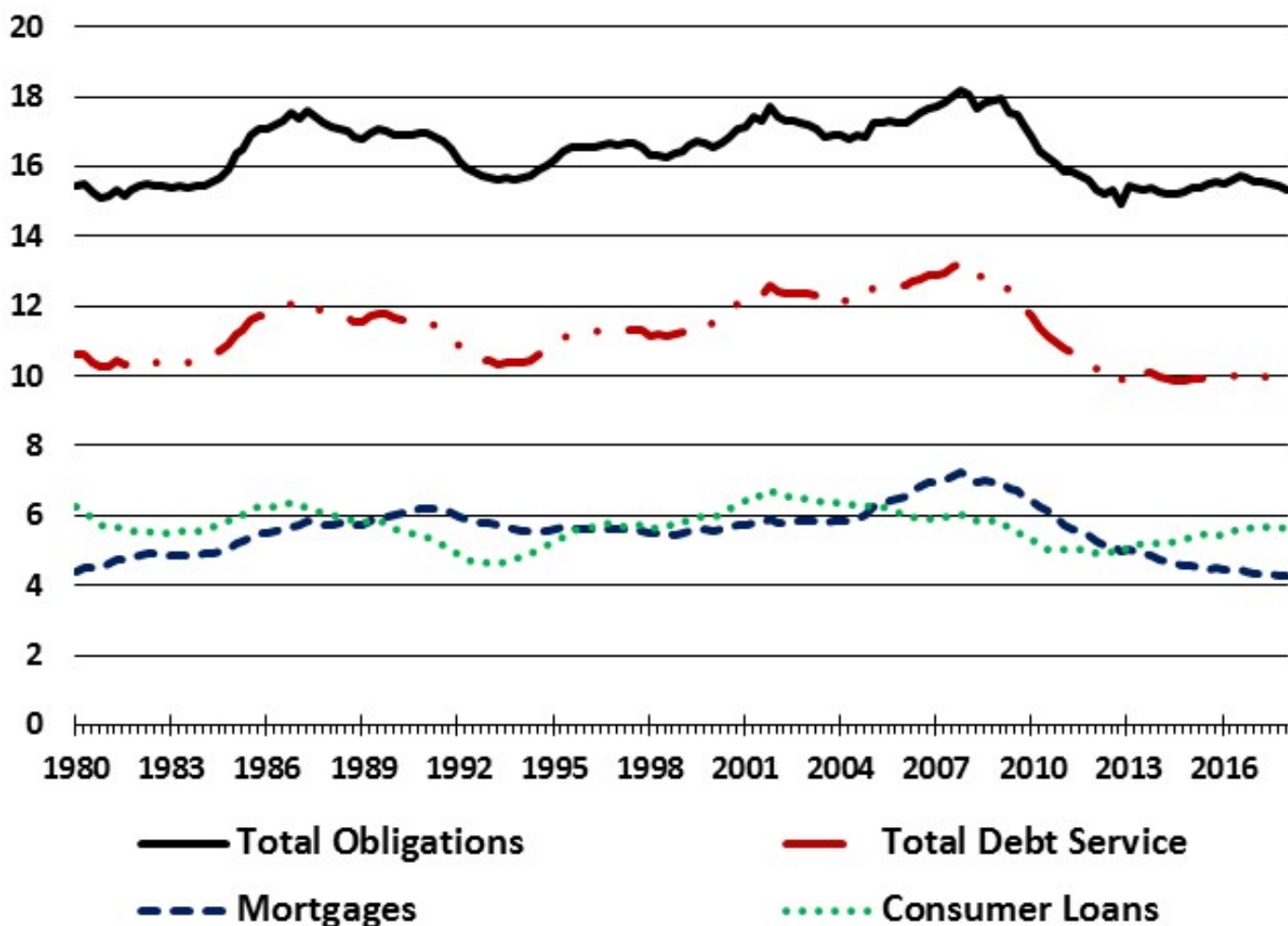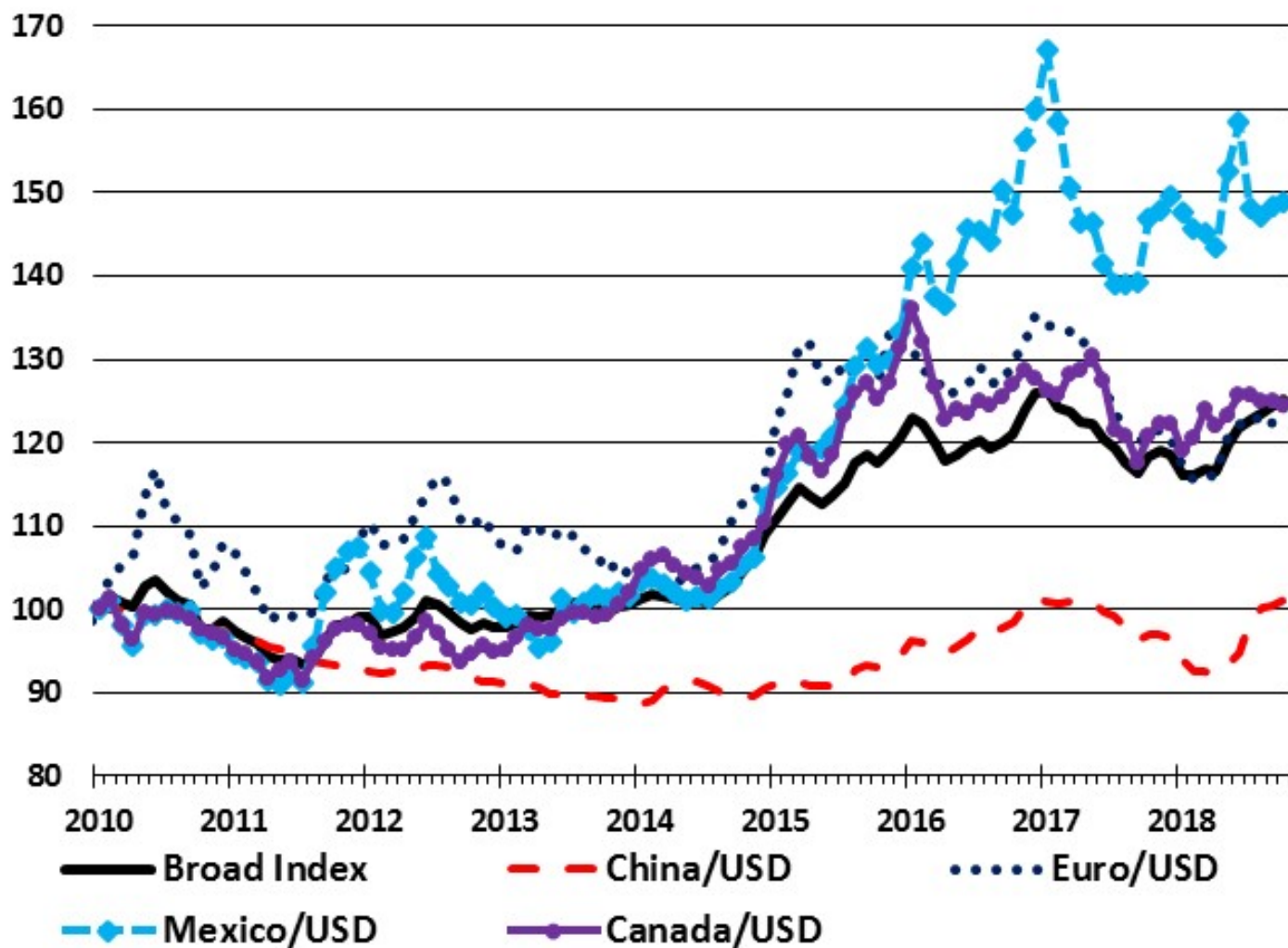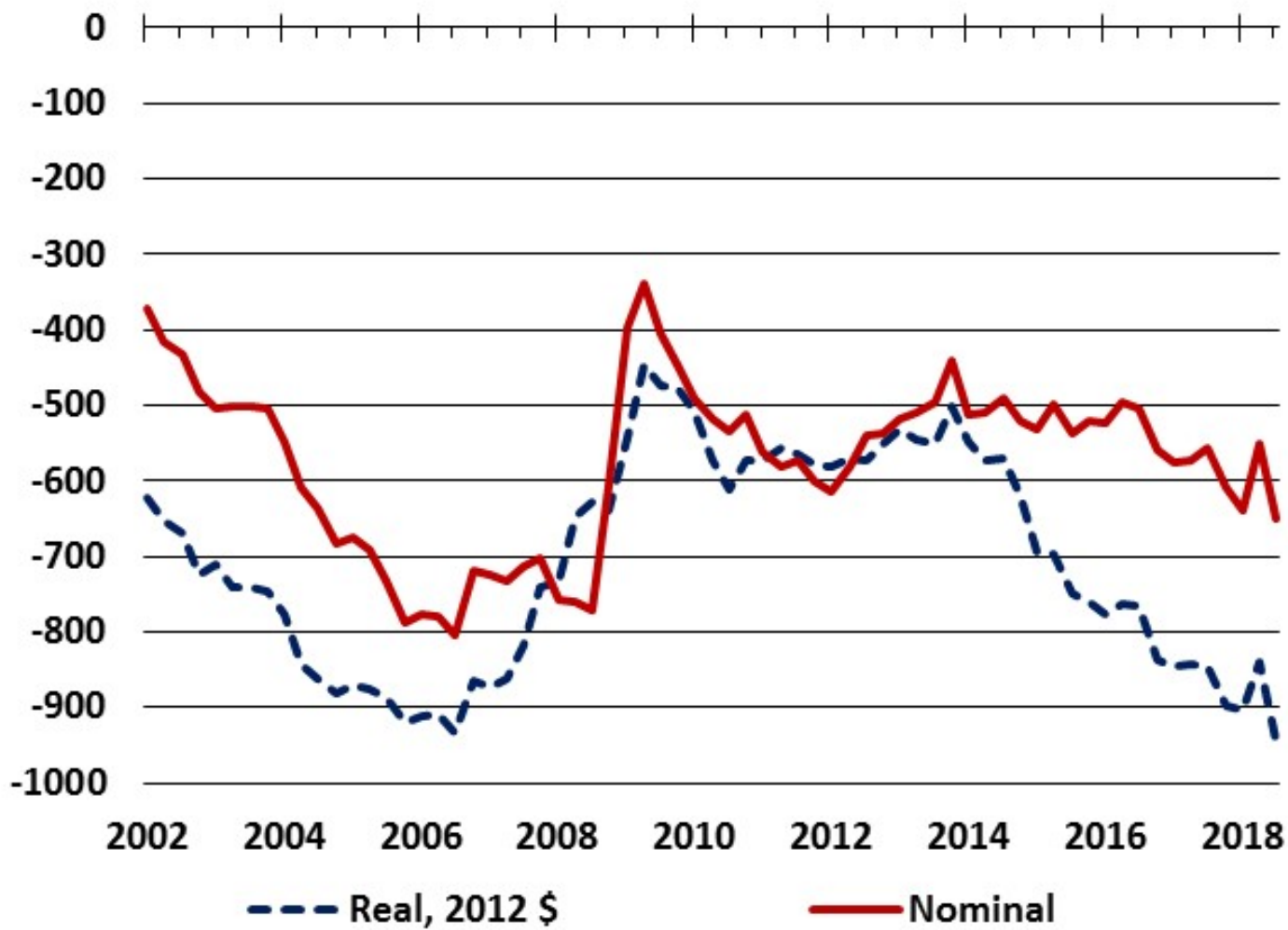
Consumer Sentiment Strong
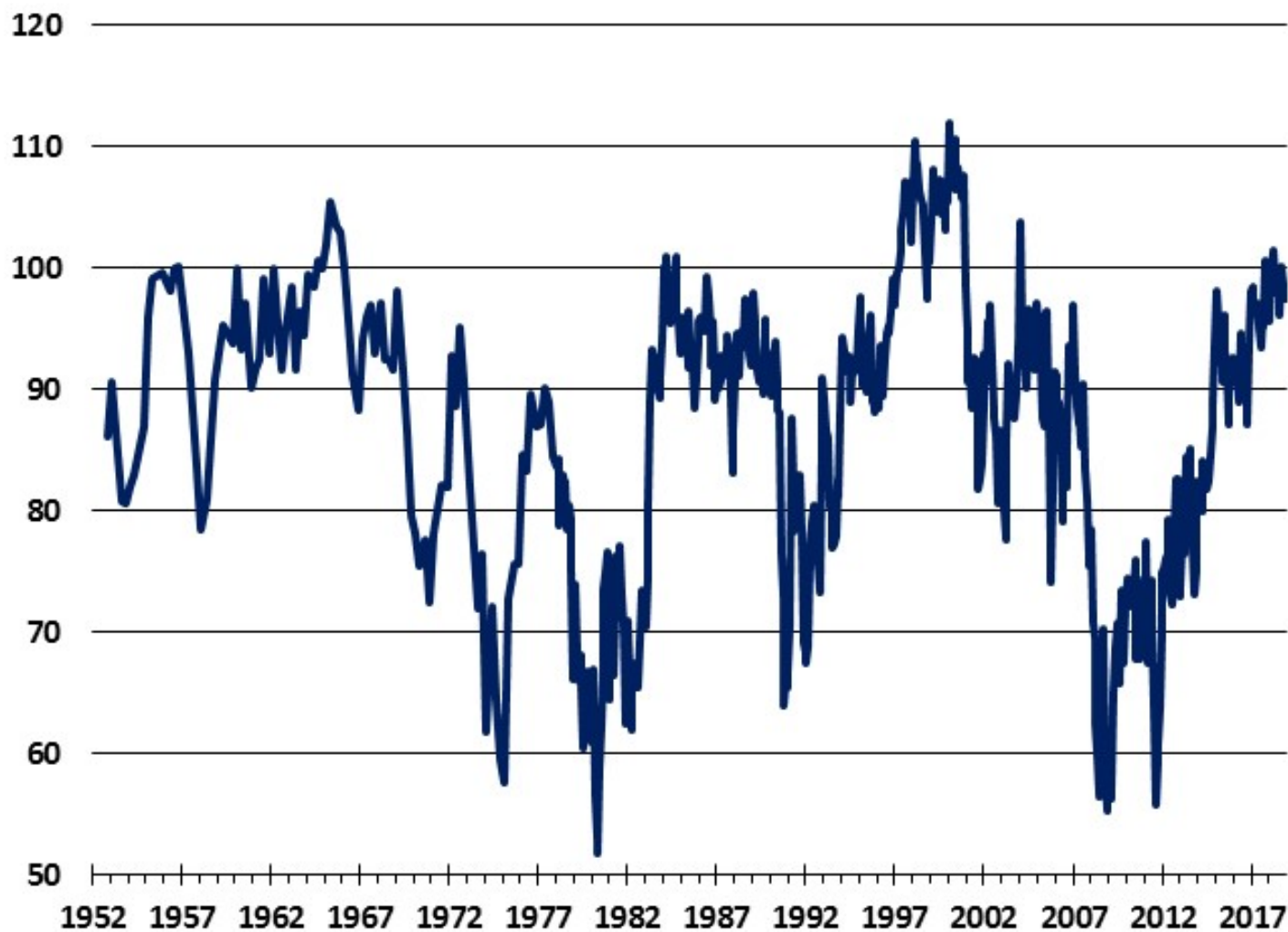
Household Debt Service

Percentage of Disposable Personal Income

Dollar Strengthens in 2018

Trade Gap Widens

International Growth Prospects

GDP Growth
(Annualized semiannual percent change)

—— April 2018 WEO   —— October 2018 WEO

4. Advanced Economies

**5. Emerging Market and Developing Economies**
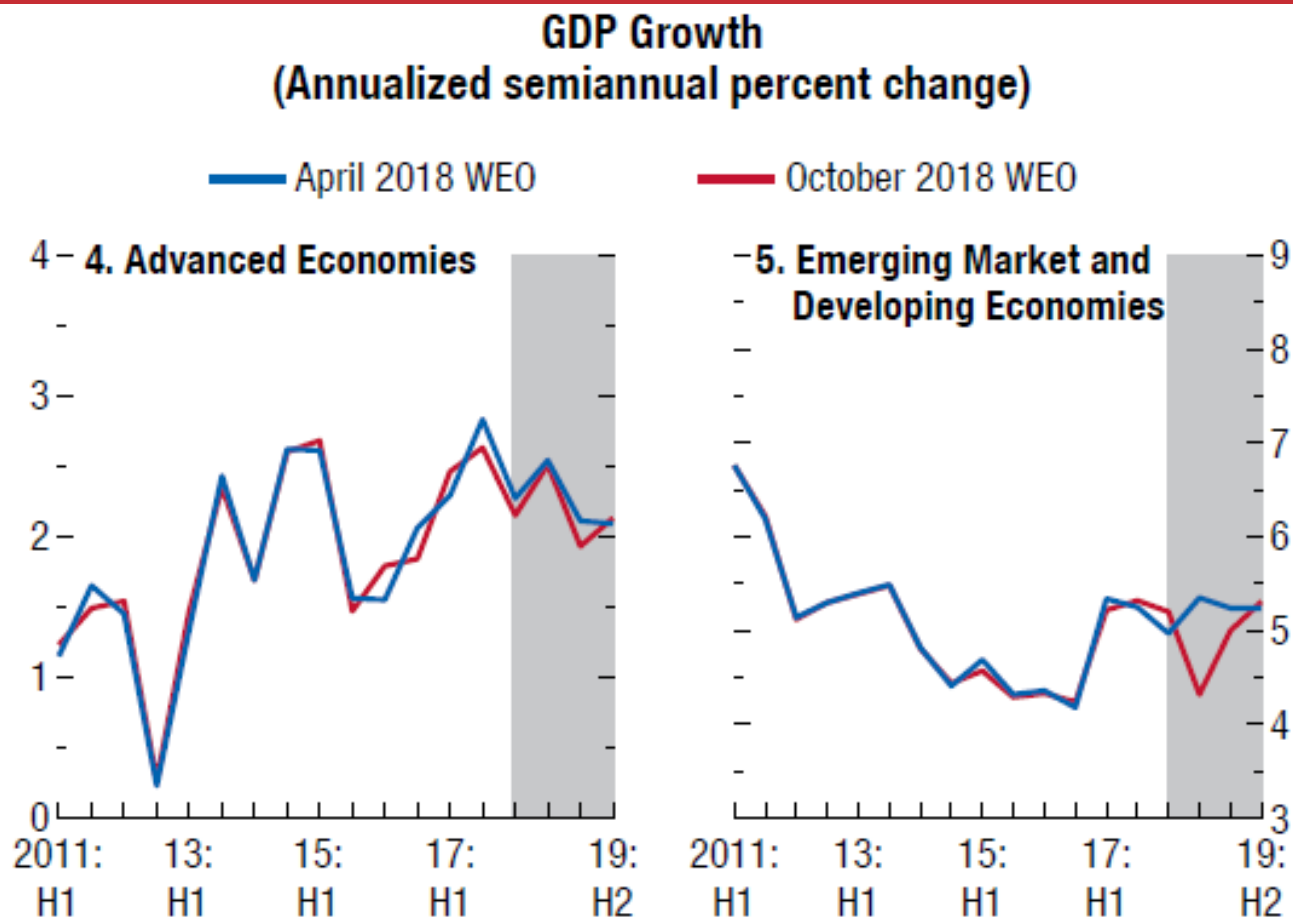
Sources: CPB Netherlands Bureau for Economic Policy Analysis; Haver Analytics; Markit Economics; and IMF staff estimates.

WEO Projections (IMF)

|	2016	2017	2018	2019
World Output	**3.3**	**3.7**	**3.7**	**3.7**
Advanced Economies	**1.7**	**2.3**	**2.4**	**2.1**
United States	1.6	2.2	2.9	2.5
Euro Area	1.9	2.4	2.0	1.9
Germany	2.2	2.5	1.9	1.9
France	1.1	2.3	1.6	1.6
Italy	0.9	1.5	1.2	1.0
Spain	3.2	3.0	2.7	2.2
Japan	1.0	1.7	1.1	0.9
United Kingdom	1.8	1.7	1.4	1.5
Canada	1.4	3.0	2.1	2.0
Other Advanced Economies	2.3	2.8	2.8	2.5
Emerging Market and Developing Economies	**4.4**	**4.7**	**4.7**	**4.7**
Russia	−0.2	1.5	1.7	1.8
China	6.7	6.9	6.6	6.2
India	7.1	6.7	7.3	7.4
Brazil	−3.5	1.0	1.4	2.4
Mexico	2.9	2.0	2.2	2.5

Contributions to U.S. Growth
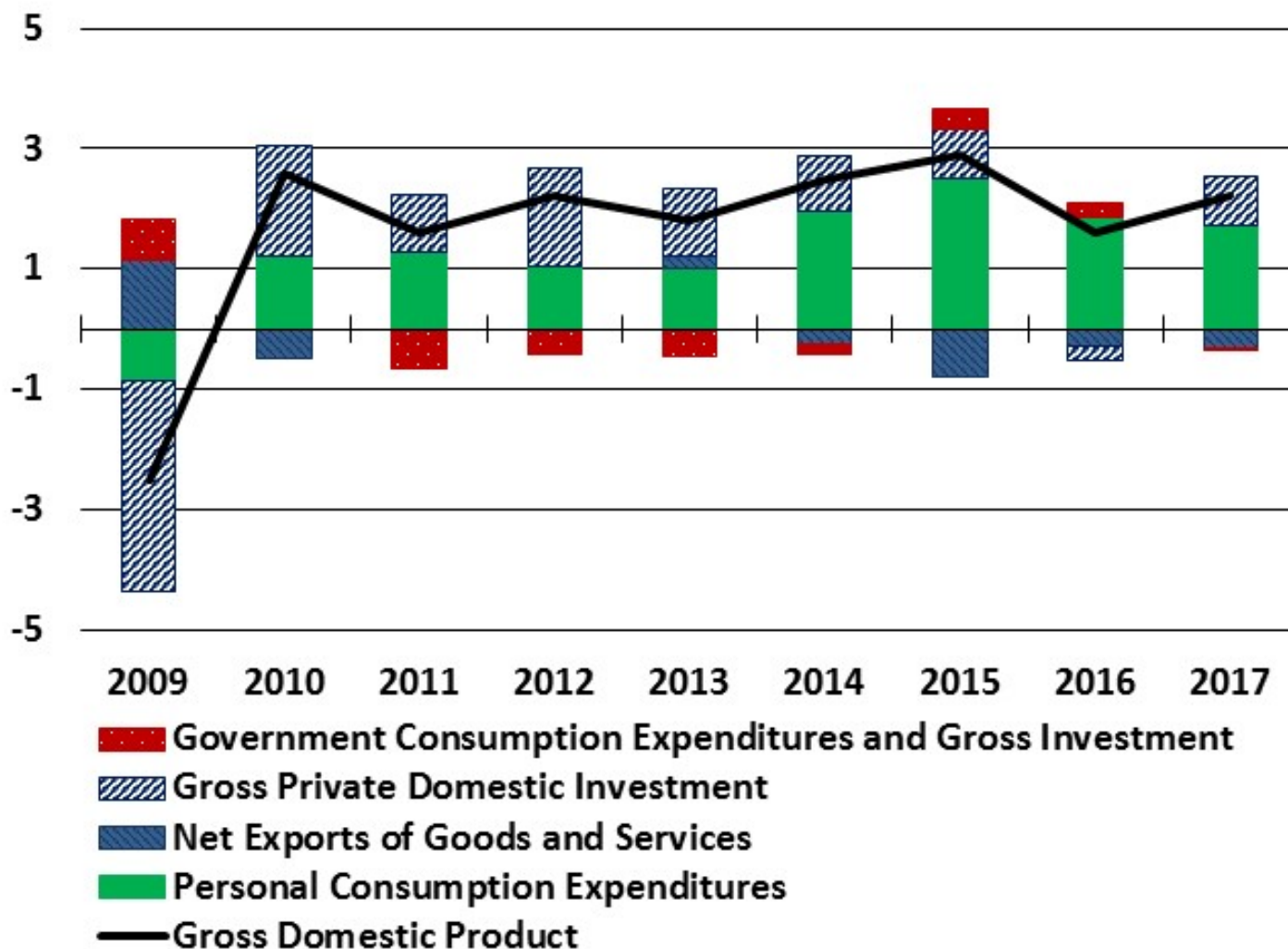
Public Borrowing (1950-2017)

Strong Labor Markets

Net Change (Left) — Employment (Right)
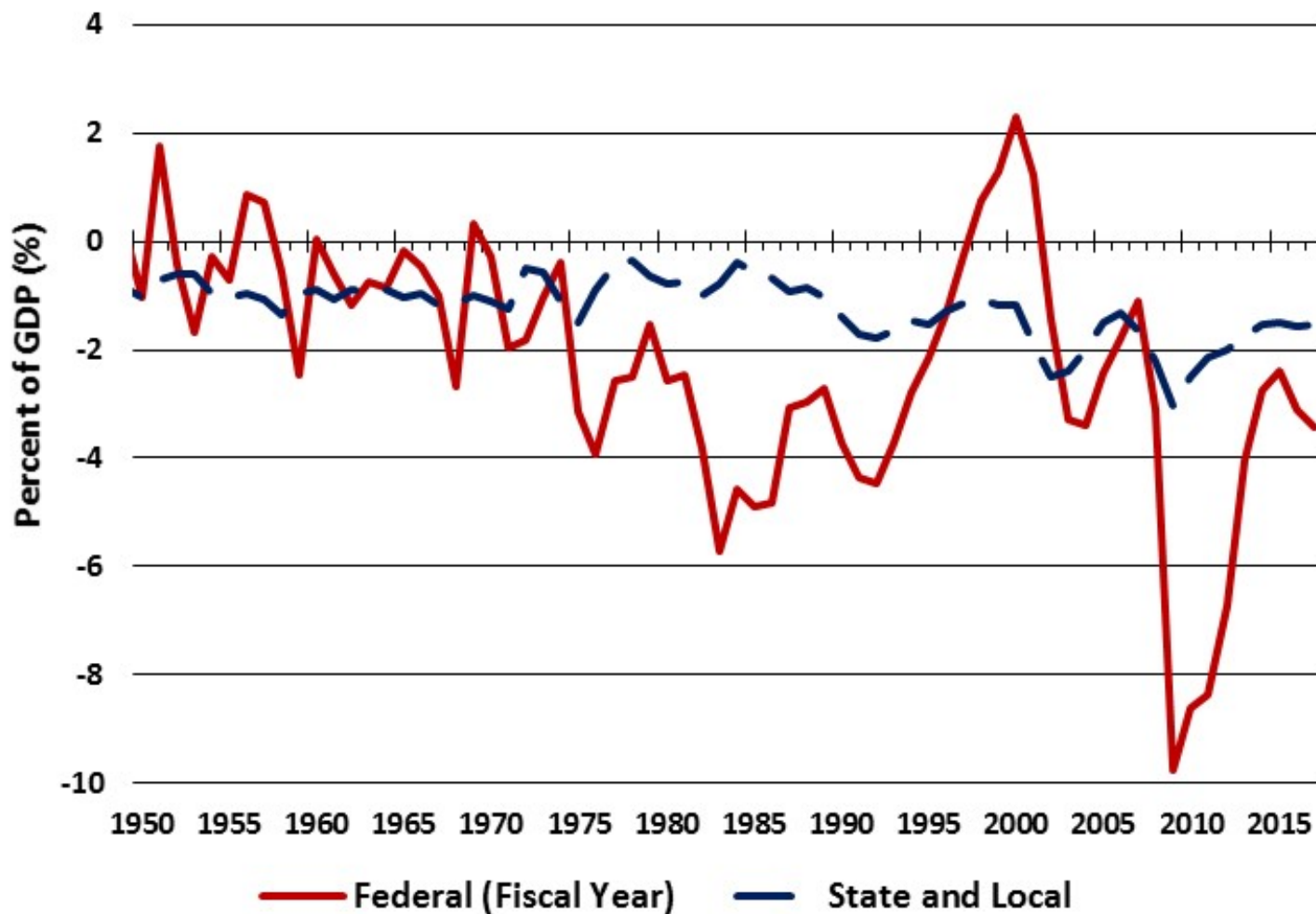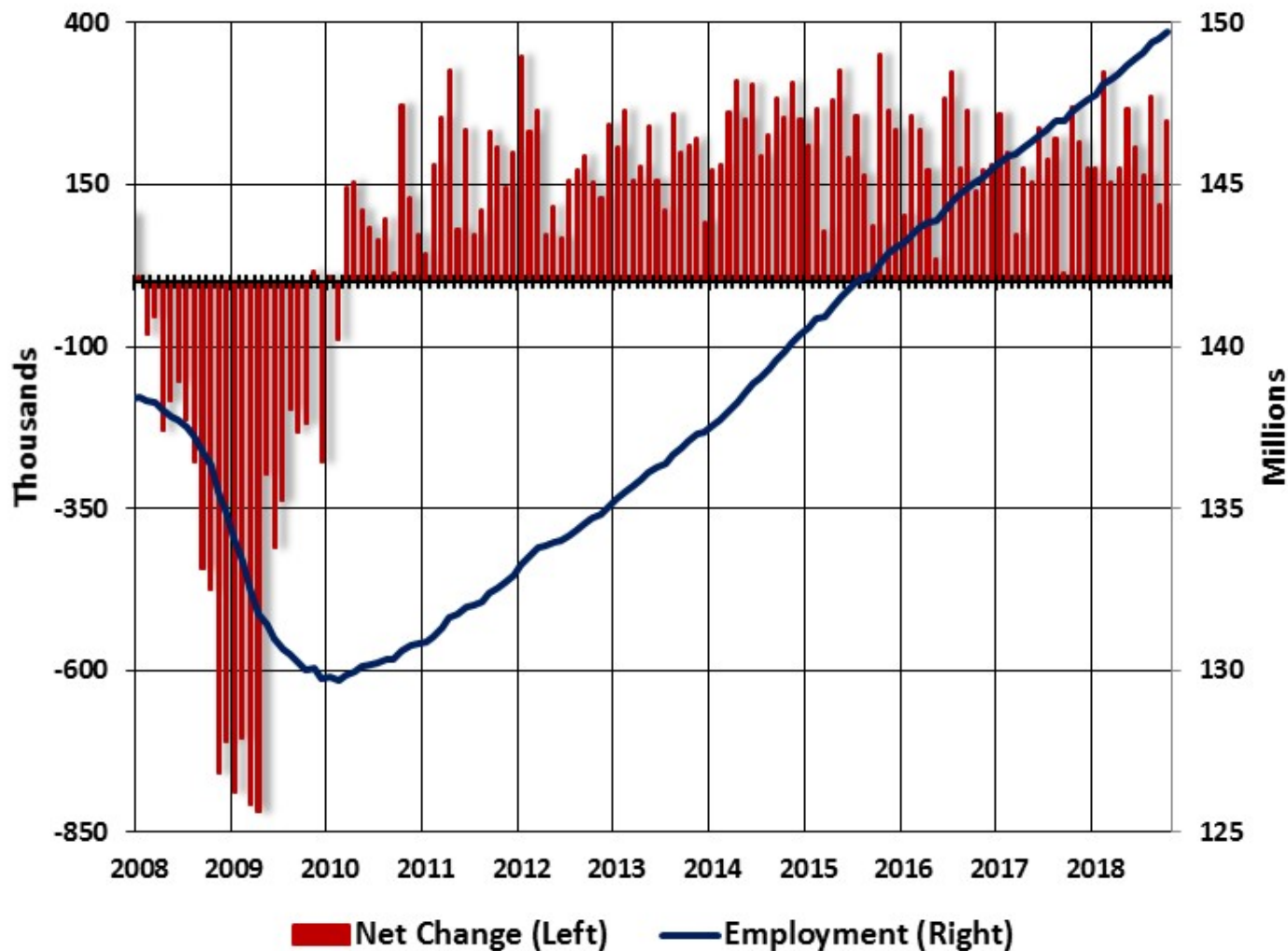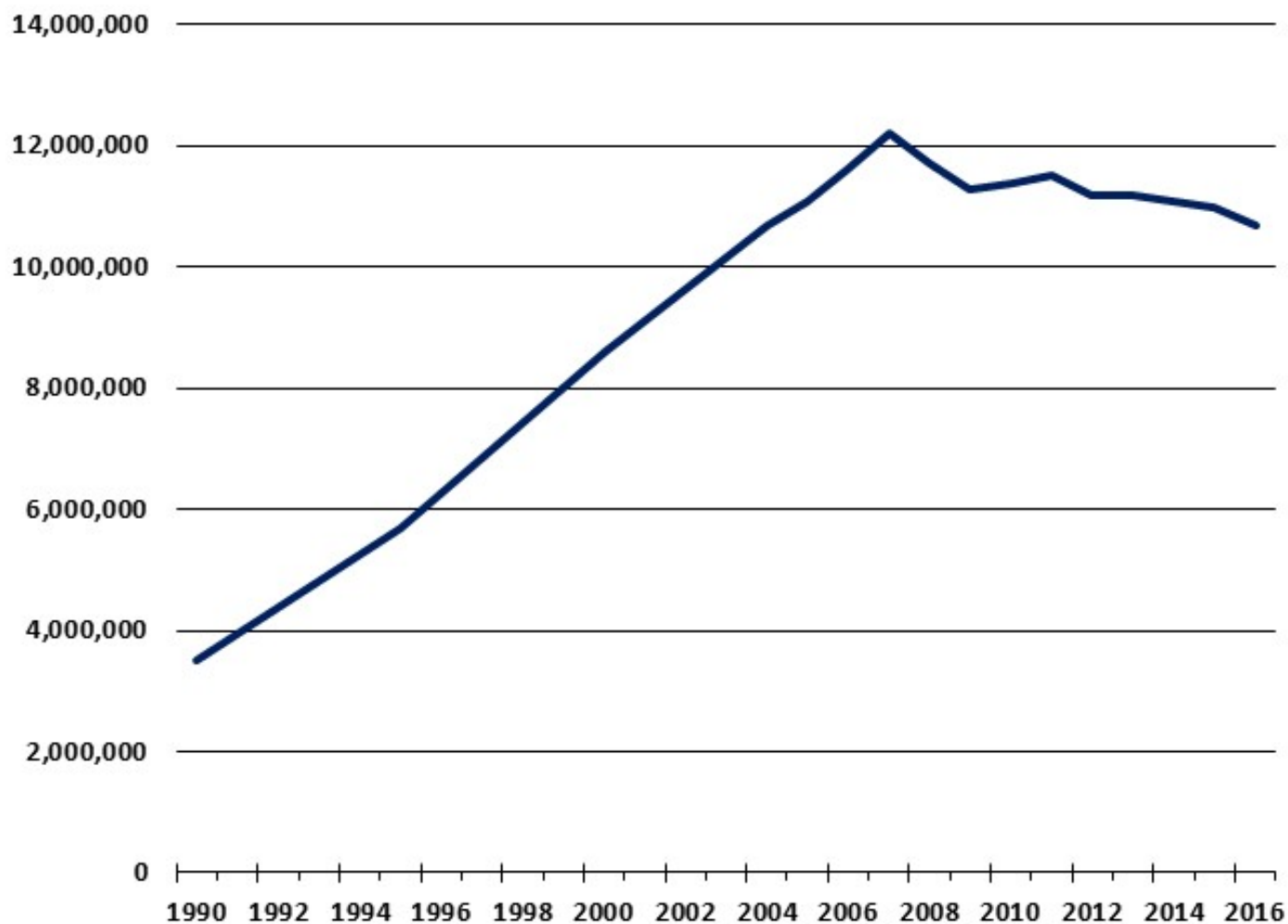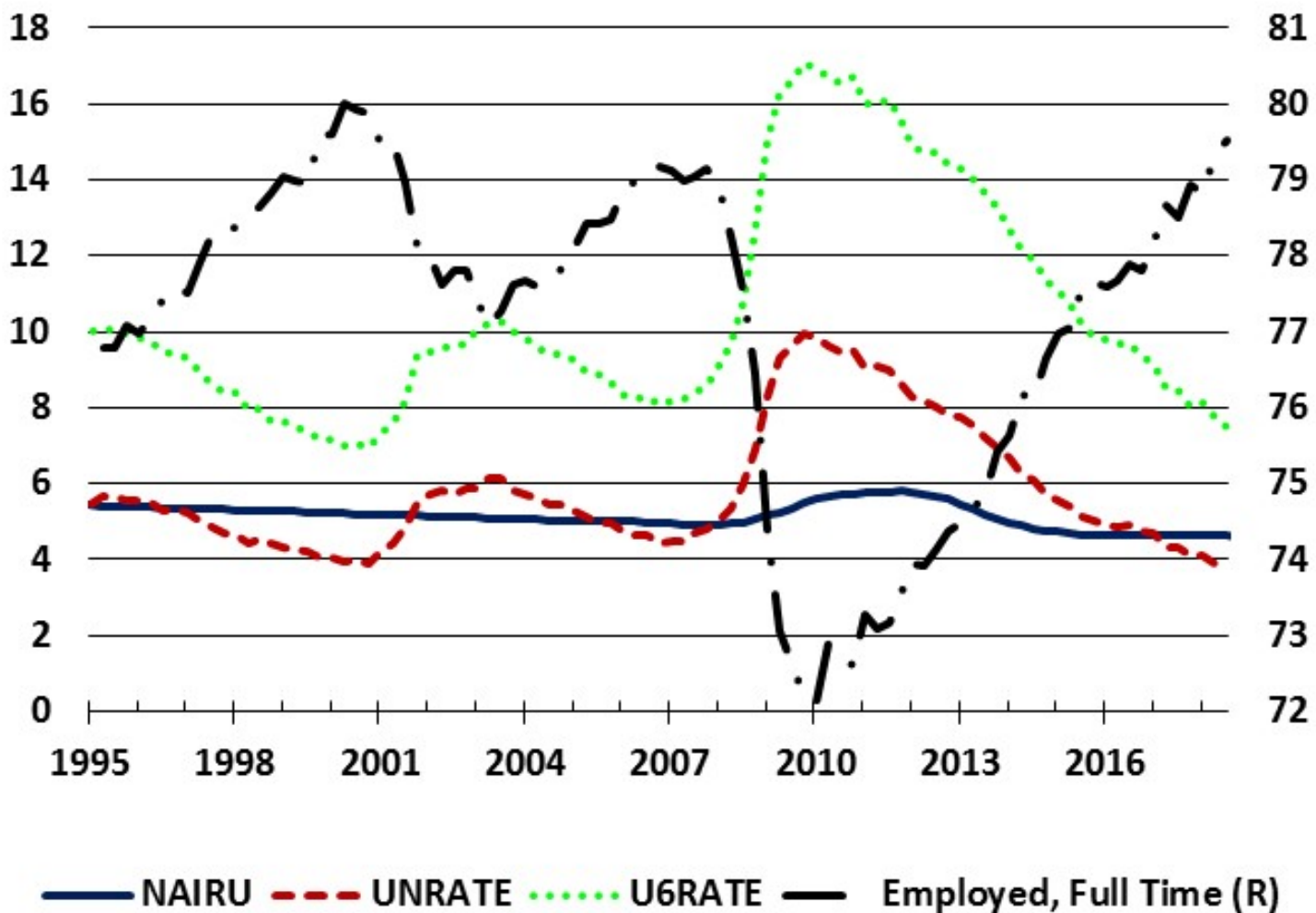
Foreign-Born Population
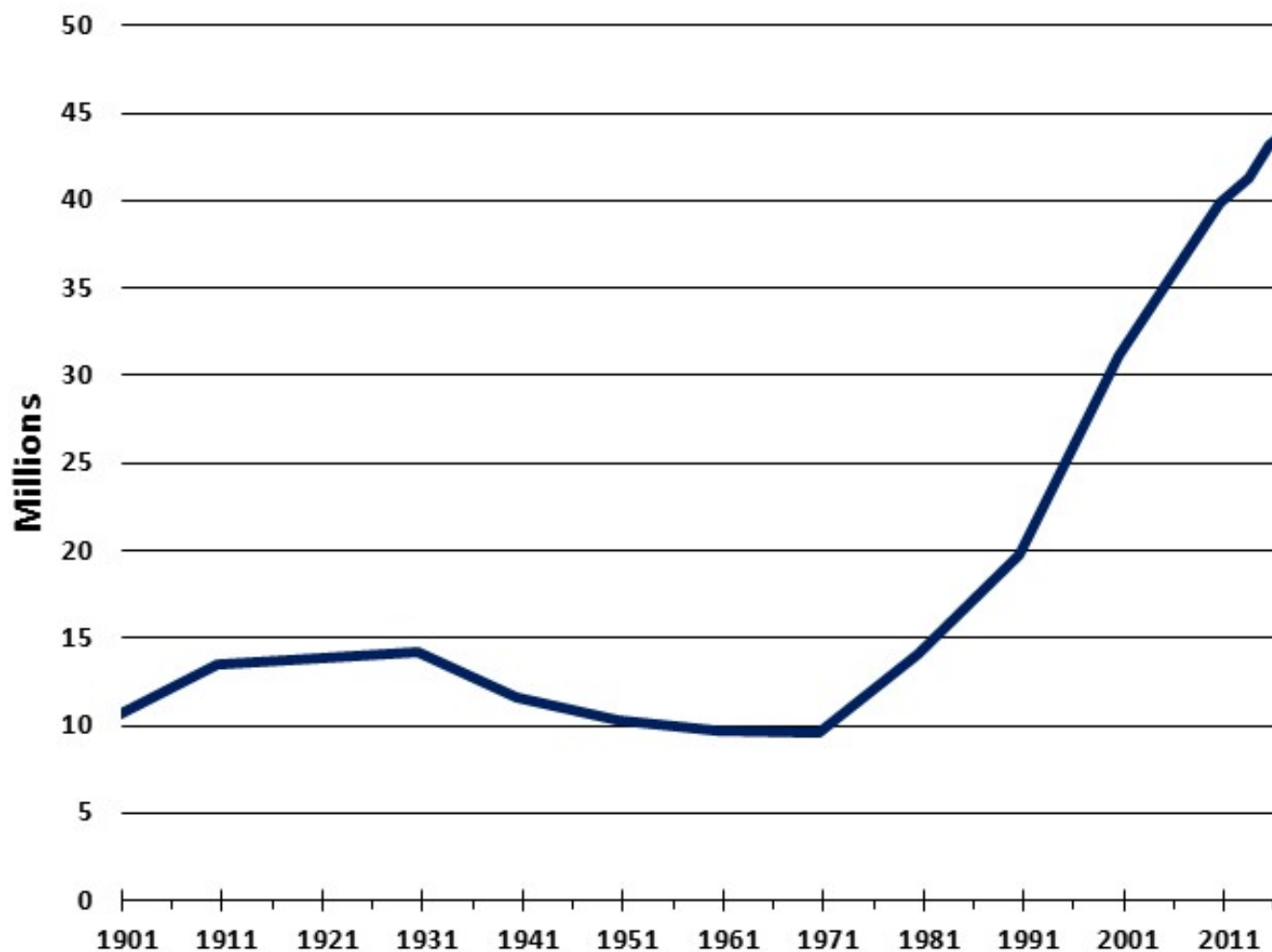
A record 43.7 million, or 13.5% of the U.S. population, in 2016. Pew Research Center.

Unauthorized Immigrant Population

Pew Research Center

Labor Markets Tightening

Wage Growth Climbing
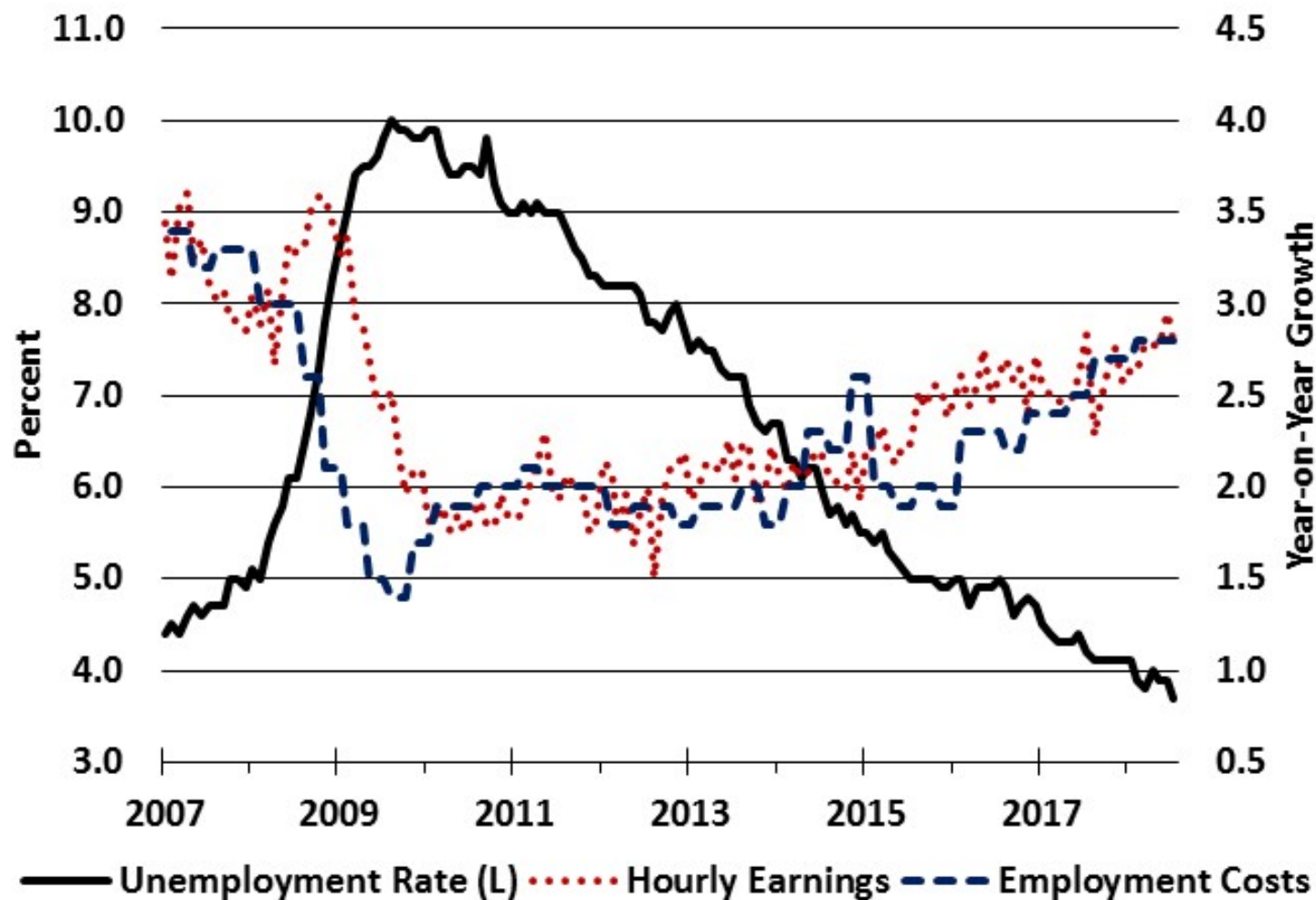
Rising Inflation and Rates
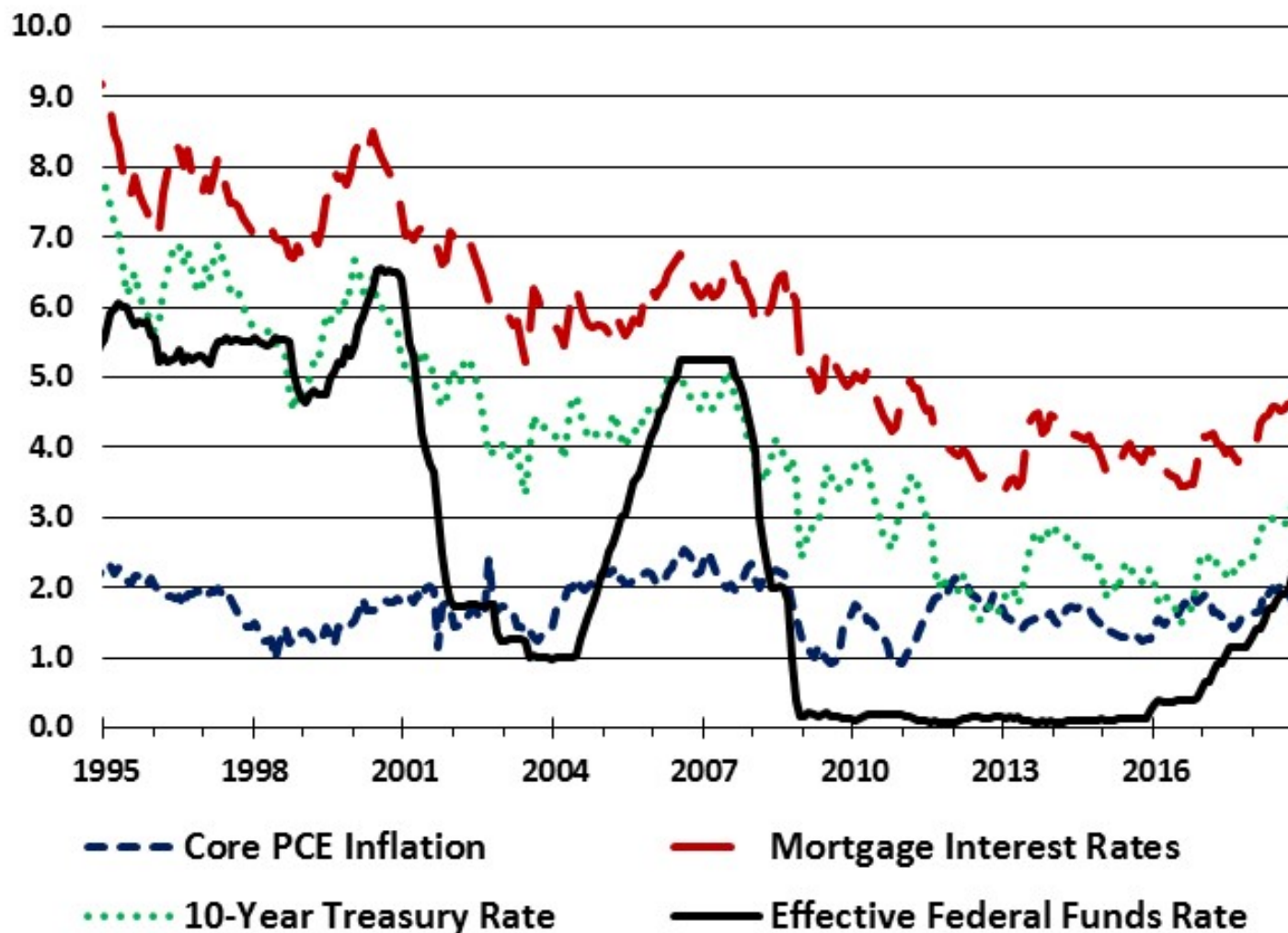
Fed Treasury Security Holdings
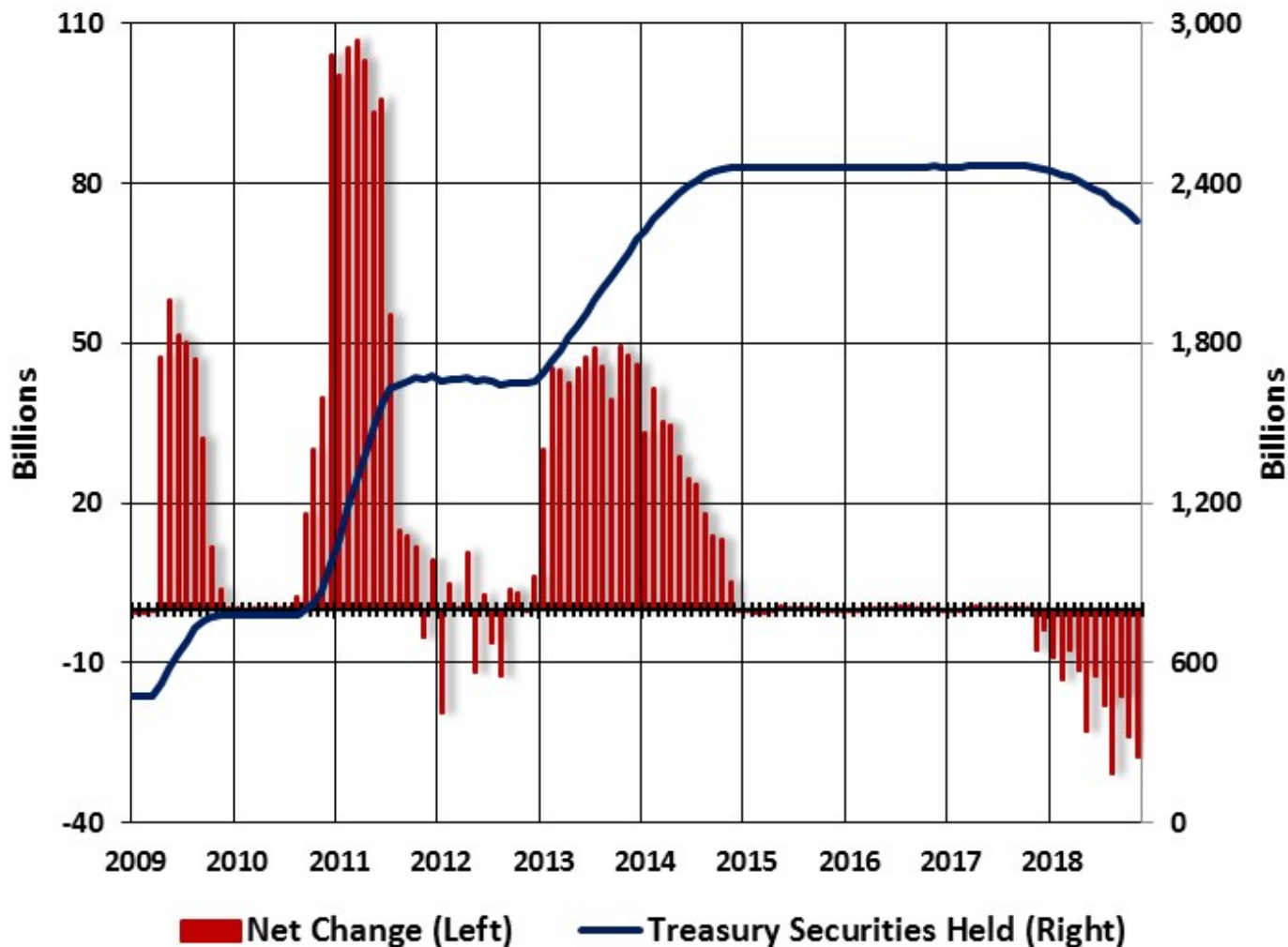
Rising Rates: An Inadvertent Policy Decision

10-Year Yield (Left Scale)   Alan Greenspan   Janet Yellen
Paul Volcker   Ben Bernanke   Jay Powell?

Source: LPL Research, Bloomberg   10/22/17
We don't actually believe that interest rates are determined by the height of the Fed Chair, but it has been an interesting coincidence.
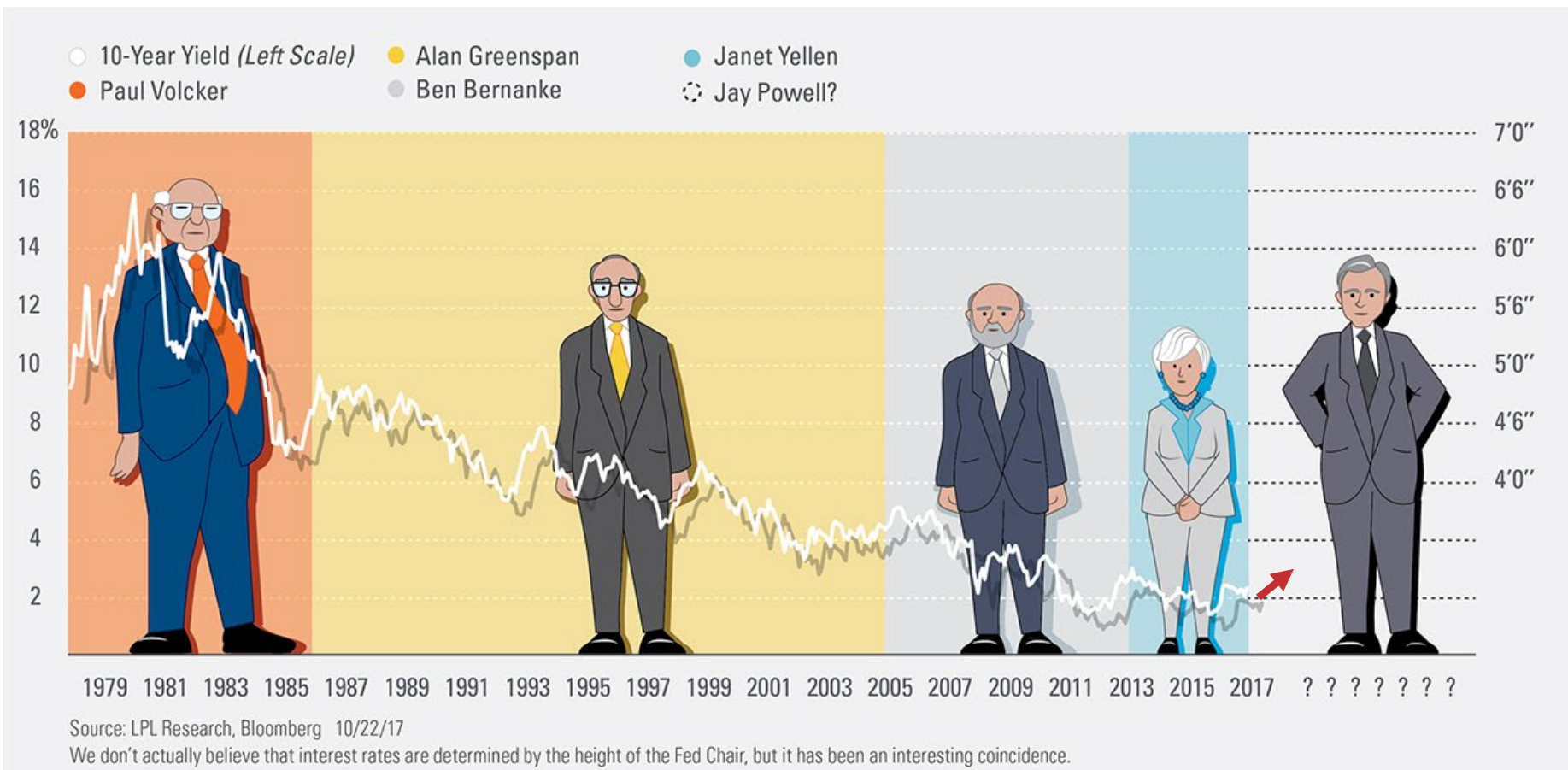
Forecasting Assumptions: Exogenous Detail

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)

Forecasting Assumptions: The Long-Run

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

The Outlook: Real GDP Growth
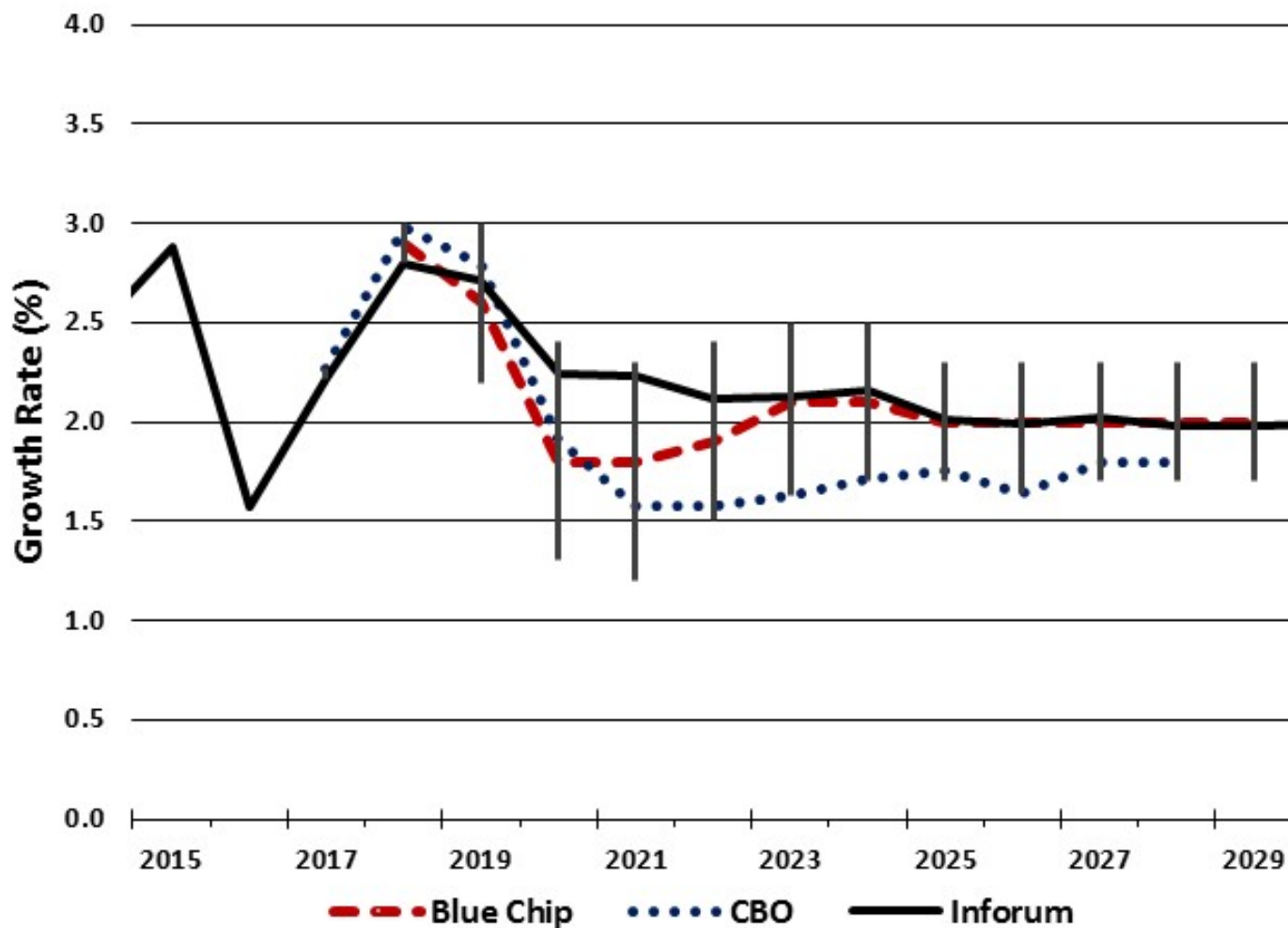
Outlook: Real Spending

	16-17	17-18	18-19	19-20	20-21	21-25	25-35	35-45
Gross Domestic Product	2.2	2.8	2.7	2.2	2.2	2.1	2.0	1.9
Personal Consumption	2.5	2.7	2.7	2.2	2.0	1.9	1.9	1.9
Durable Goods	6.8	5.7	3.7	1.8	2.0	2.4	2.4	2.3
Nondurable Goods	2.1	2.8	1.9	1.8	1.3	1.3	1.5	1.7
Services	2.0	2.2	2.7	2.4	2.2	2.1	2.0	1.9
Gross Private Domestic Investment	4.8	5.1	4.6	3.8	4.9	3.8	3.0	2.5
Nonres. Fixed Investment	5.3	6.4	4.1	4.2	4.6	3.5	3.0	2.5
Nonresidential Structures	4.6	5.0	4.3	5.0	5.5	2.5	1.9	1.6
Equipment Investment	6.1	7.0	4.1	4.2	3.4	3.2	2.9	2.4
Intellectual Property	4.6	6.6	4.1	3.6	5.8	4.5	3.8	3.1
Residential Investment	3.3	0.5	2.6	3.8	6.1	5.3	3.3	2.4
Exports (% change)	3.0	4.2	3.1	2.9	3.0	3.4	3.3	3.4
Imports (% change)	4.6	4.8	4.0	2.7	2.5	2.7	2.8	2.8
Government	-0.1	1.6	1.9	0.8	0.0	0.4	0.7	1.0
Federal	0.7	2.6	2.5	-0.3	-1.8	-0.6	0.5	0.8
Defense	0.7	2.8	3.0	-1.0	-1.9	-1.0	0.6	0.7
Nondefense	0.8	2.4	1.8	0.6	-1.7	-0.1	0.3	0.9
State & Local	-0.5	1.0	1.5	1.4	1.1	1.0	0.9	1.1
	2017	2018	2019	2020	2021	2025	2030	2045
Inventory Change (Billion 2012$)	22.5	51.8	78.2	71.6	73.8	76.4	85.5	107.5
Net Exports (Billion 2012$)	-858.7	-912.5	-972.1	-994.0	-1005.7	-1030.5	-1079.8	-1124.8

Outlook: Employment

.	16-17	17-18	18-19	19-20	20-21	21-25	25-35	35-45
Gross Domestic Product (Growth)	2.2	2.8	2.7	2.2	2.2	2.1	2.0	1.9
Real Disposable Income (2012$)	2.6	2.5	2.6	2.7	2.8	2.4	1.9	1.9
Civilians: noninstitutional, age 16+	0.6	1.0	1.0	1.0	1.0	0.9	0.7	0.6
Labor Force	0.7	1.0	1.0	1.0	0.8	0.5	0.4	0.5
Employment	1.6	1.5	1.3	0.8	0.6	0.5	0.4	0.5
Labor Productivity	0.5	1.3	1.4	1.5	1.6	1.6	1.6	1.4
	2017	2018	2019	2020	2021	2025	2030	2045
Unemployment Rate	4.4	3.9	3.6	3.8	4.1	4.6	4.6	4.6
Labor Force Participation	62.8	62.8	62.8	62.8	62.7	61.7	60.7	59.5

Outlook: Nominal GDP

|	16-17	17-18	18-19	19-20	20-21	21-25	25-35	35-45
GDP Deflator	1.9	2.3	2.3	2.1	2.0	2.0	2.0	2.0
Consumption Deflator	1.8	2.2	2.2	2.3	2.2	2.1	2.2	2.2
Gross Domestic Product	2.2	2.8	2.7	2.2	2.2	2.1	2.0	1.9
	2017	2018	2019	2020	2021	2025	2030	2045
Unemployment Rate	4.4	3.9	3.6	3.8	4.1	4.6	4.6	4.6
Interest Rates								
Treasury Bills, 3-month	0.9	2.0	2.7	3.1	3.2	2.7	2.9	3.1
Yield, 10 yr. Treasury bonds	2.3	3.0	3.4	3.9	4.0	3.7	3.8	4.3
Nominal Quantities, Billions of Dollars								
Current Account	-472.5	-505.2	-591.4	-615.6	-642.5	-731.7	-878.3	-1695.3
(% of GDP)	-2.4	-2.5	-2.7	-2.7	-2.7	-2.6	-2.6	-2.7
Federal Net Borrowing	-515.8	-923.0	-1079.1	-1158.6	-1252.0	-1497.9	-1730.1	-2913.5
(% of GDP)	-2.6	-4.5	-5.0	-5.1	-5.3	-5.4	-5.1	-4.7

GDP, Hours, and Productivity
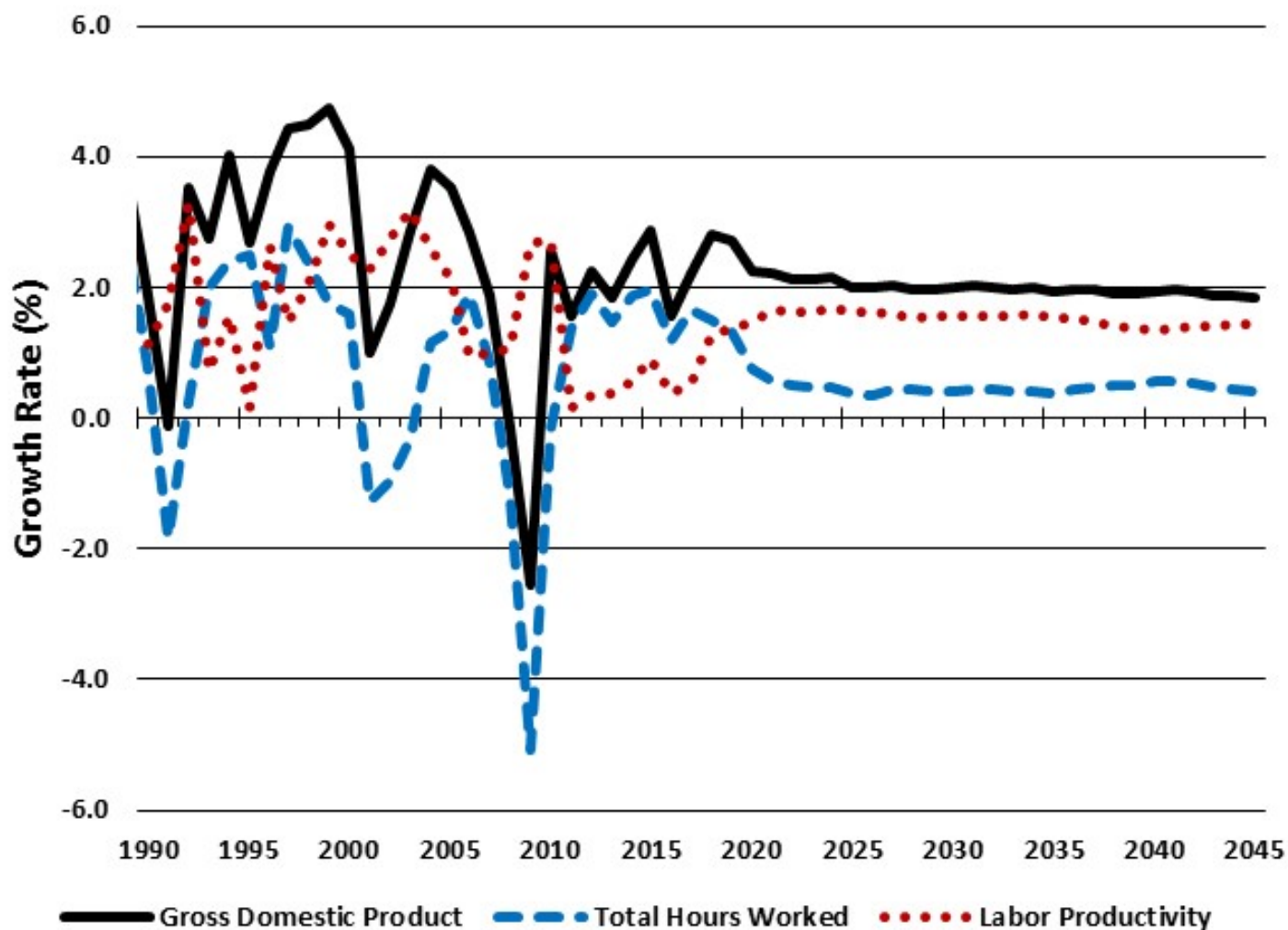
Participation Rates Decline
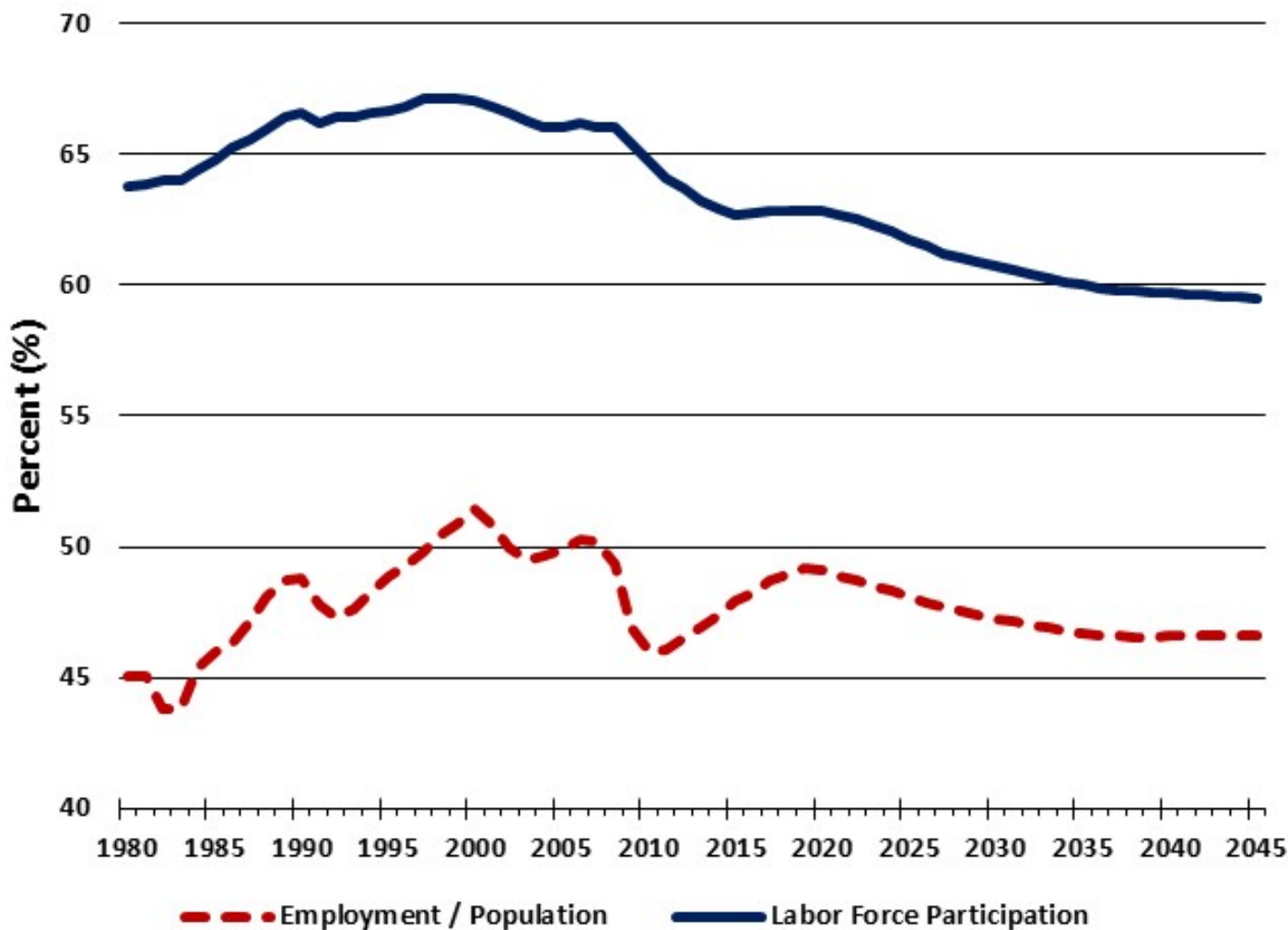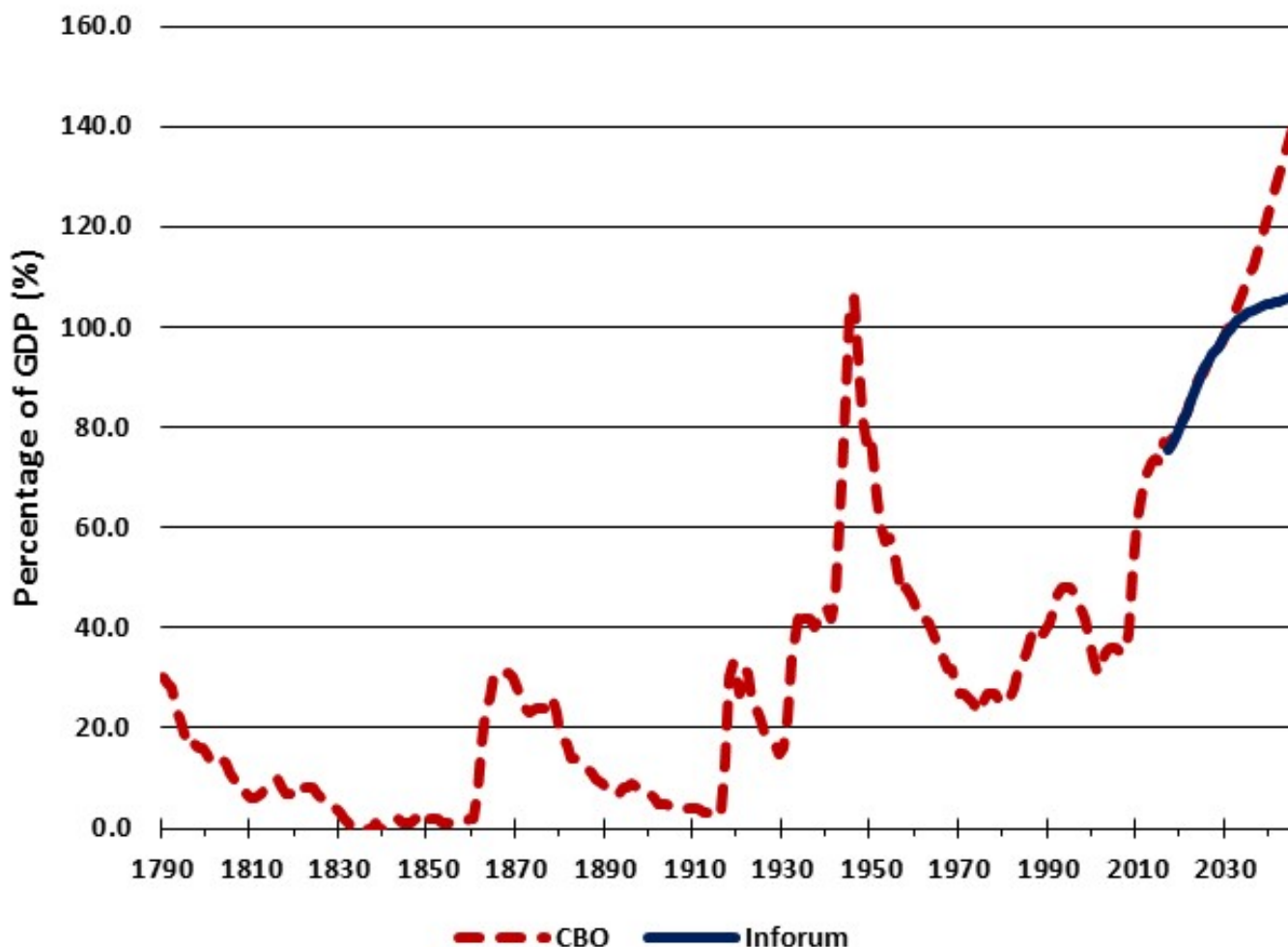
Sustained Full Employment
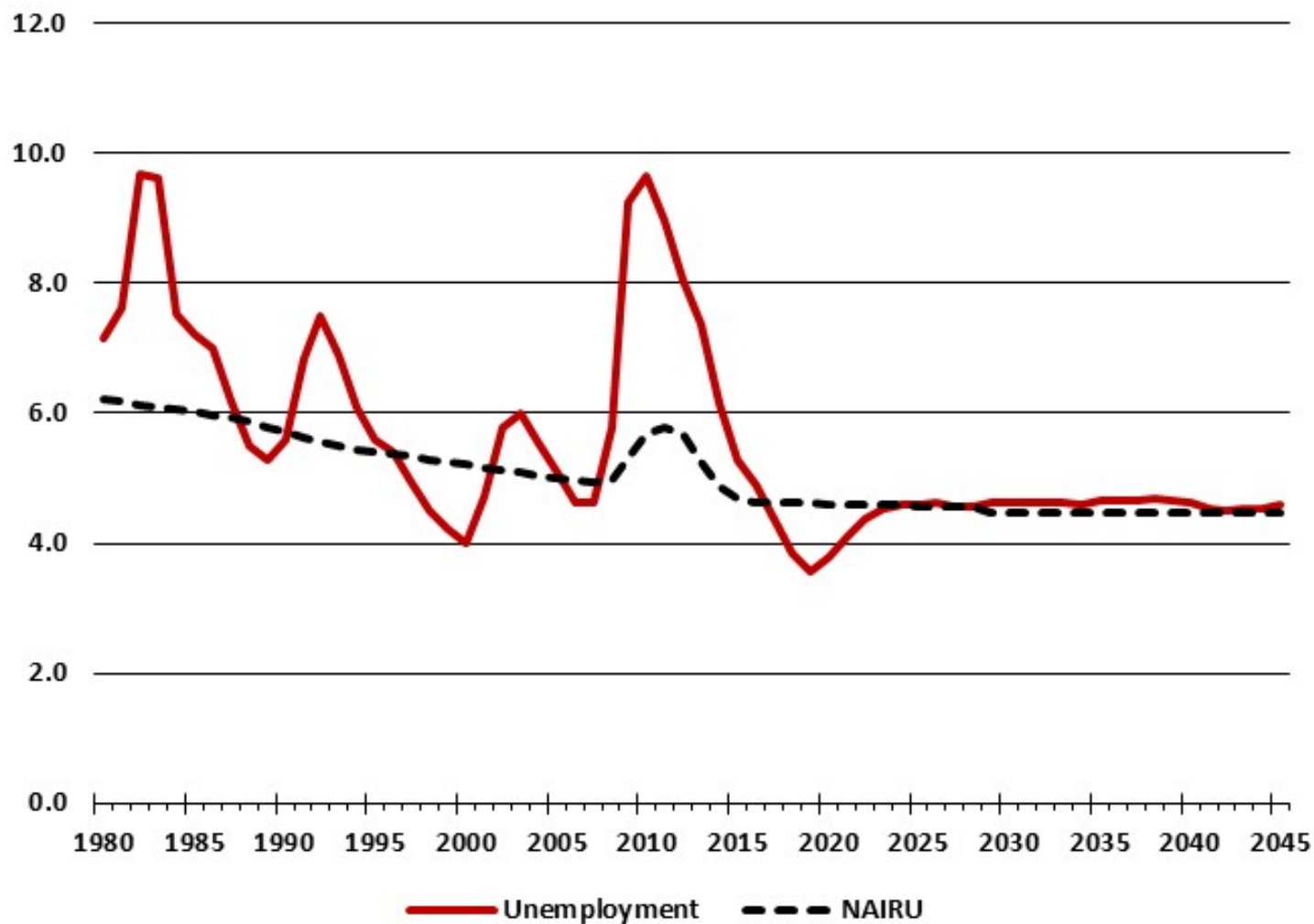
Real GDP vs Potential GDP
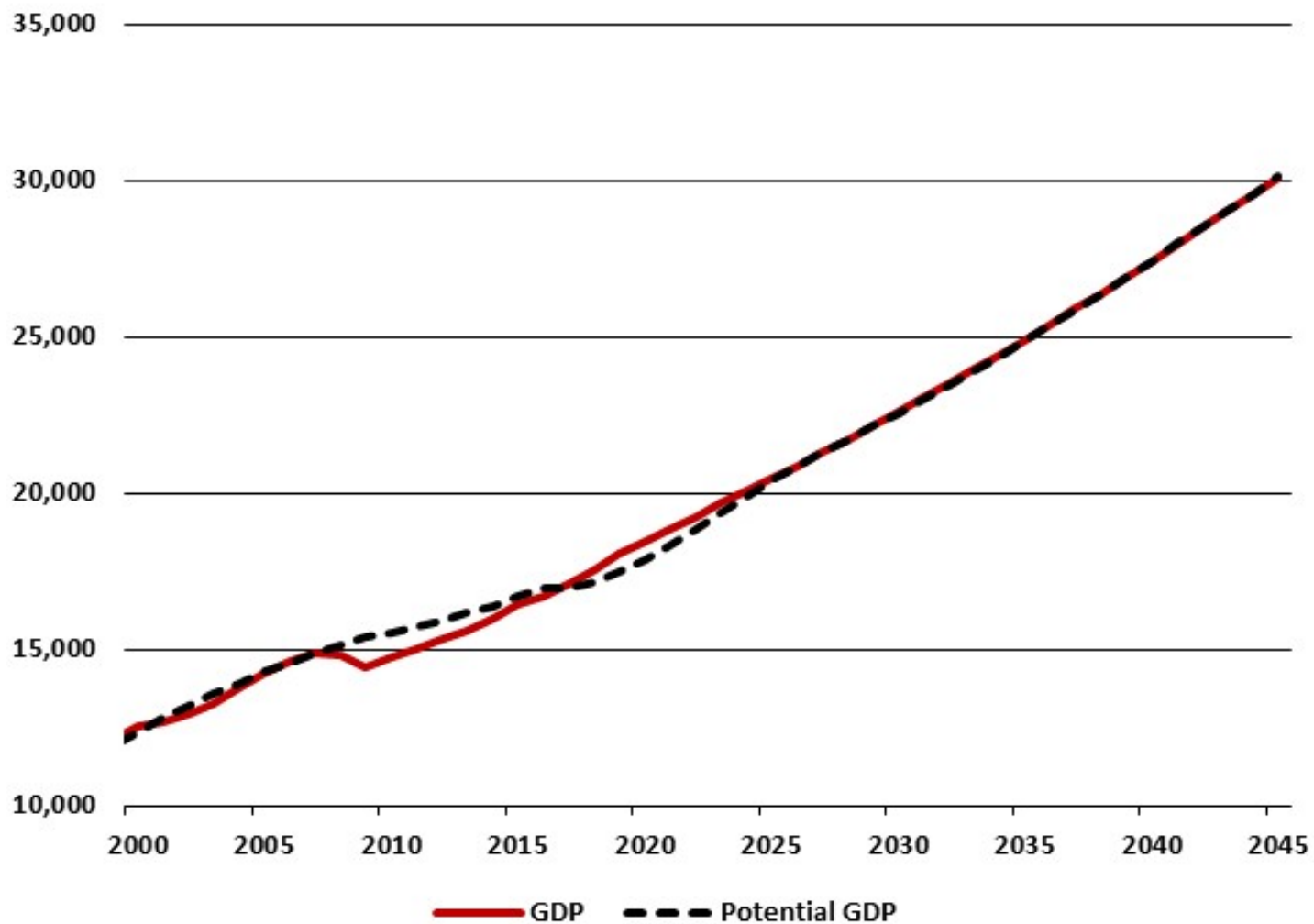
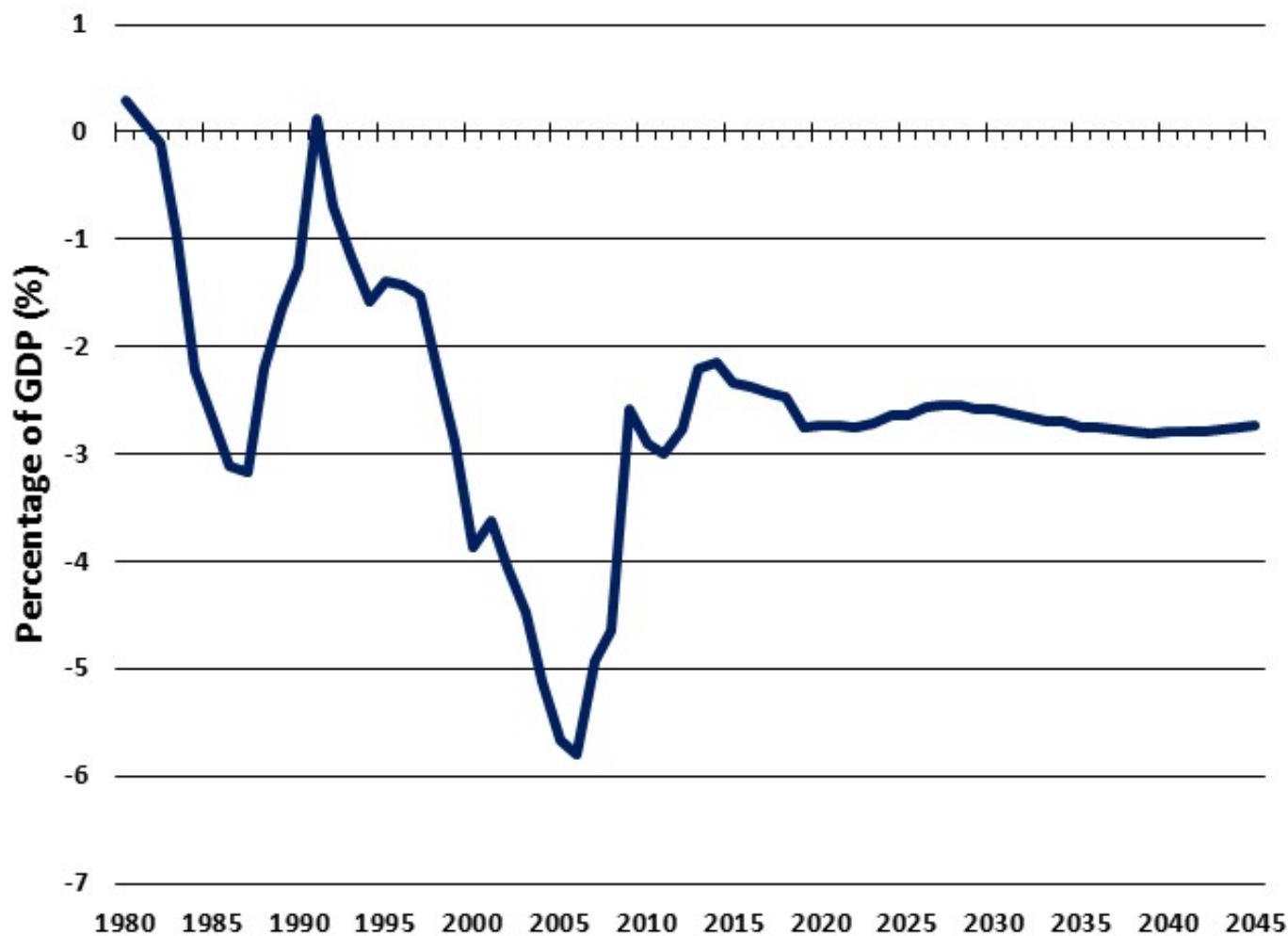# Balanced Personal Accounts

Rising Federal Debt

Federal Debt Held by Public, as Percentage of GDP

Sustainable Current Account

Current Account Deficit, as Percentage of GDP

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 rolling out

    - Gross Output, Benchmark IO, Annual IO

- Work will begin in 2019 on the next generation of Lift

- Interindustry structure and information derived from BEA benchmark 2012 IO and 1997-2017 annual IO tables

- Industry data integrated and reconciled to NIPA in real and nominal terms (2012 NIPA Benchmark)

Contact Information

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