Economics

Market Indicators

Session 2

National Association of Credit Management
Graduate School of Credit
and Financial Management
American University
Washington, DC
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Instructor: William Strauss, william.strauss@chi.frb.org – 312-322-8151

What you will learn in this session

- Labor productivity and Unit Labor Costs
- Producer Price Index
- Cost/Price Dynamics in the Business Cycle
- Business Capital Expenditures
- Inventories
- Consumers represent a large share of the U.S. Economy
- Consumer Price Index (CPI)
- Inflation versus deflation
- Employment
- Leading Economic Indicators
- Activity Index

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Labor Productivity and Unit Labor Costs

- Labor productivity measures output or production per unit of labor input (output per hour)
  - Efficiency – this is the direct link to higher per capita real income levels (i.e. higher living standards)
- Unit labor cost measures the cost of labor per unit of output
  - How much additional labor is needed to produce one additional unit of output
  - The inverse of labor productivity
- Often at the peak of the business cycle labor productivity will often plunge with unit labor costs spiking

Orders ⇨ Production ⇨ Extra Shifts ⇨ Higher Costs ⇨ Pushes Economy Too Far

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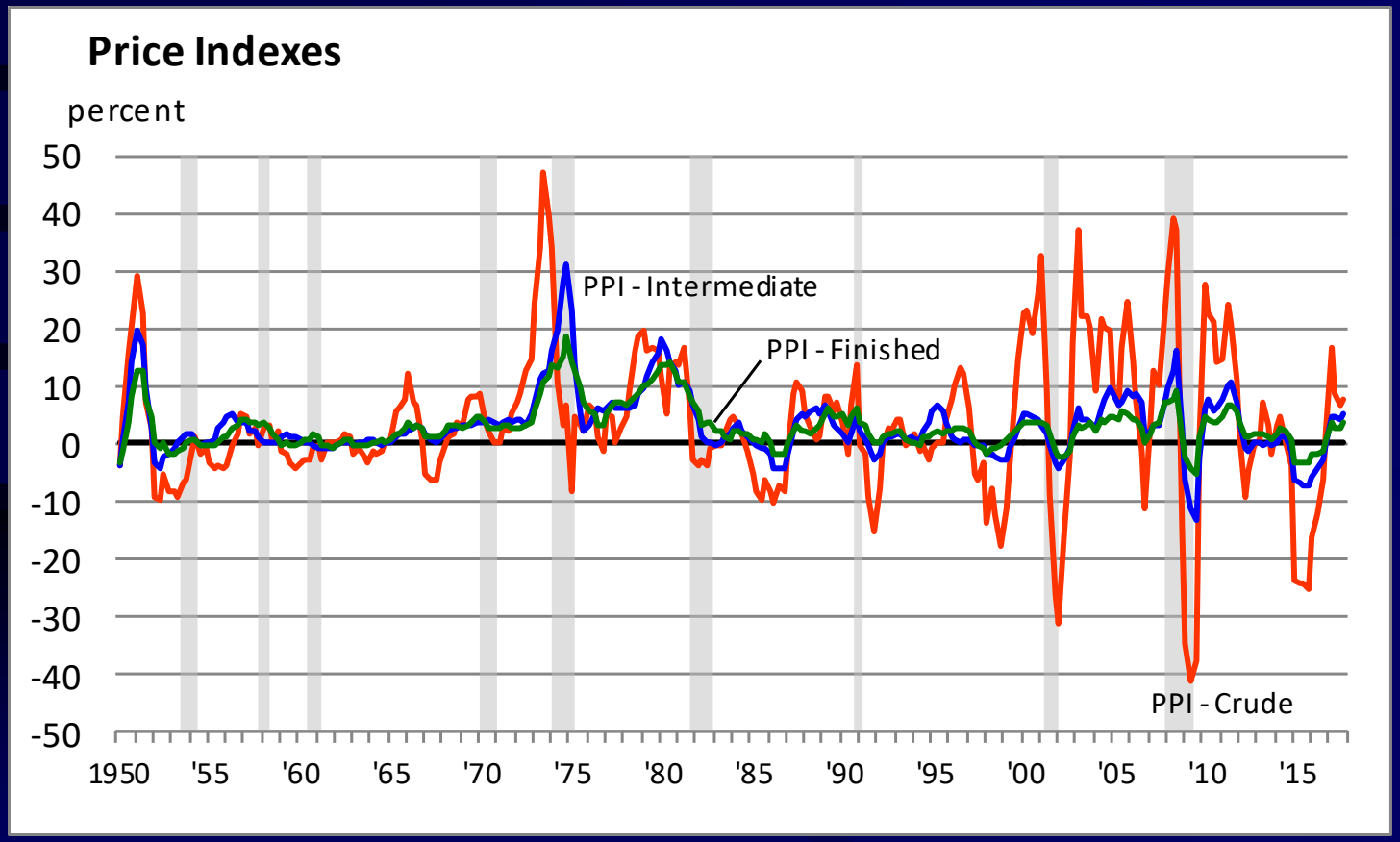
Producer Price Index

- Producer Price Index (PPI) is the average change in price of a basket of representative goods and services sold by manufacturers and producers in the wholesale market
  - A family of three indices
    - Crude materials
    - Intermediate materials
    - Finished goods
  - In contrast to the consumer price index which measures price changes from the consumer's perspective, PPI measures them from the seller's perspective

Producer Price Index



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Cost/Price Dynamics in the Business Cycle

GDP ↑ → IP ↑ → PMI ↑ → CU ↑ → Labor Productivity ↓ →

Unit Labor Costs ↑ → PPI ↑

- This same path is followed by the non-manufacturing sector of the economy

GDP ↓ → IP ↓ → PMI ↓ → CU ↓ → Labor Productivity ↑ →

Unit Labor Costs ↓ → PPI ↓

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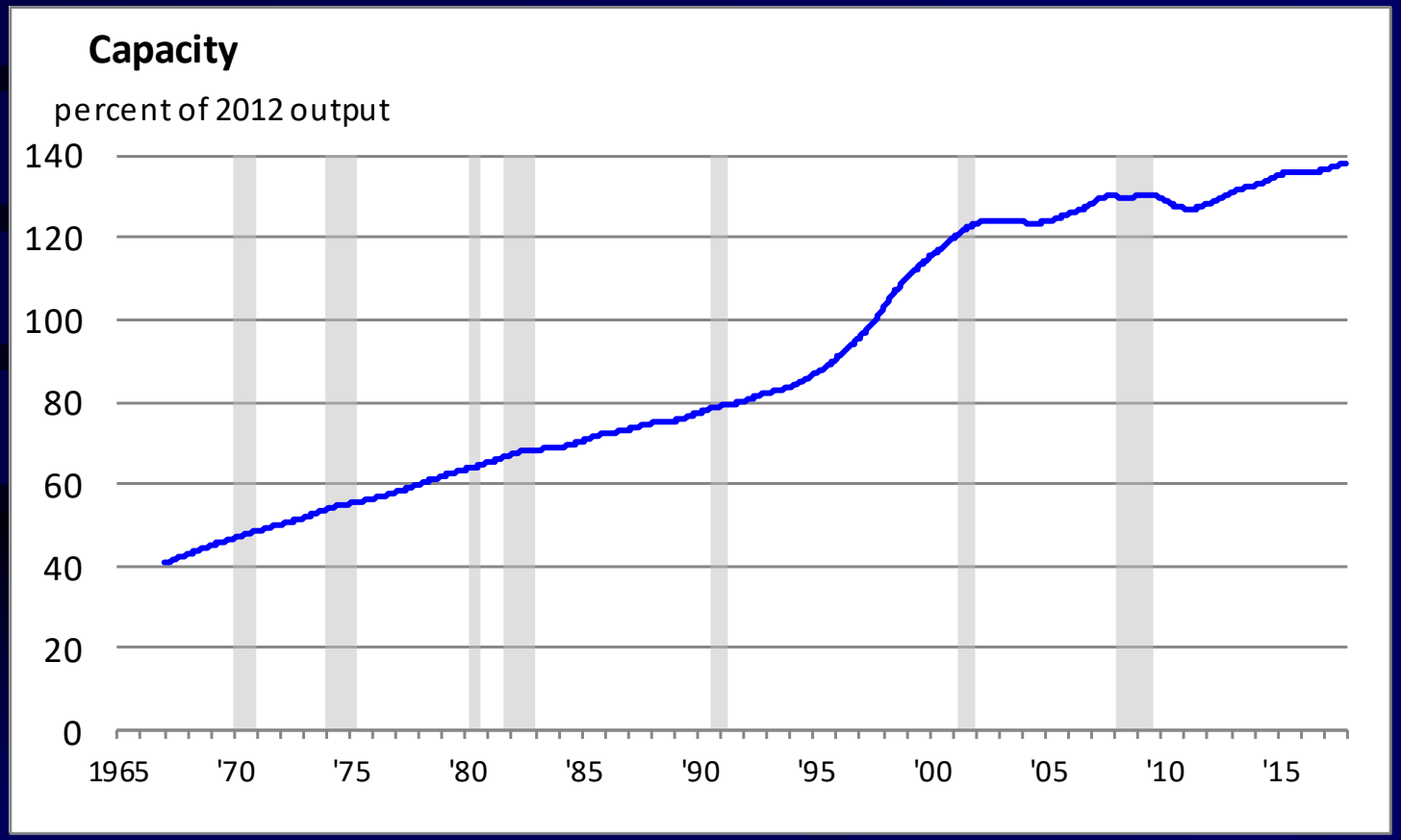
Business Capital Expenditures

- Investment is the key reason for growth in the economy over time
  - Why invest?
    - In order to be able to produce more/consume more in the future
    - Necessary evil
  - Six reasons to invest
    1) Depreciation
       - Factories/plants and equipment wear out and need to be replaced
    2) If output rises to a point where in order to produce more, more capital is needed

Business Capital Expenditures



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Business Capital Expenditures

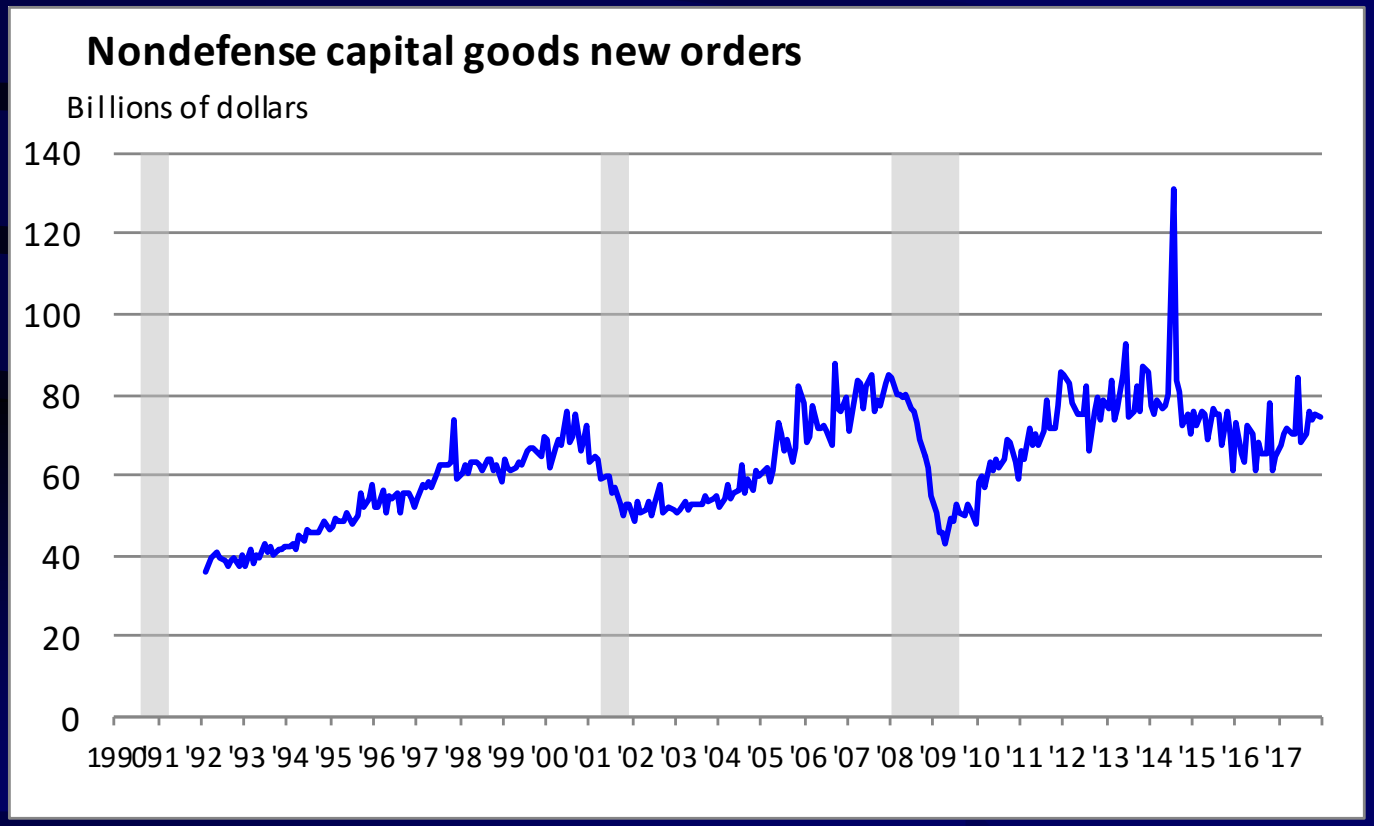
- Investment is the key reason for growth in the economy over time
  - Six reasons to invest
    3) Innovation
       - Even functional equipment will be replaced if newer equipment reduces operating costs sufficiently to justify the investment
         - » Electronic technology (e.g. computers and smart phones)
    4) New products or redesigned products force the replacement of existing equipment
       - PC equipment : Desktop ➡ Laptop ➡ Mobile
       - Auto dies

Business Capital Expenditures

- Investment is the key reason for growth in the economy over time
  - Six reasons to invest
    5) Profits growth in the long-run future is anticipated for the company's business
    6) Interest rates
       - Since investment is a durable good (having a useful life of more than three years), financing the purchase is a reasonable way to finance the acquisition of this asset
       - The lower the interest rate the lower the cost of carrying the equipment (improving the rate of return)

Business Capital Expenditures

- Nondefense capital goods
  - The defense sector spending on capital goods is subtracted since the military cycle is not related to the business cycle



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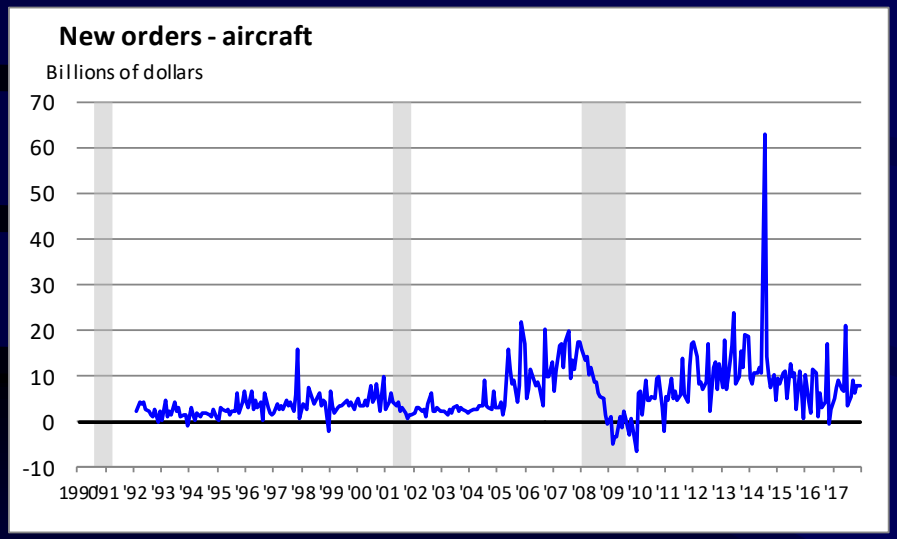
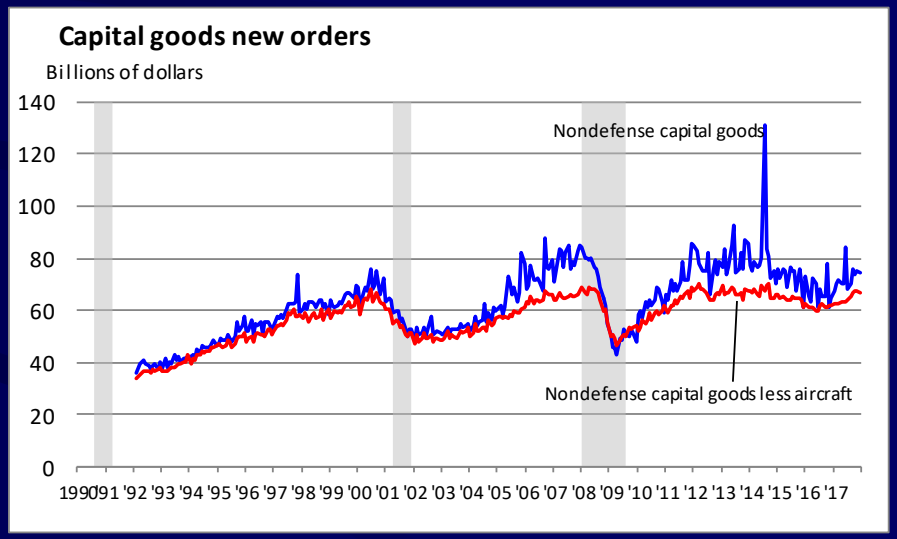
Business Capital Expenditures

- Nondefense capital goods less aircraft
  - Aircraft are extremely expensive items and even the swing of 1 or 2 aircraft can move the numbers in a significant way
    - Boeing 737: $78-$113 million
    - Boeing 767: $194 million
    - Boeing 787: $218-$298 million
    - Boeing 777: $270-$389 million
    - Boeing 747: $368 million

Business Capital Expenditures

- Nondefense capital goods less aircraft





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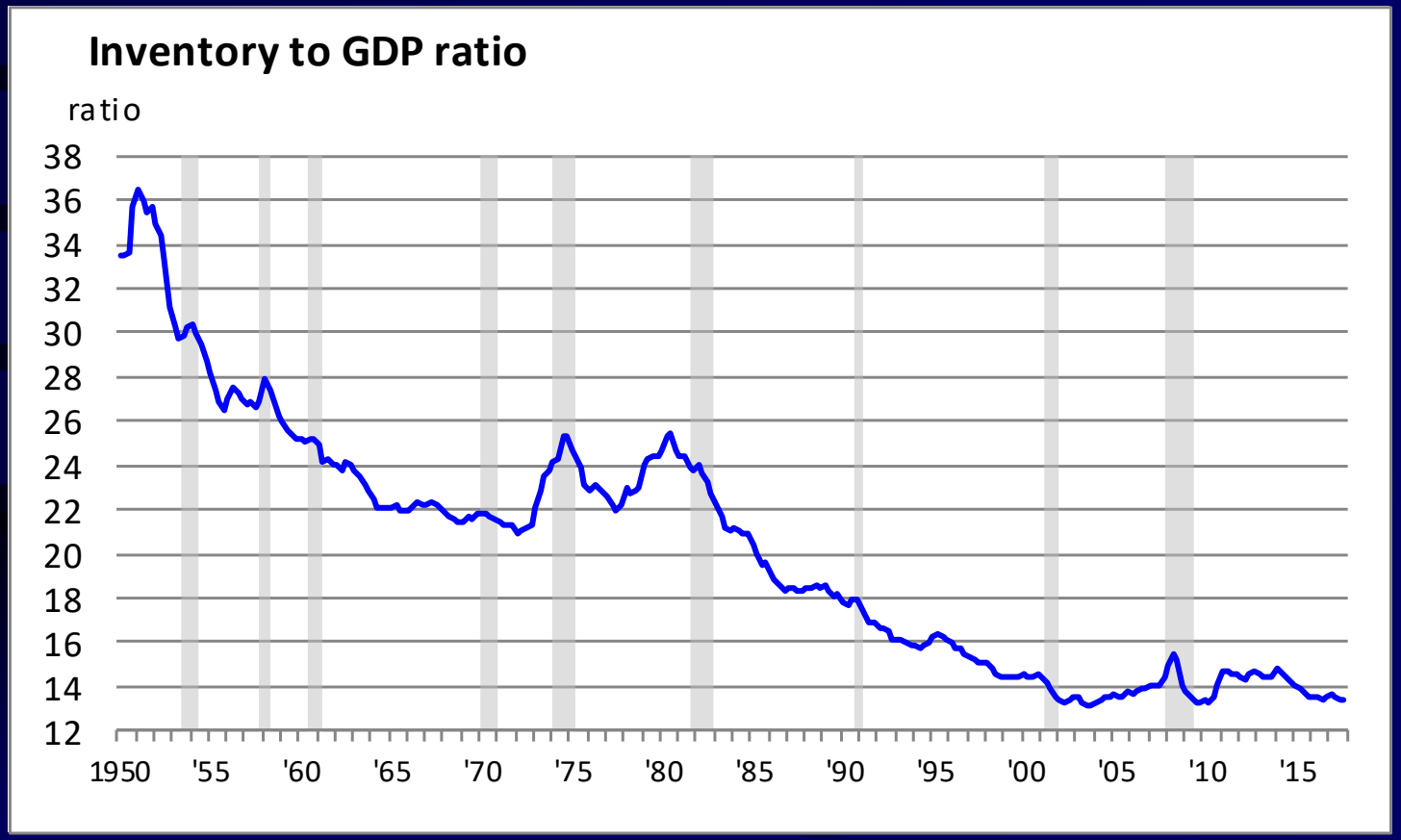
Inventories

- Reasons for holding inventories:
  - Cushion against unexpected orders (demand)
    - Stock-out
  - Smoothing seasonal demands
  - Taking advantage of price discounts (buying in bulk)
  - Hedging against price increase
  - Avoiding production disruptions
- Inventories are not costless (carrying costs)

Inventories

- Inventories as a share of the economy have been declining over time
  - JIT (Just in Time) manufacturing processes
  - Technology
    - Bar codes
    - RFID (Radio Frequency Identification)
    - Digital
      - DVD/CD to digital download/streaming
  - Software
    - Keep track of inventories
    - Automated ordering systems
  - International trade
    - Outsourcing lowers inventories
    - Reshoring increases inventories

Inventories



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Inventories

- Desired versus undesired inventories
  - Used as a signal for production

  - Used as a signal for the business cycle

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Consumers Represent a Large Share of the U.S. Economy

- Bulk of GDP – 72.9% of GDP
  - Ultimately what you want to maximize
  - Services – 46.9% of GDP
  - Nondurable goods – 14.6% of GDP
  - Durable goods – 7.6% of GDP
  - Residential investment – 3.9% of GDP

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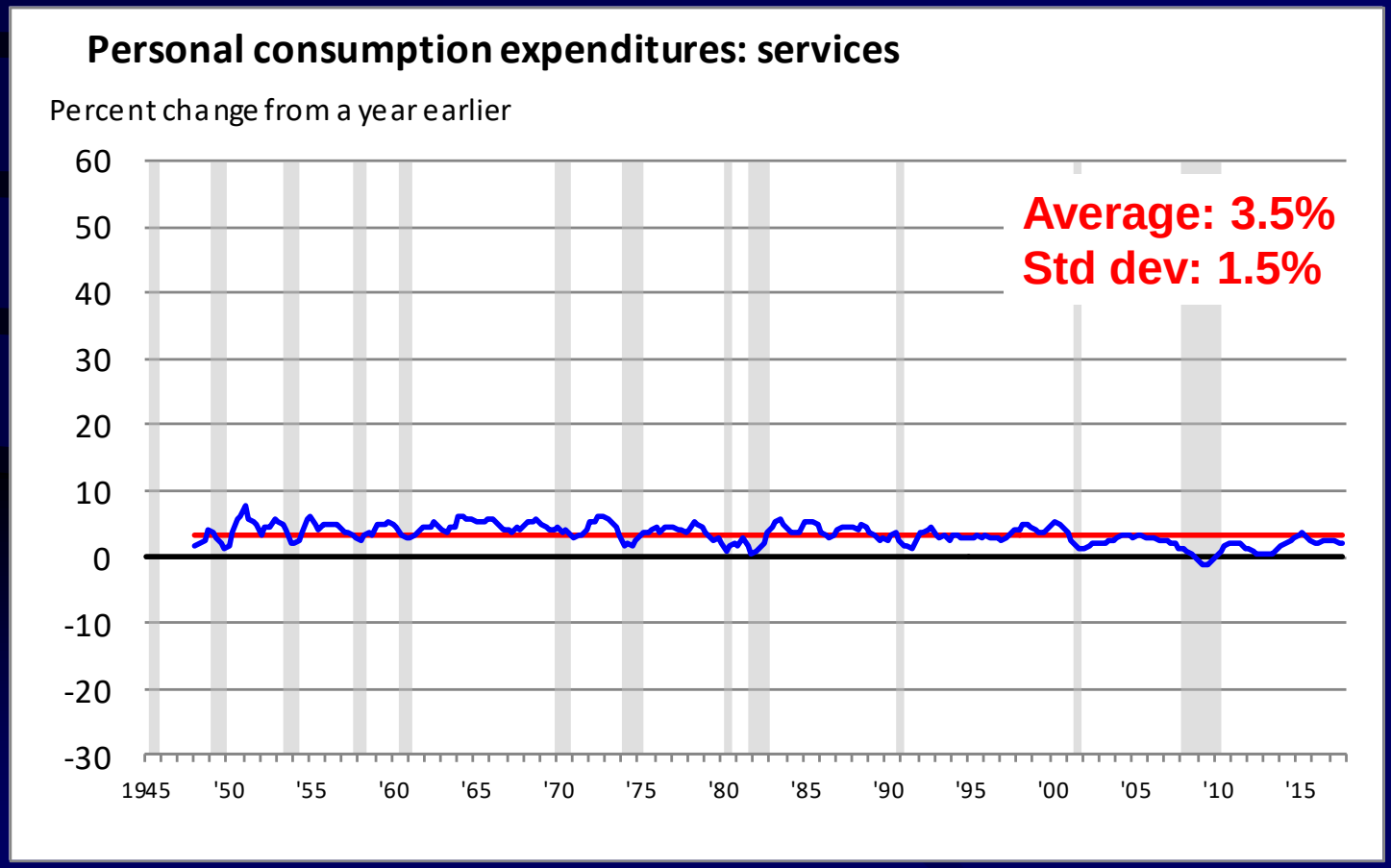
- Services – 46.9% of GDP



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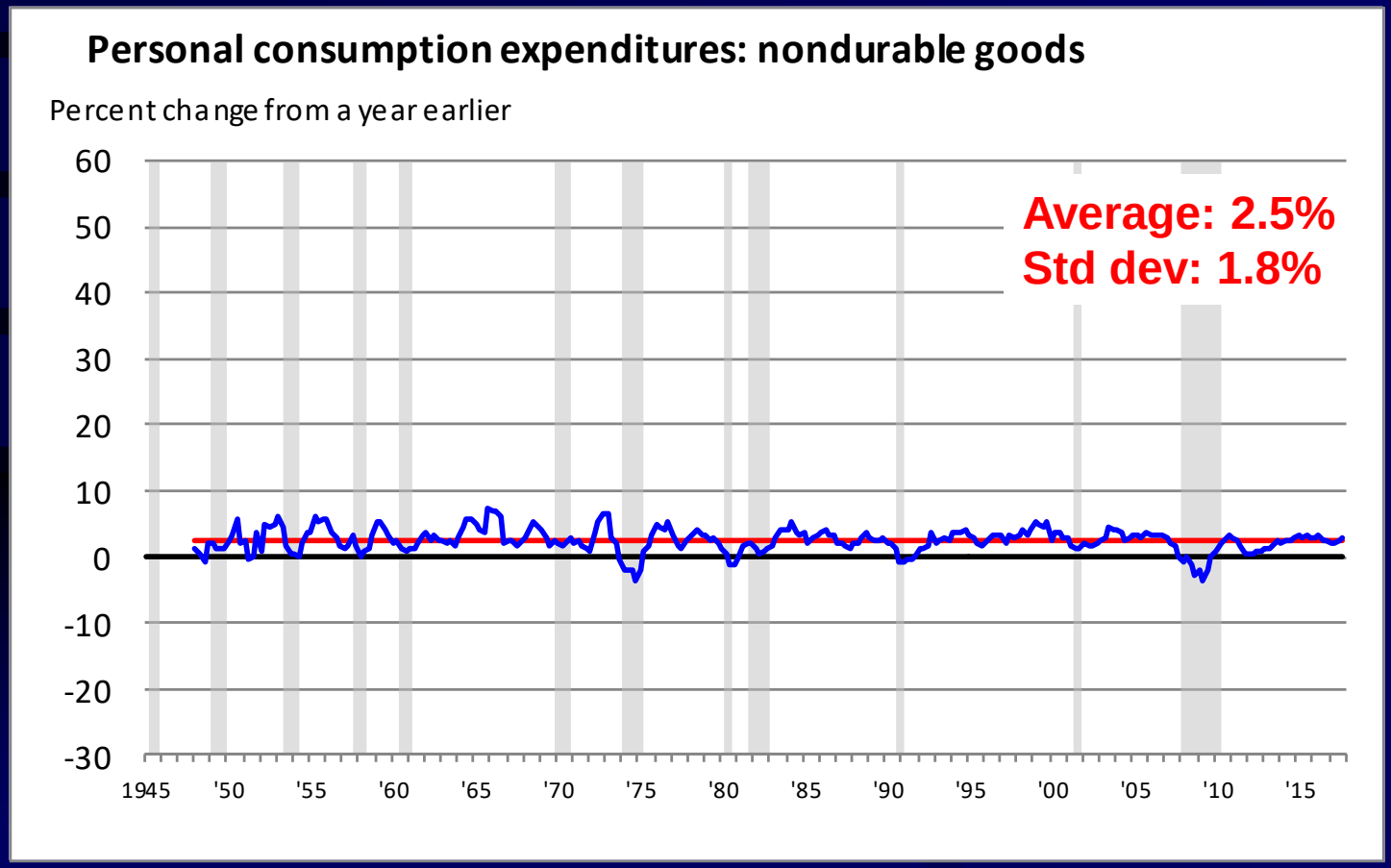
Consumers Represent a Large Share of the U.S. Economy

- Nondurable – 14.6% of GDP



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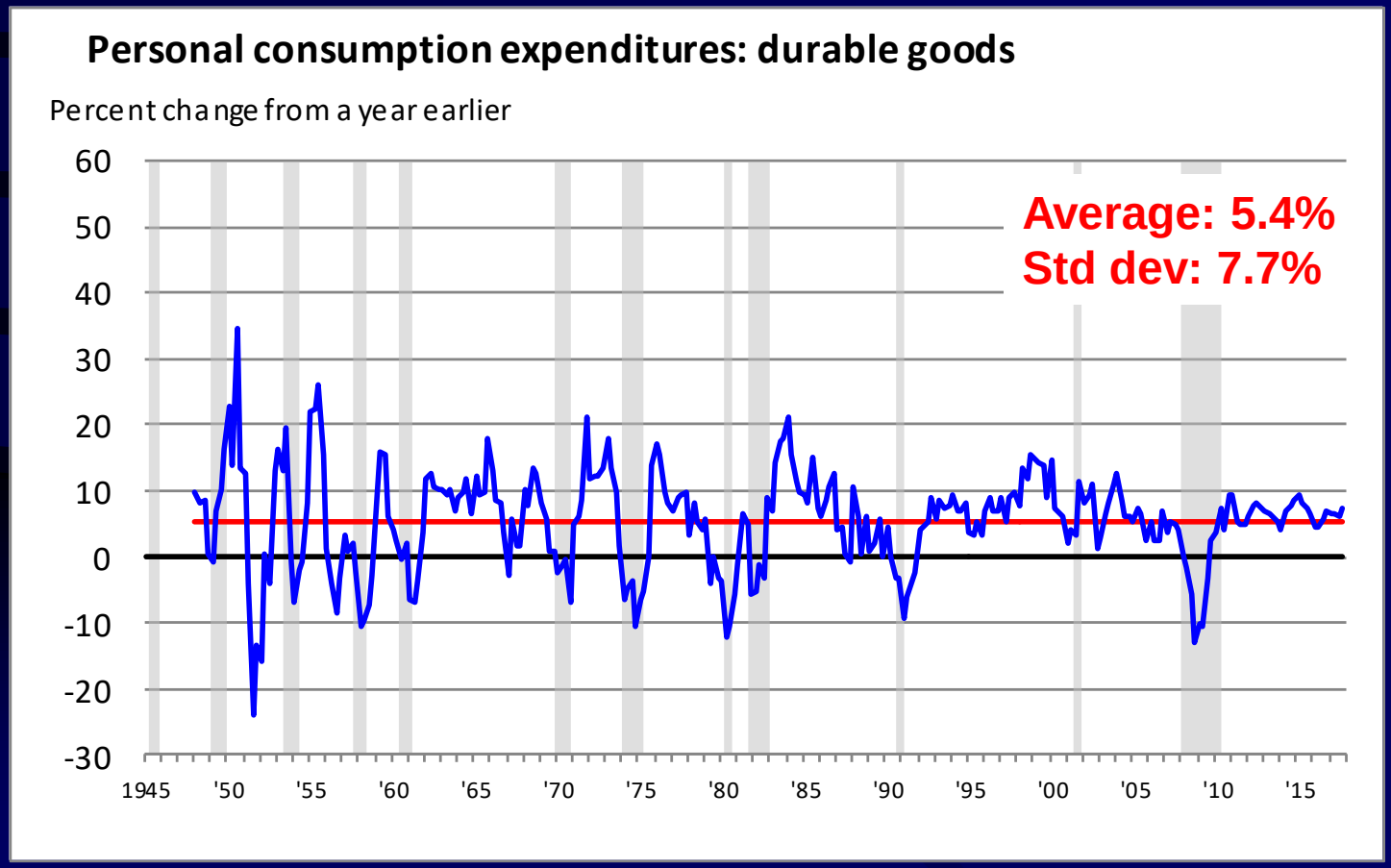
Consumers Represent a Large Share of the U.S. Economy

- Durable – 7.6% of GDP



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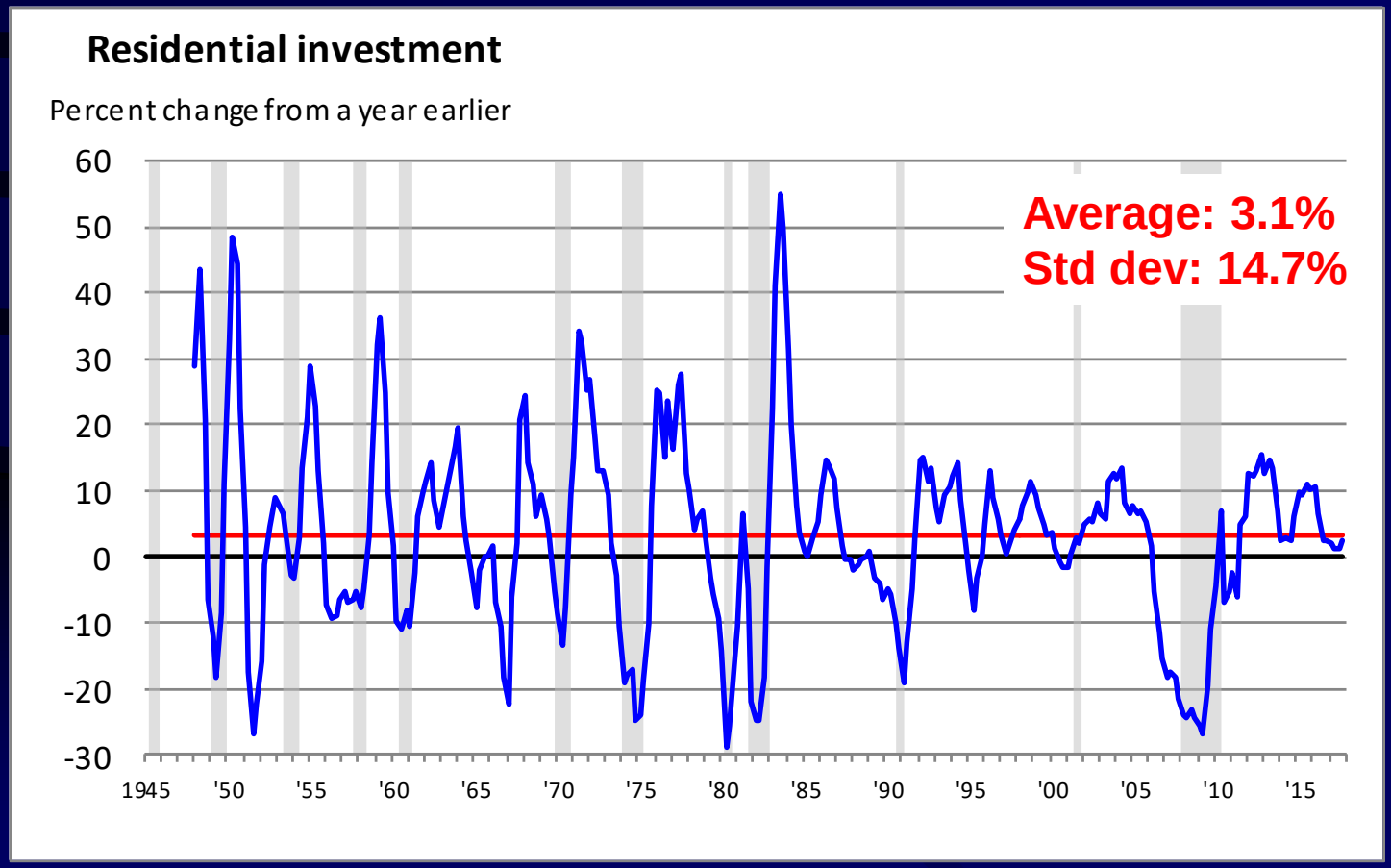
Consumers Represent a Large Share of the U.S. Economy

- Residential investment – 3.9% of GDP



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Consumer Price Index (CPI)

- Consumer Price Index (CPI)
  - A measure is a measure of the overall cost of the goods and services bought by a typical consumer
  - The Bureau of Labor Statistics (BLS) reports the CPI each month
  - The BLS identifies a market basket of goods and services the typical consumer buys

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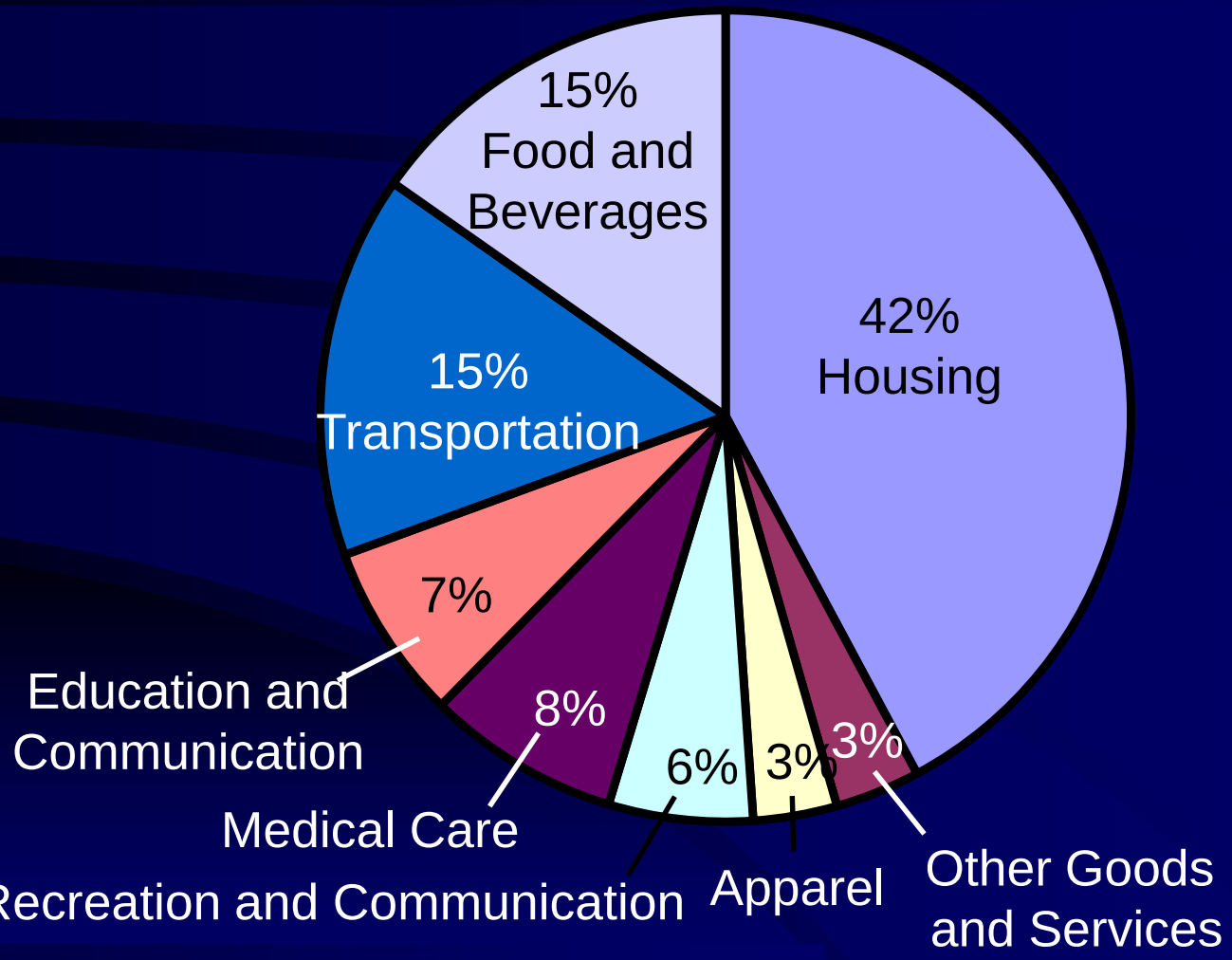
Consumer Price Index (CPI)



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Consumer Price Index (CPI)

- Find the prices of each of the goods and services in the basket for each point in time
- Use the data on prices to calculate the cost of the basket of goods and services at different times
- Designate one year as the base year, making it the benchmark against which other years are compared.
- Compute the index by dividing the price of the basket in one year by the price in the base year and multiplying by 100

$$\text{Consumer price index} = \frac{\text{Price of basket of goods and services}}{\text{Price of basket in base year}} \times 100$$

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Consumer Price Index (CPI)

- It is used to monitor changes in the cost of living over time
- When the CPI rises, the typical family has to spend more dollars to maintain the same standard of living
- Allows comparisons of dollar amounts over time
- Adjust many contracts for inflation (“COLAs”)
  - Primary reason why the top-line CPI is not revised

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Consumer Price Index (CPI)

- The CPI is an accurate measure of the selected goods that make up the typical bundle, but it is not a perfect measure of the cost of living
  - Your cost living can vary independently of any change in the CPI
- Substitution bias
  - The basket does not change to reflect consumer reaction to changes in relative prices
    - Consumers substitute toward goods that have become relatively less expensive
    - The index overstates the increase in cost of living by not considering consumer substitution

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Consumer Price Index (CPI)

- Introduction of new goods
  - The basket does not reflect the change in purchasing power brought on by the introduction of new products
    - New products result in greater variety, which in turn makes each dollar more valuable
    - Consumers need fewer dollars to maintain any given standard of living
- Unmeasured quality changes
  - If the quality of a good rises from one year to the next, the value of a dollar rises, even if the price of the good stays the same
  - If the quality of a good falls from one year to the next, the value of a dollar falls, even if the price of the good stays the same
  - The BLS tries to adjust the price for constant quality, but such differences are hard to measure

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Inflation versus Deflation

- Inflation is a rise in the general price level
  - It is not the increase in a particular good
  - Inflation occurs when demand exceeds supply at current prices and prices are bid up
  - Inflation rises due to “too many dollars chasing too few goods”
  - When an economy’s growth exceeds its potential (long-run) growth inflation tends to rise
  - When an economy’s growth is below its potential growth, creating slack in the economy, inflation tends to fall (disinflation)
- Deflation is a decline in the general price level
  - Occurs during times of extreme weakness in the economy or during times of extreme constraint in the amount of money

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Employment

- Current Employment Statistics (CES)
  - Establishment Survey
    - Each month the CES program surveys approximately 144,000 businesses and government agencies, representing approximately 554,000 individual worksites
      - Provides detailed industry data on employment, hours, and earnings of workers on nonfarm payrolls

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Employment

- Current Population Survey (CPS)
  - Household Survey
    - The CPS is a monthly survey of approximately 60,000 households conducted by the Bureau of Census for the Bureau of Labor Statistics
      - Provides a comprehensive body of data on the labor force, employment, unemployment, persons not in the labor force, hours of work, earnings, and other demographic and labor force characteristics

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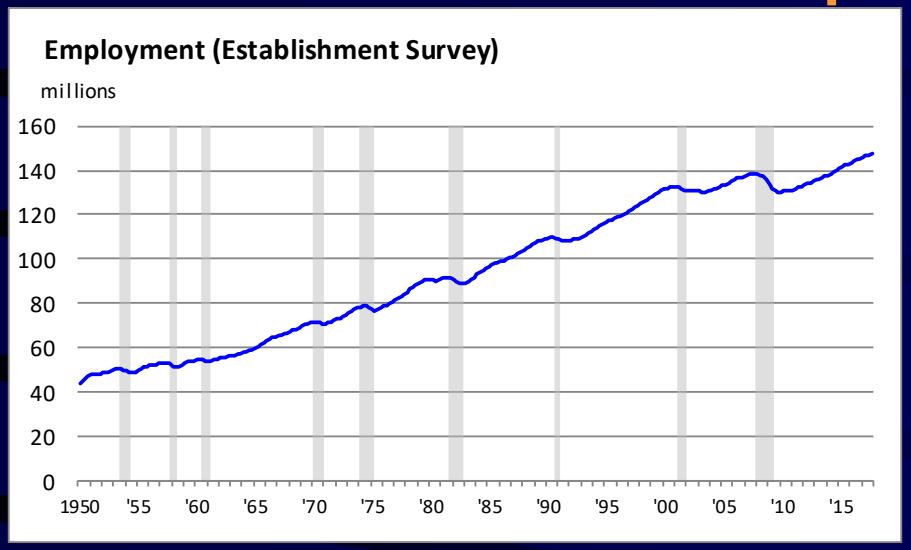

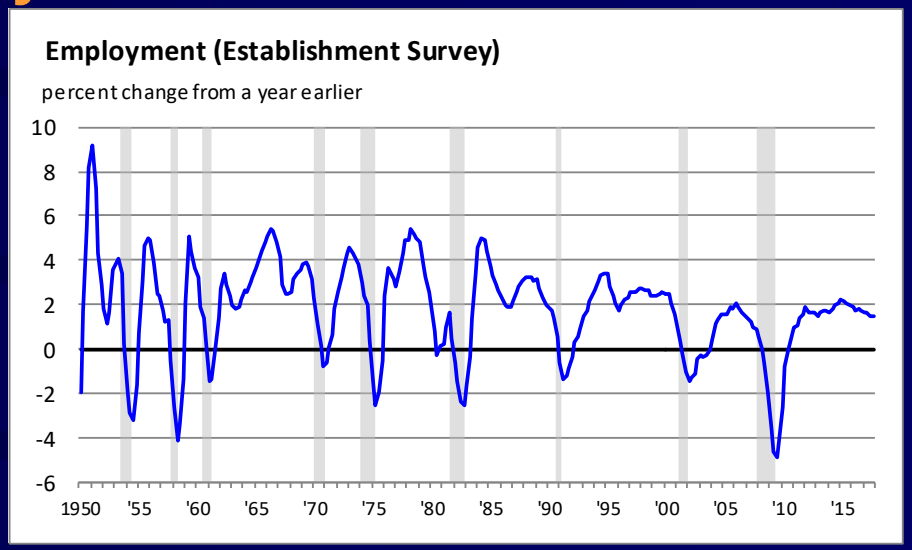

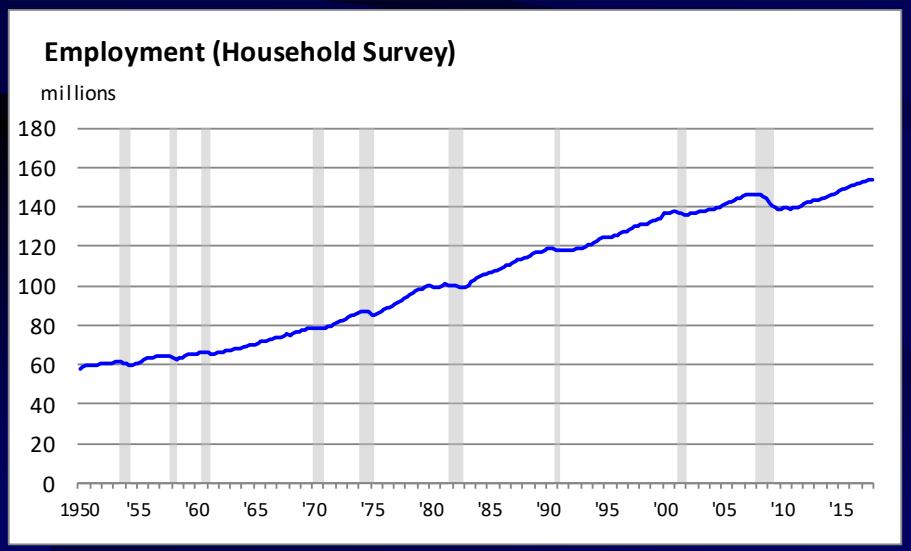

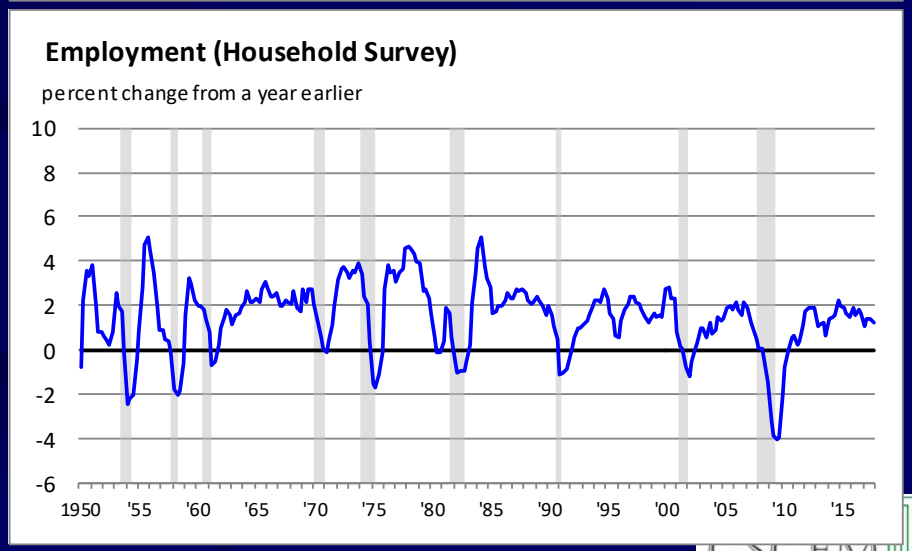

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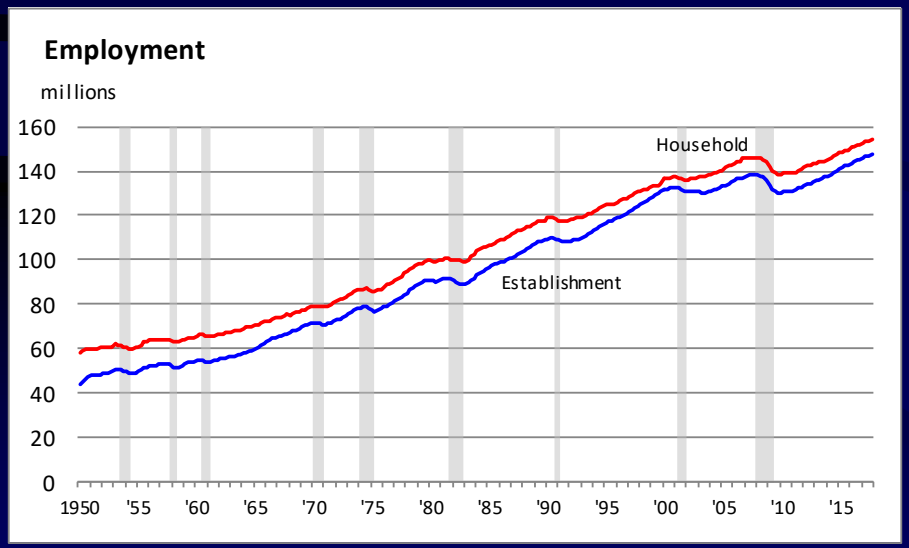
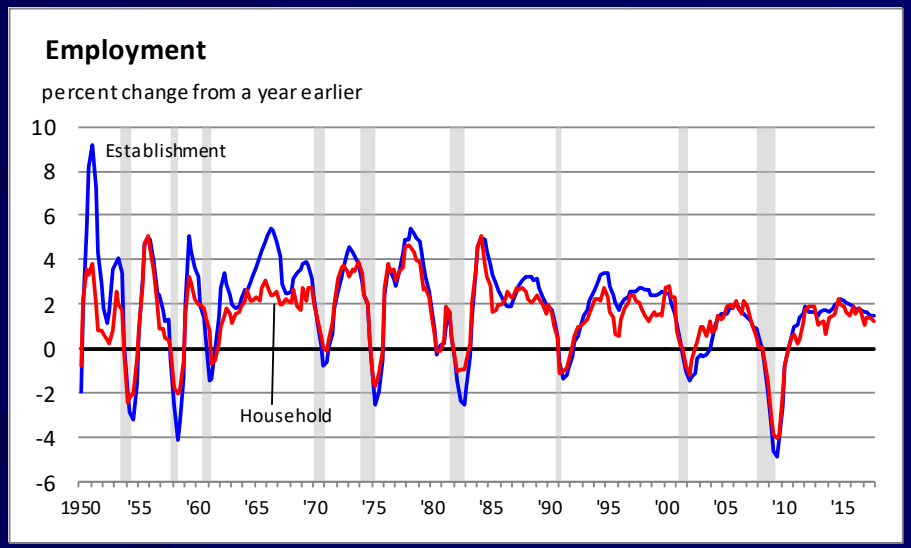
Employment

- Establishment Survey versus Household Survey
  - Diverge due to:
    - Treatment of self-employed persons
    - New firms not counted in establishment survey
    - Treatment of multiple job holders





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Employment

- Categories of the working age population (16 years or older)
  - Employed
    - Working at a paid job
  - Unemployed
    - Not employed but actively looking for a job
  - Labor force
    - The amount of labor available for producing goods and services
    - Sum of the number of employed and unemployed people
  - Not in the labor force
    - Not employed and not looking for a job
    - Working age population minus labor force

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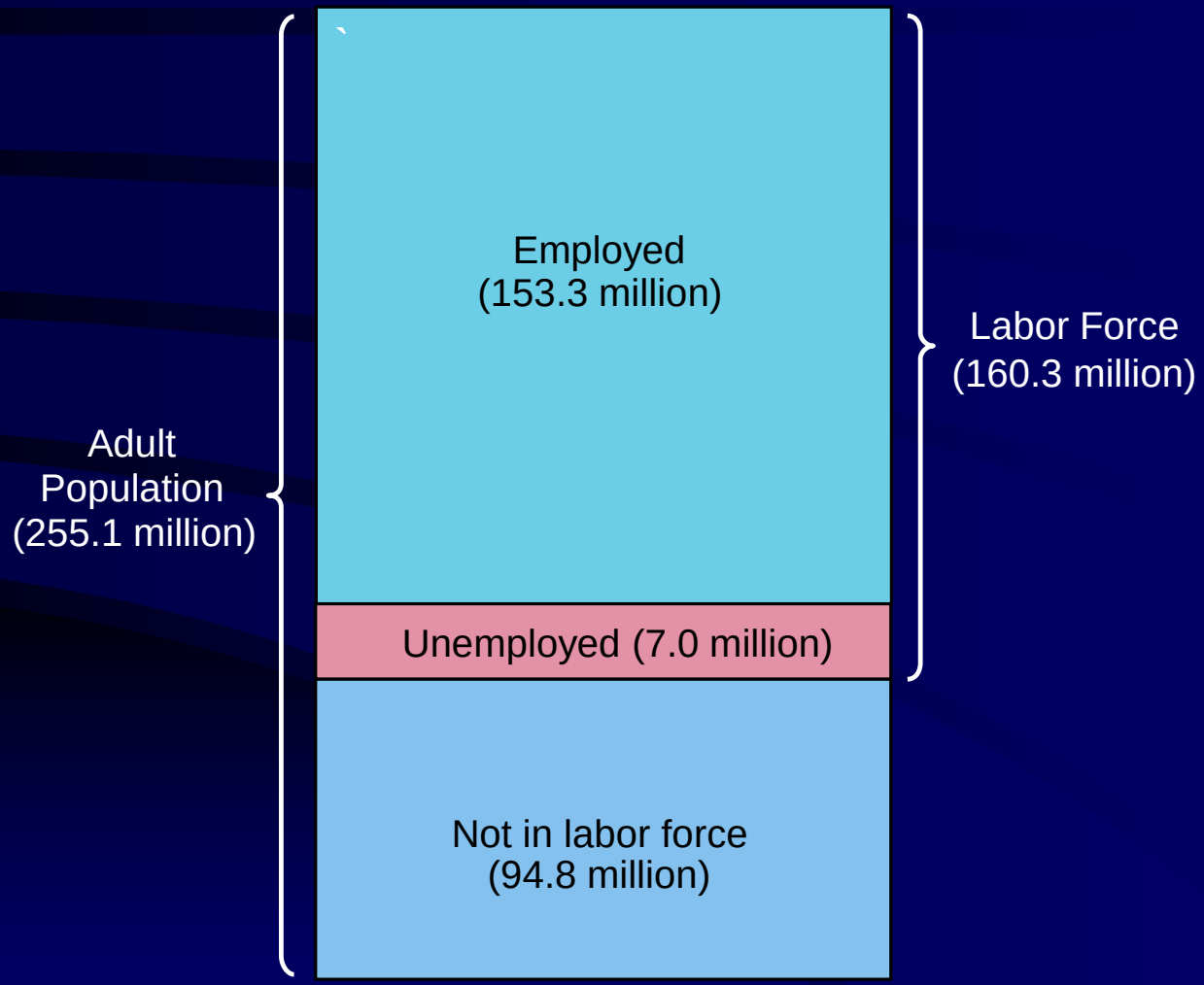
Employment

The Breakdown of the Population 2017



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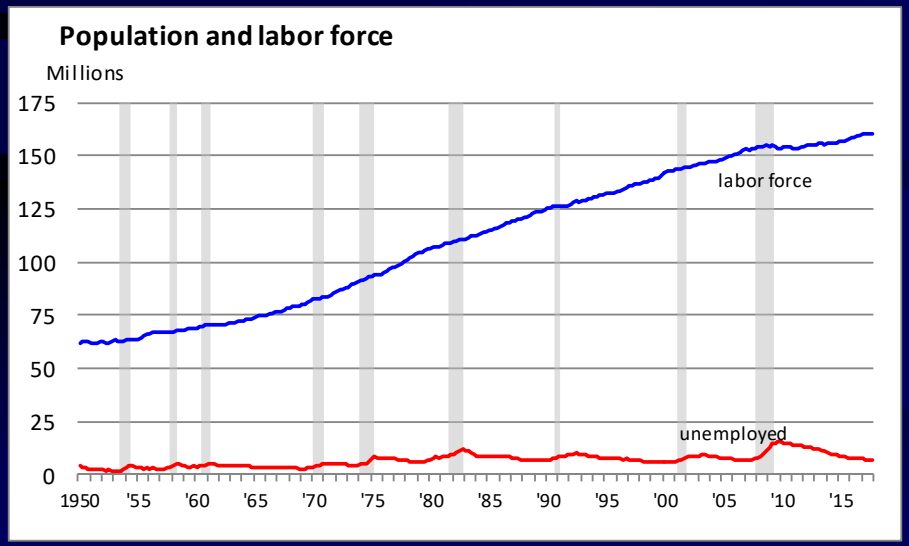
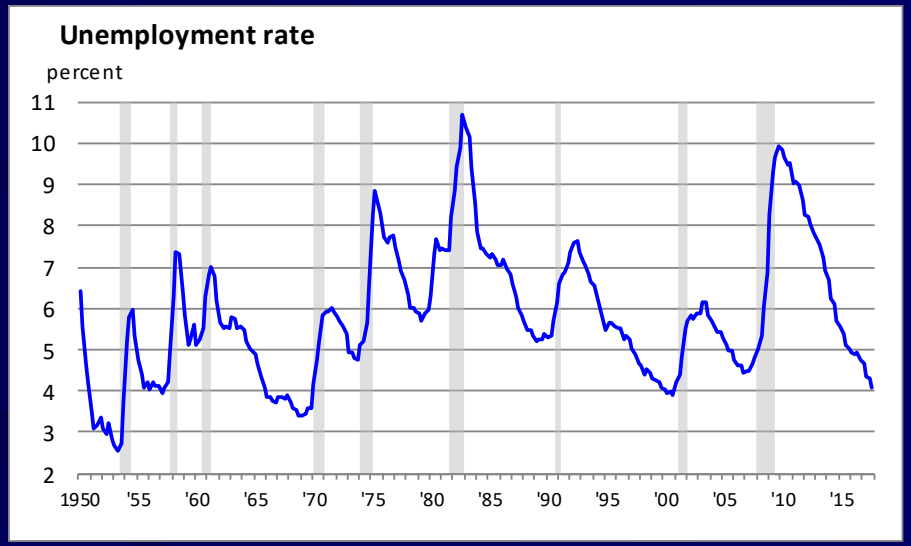
Employment

- Employment statistics
  - Unemployment rate
    - Percentage of the labor force that is unemployed

$$\text{Unemployment rate} = \frac{\text{Number unemployed}}{\text{Labor force}} \times 100$$





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Employment
Alternate Measures of Labor Utilization

Measure and Description		Jan 2018 Rate
U-1	Persons unemployed fifteen weeks or longer, as a percent of the civilian labor force (includes only very long-term unemployed)	1.5
U-2	Job losers and persons who have completed temporary jobs, as a percent of the civilian labor force (excludes job leavers)	2.0
U-3	Total unemployed, as a percent of the civilian labor force (official unemployment rate)	4.1
U-4	Total unemployed, plus discouraged workers, as a percent of the civilian labor force plus discouraged workers	4.4
U-5	Total unemployed plus all marginally attached workers, as a percent of the civilian labor force plus all marginally attached workers	5.1
U-6	Total unemployed, plus all marginally attached workers, plus total employed part-time for economic reasons, as a percent of the civilian labor force plus all marginally attached workers	8.2

Note: The Bureau of Labor Statistics defines terms as follows:

- *Marginally attached workers* are persons who currently are neither working nor looking for work but indicate that they want and are available for a job and have looked for work sometime in the recent past.
- *Discouraged workers* are marginally attached workers who have given a job-market-related reason for not currently looking for a job.
- *Persons employed part-time for economic reasons* are those who want and are available for full-time work but have had to settle for a part-time schedule.

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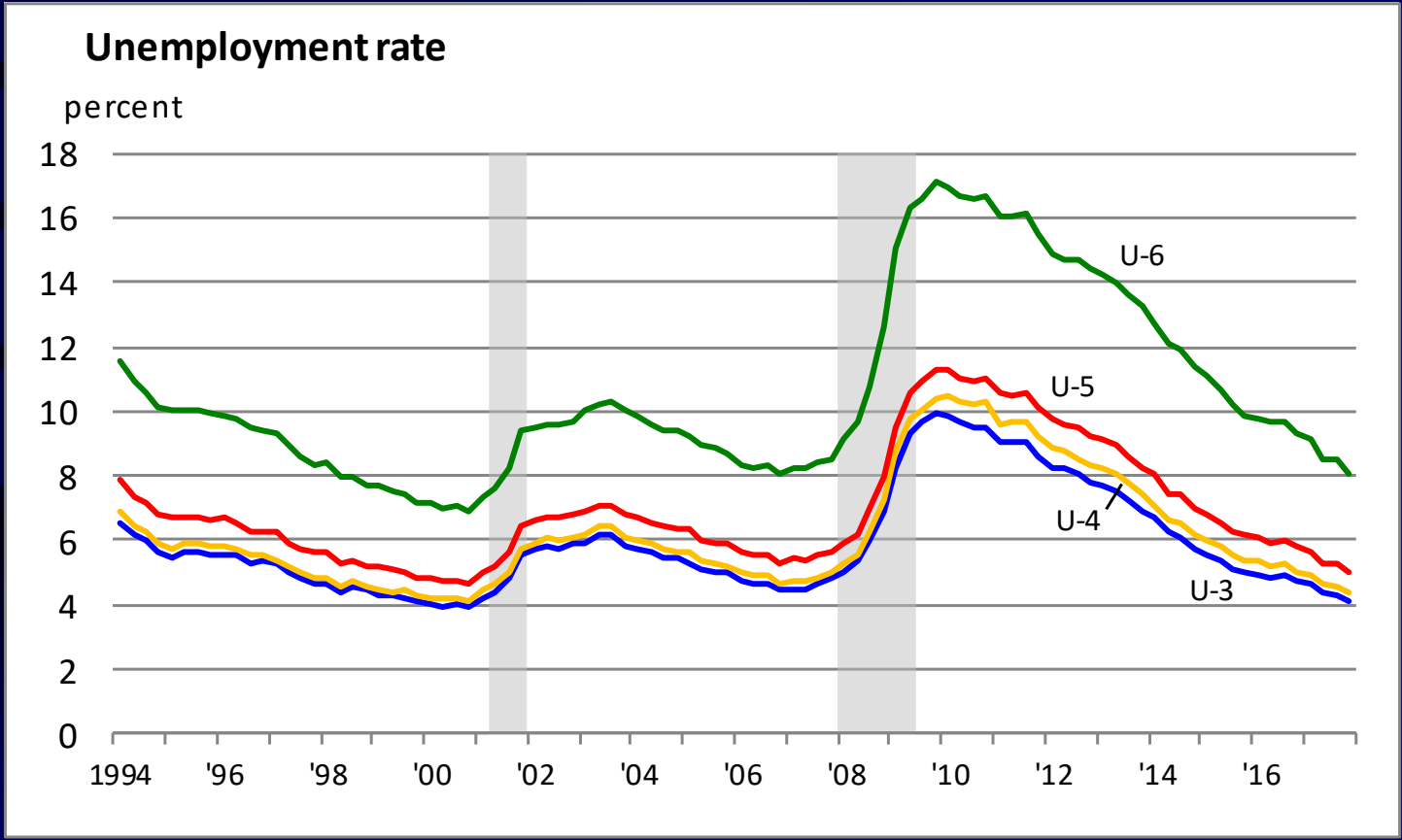

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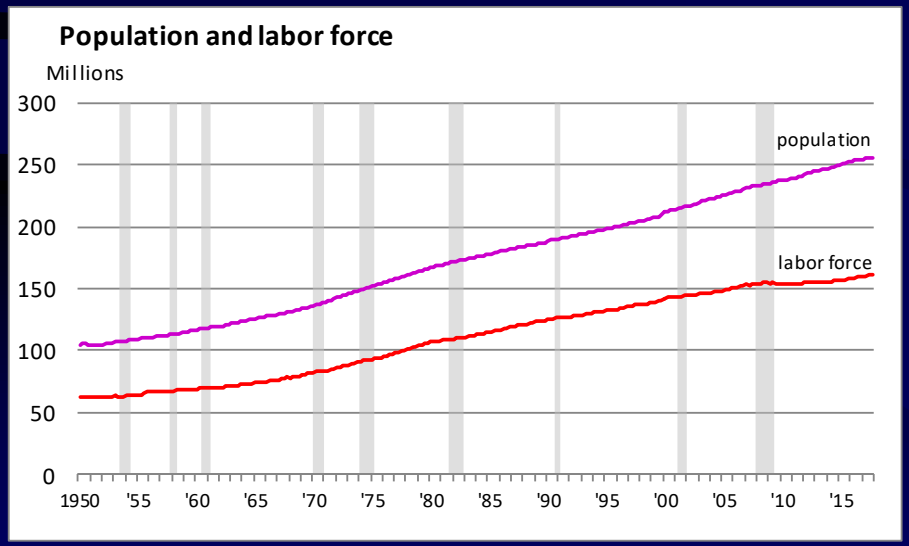
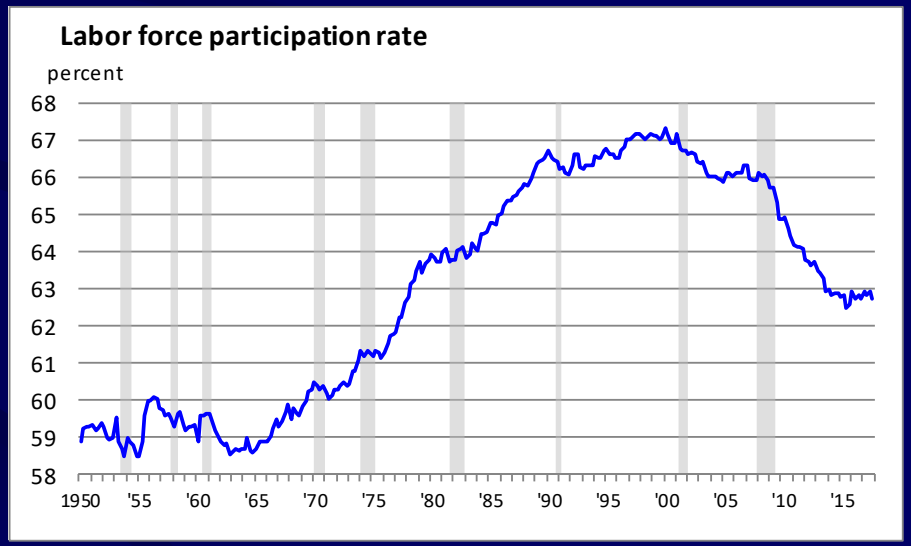
Employment

- Employment statistics
  - Labor force participation rate
    - Percentage of the adult population that is in the labor force

$$\text{Labor force participation rate} = \frac{\text{Labor force}}{\text{Adult population}} \times 100$$





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Civilian Labor Force Participation Rate and Population Share 16 and Older by Age Category, United States, 2007 and 2017

	Labor Force Participation Rate (%)			Population Share (%)		
	2017	2007	Change '07-'17	2017	2007	Change '07-'17
Population 16 and older	62.9	66.1	-3.2	100.0	100.0	0.0
16 to 24	55.5	59.4	-3.9	15.1	16.1	-1.1
25 to 34	82.1	83.3	-1.2	17.1	17.1	-0.1
35 to 44	82.7	83.8	-1.1	15.6	18.3	-2.7
45 to 54	80.3	82.0	-1.7	16.6	18.8	-2.2
55 to 64	64.5	63.8	0.7	16.2	14.0	2.2
65 plus	19.3	16.0	3.3	18.8	15.6	3.2

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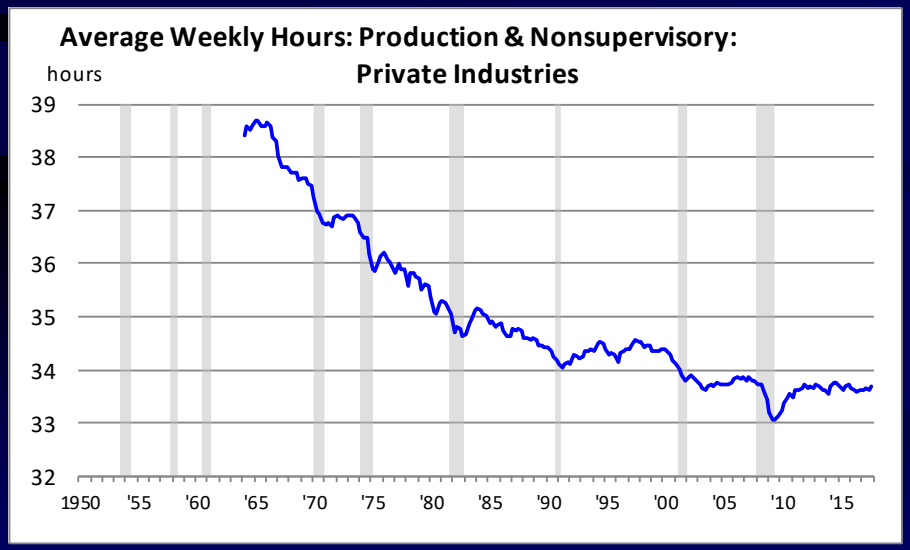
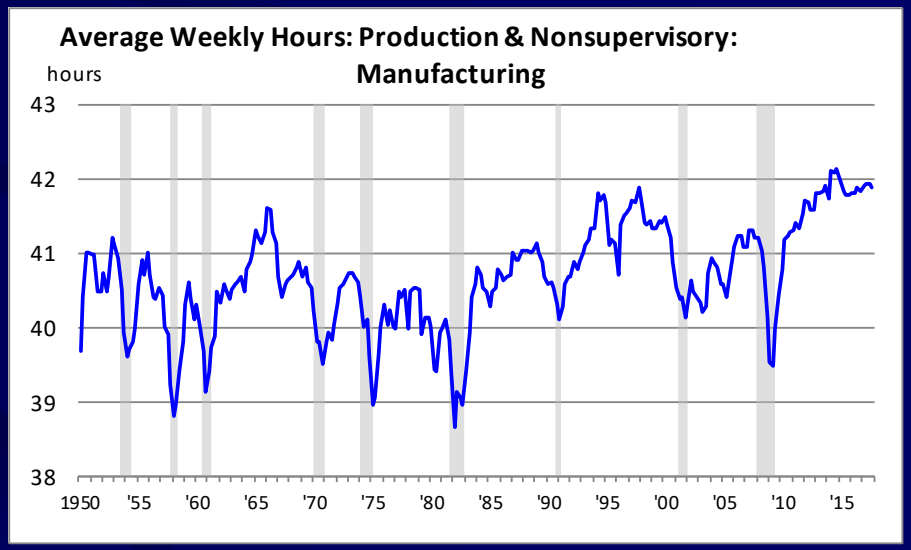
Employment

- Average workweek
  - A rising workweek early in the business cycle may indicate that employers are preparing to boost their hiring
  - A rising workweek late in the cycle may suggest that employers are having difficulty finding employees





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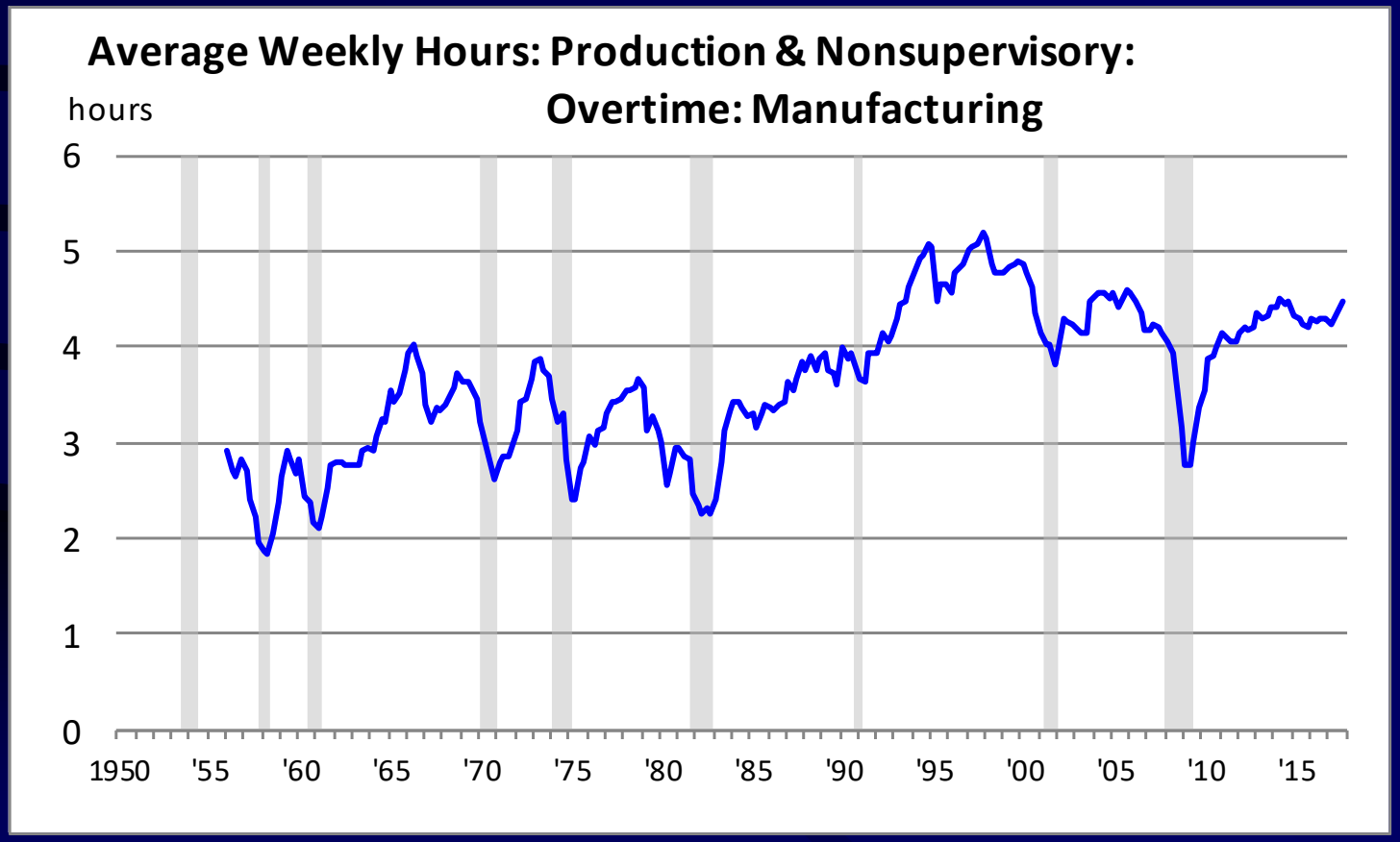
Employment

- Factory overtime



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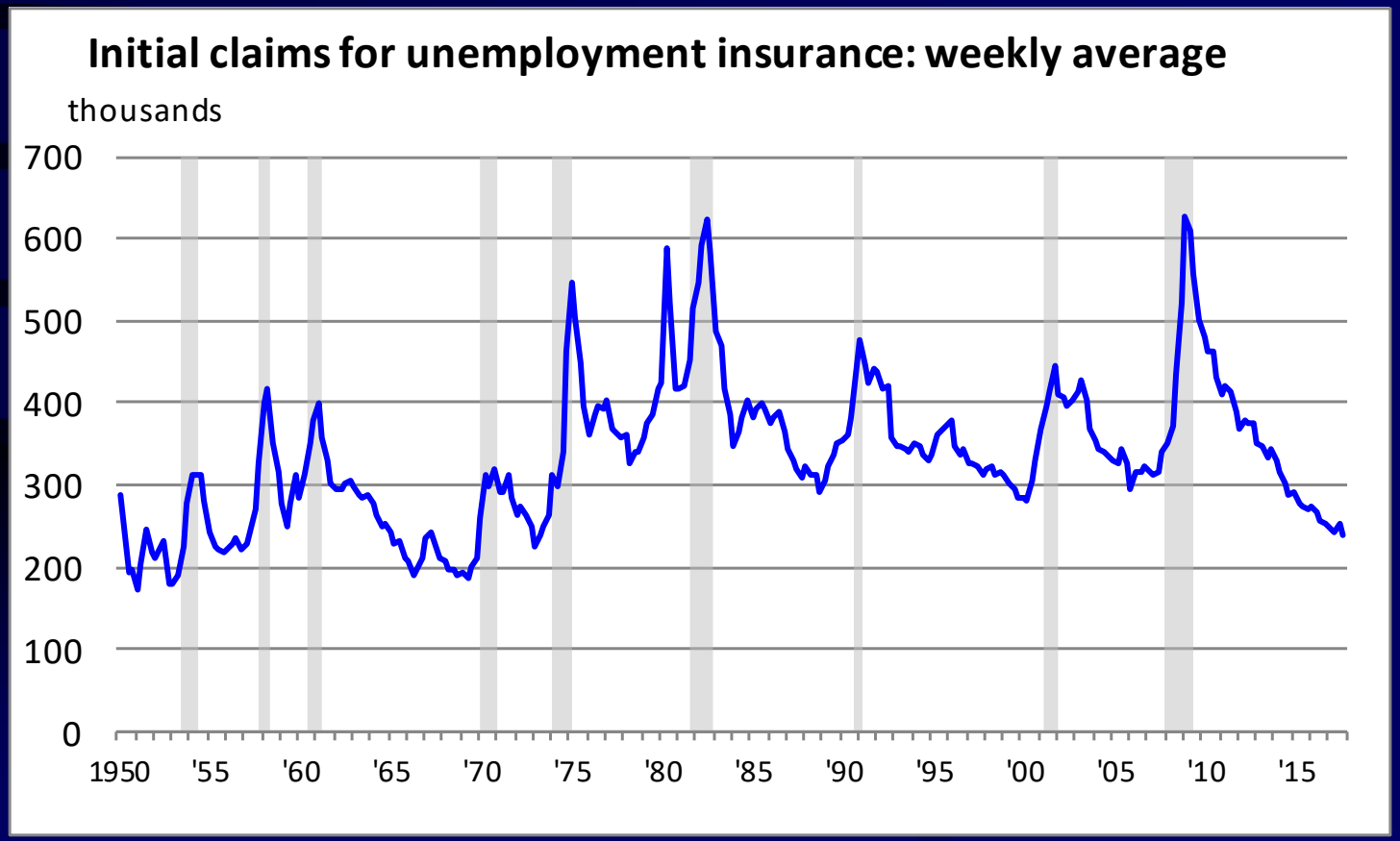
Employment

- Initial claims for unemployment insurance
  - Dynamic labor market



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Leading Economic Indicators

- Directional changes in economic data tend to either lead, lag or coincidently change with movements of the overall economy
- A leading economic indicator is an economic data series that changes direction ahead of a directional change in the overall economy
- When you group several different series together, combining them into an index (weighting by the importance each series offers to explaining changes in the overall economy), you have created an Index of leading economic indicators
- The Conference Board has created the most cited Leading Economic Index
  - They also create a Coincident Economic Index and a Lagging Economic Index

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Leading Economic Indicators

- The ten series that comprise the Leading Economic Index:
  1) Average weekly hours, manufacturing
  2) Average weekly initial claims for unemployment insurance
  3) Manufacturers' new orders, consumer goods and materials
  4) ISM® Index of New Orders
  5) Manufacturers' new orders, nondefense capital goods excluding aircraft orders
  6) Building permits, new private housing units
  7) Stock prices, 500 common stocks
  8) Leading Credit Index™
  9) Interest rate spread, 10-year Treasury bonds less federal funds
  10) Average consumer expectations for business conditions

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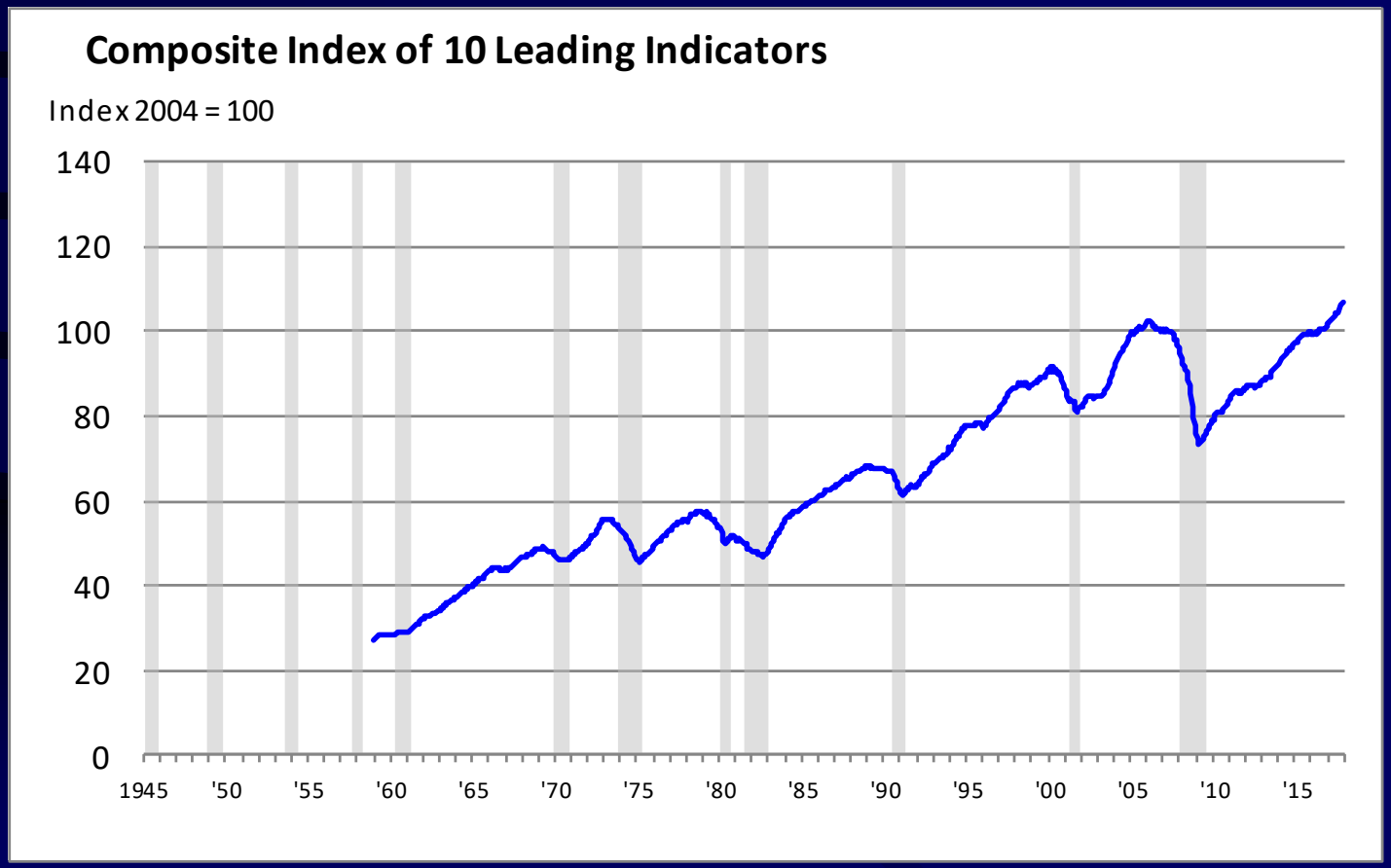
Leading Economic Indicators



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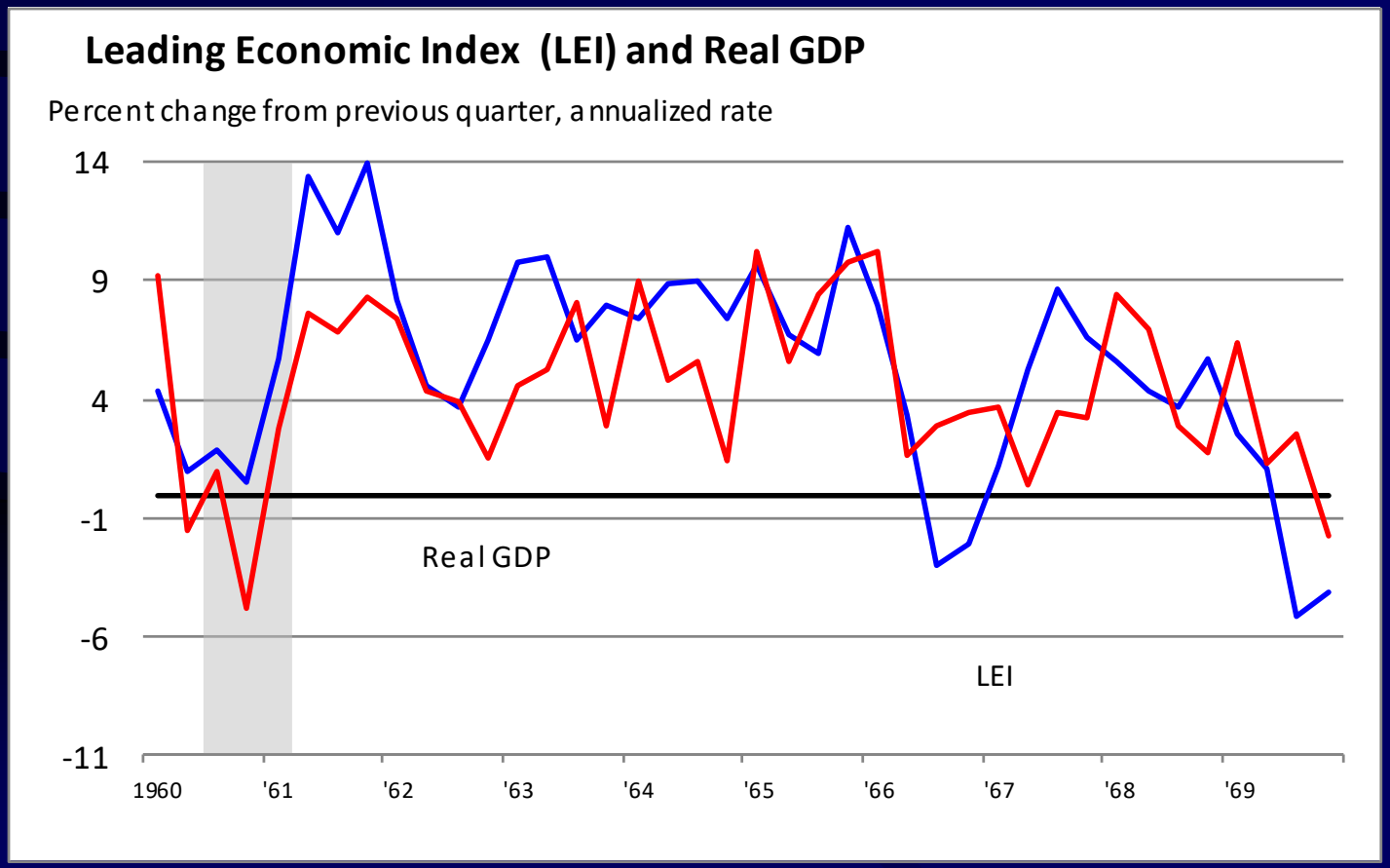
Leading Economic Indicators

- The LEI and real GDP growth – 1960s



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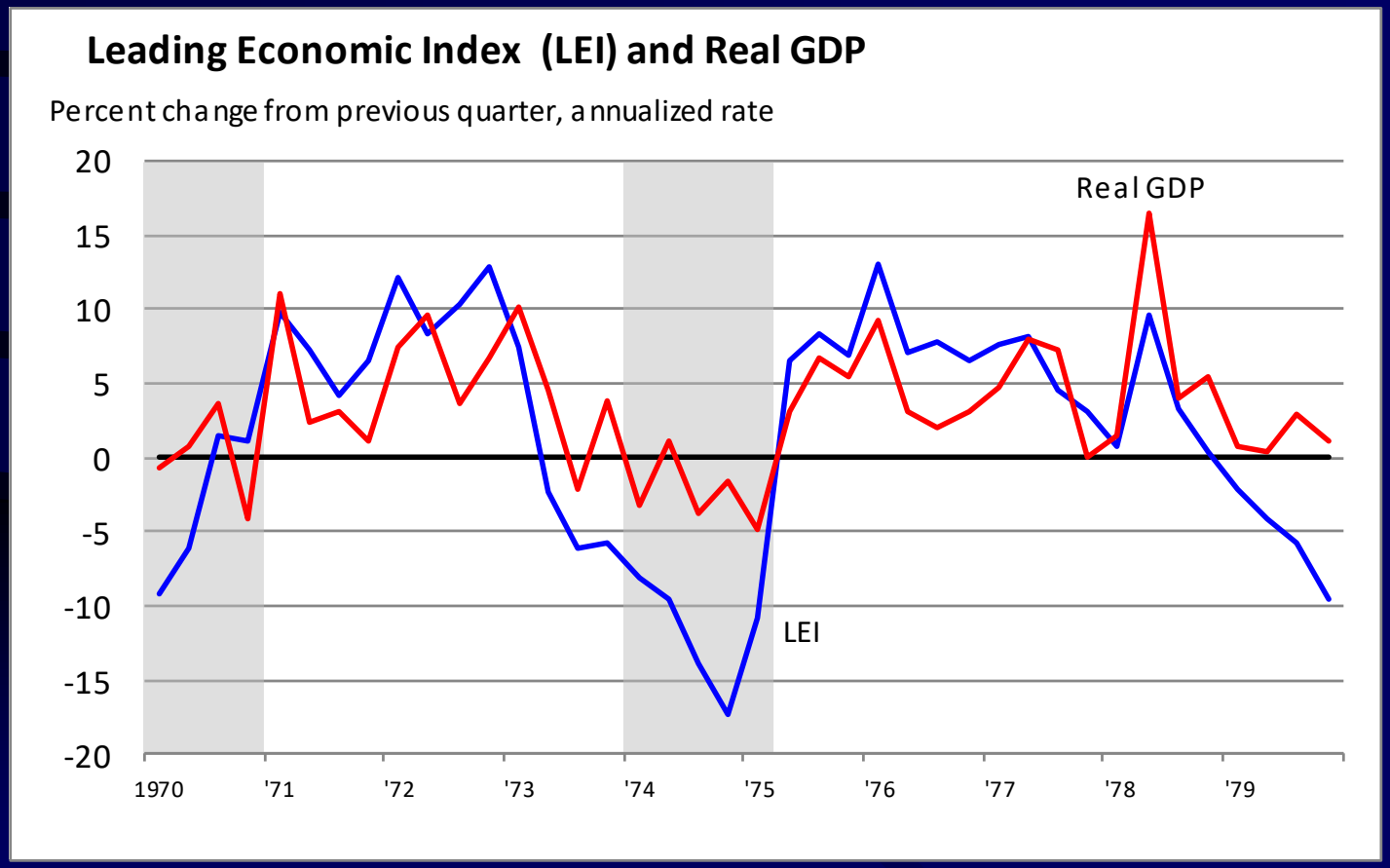
Leading Economic Indicators

- The LEI and real GDP growth – 1970s



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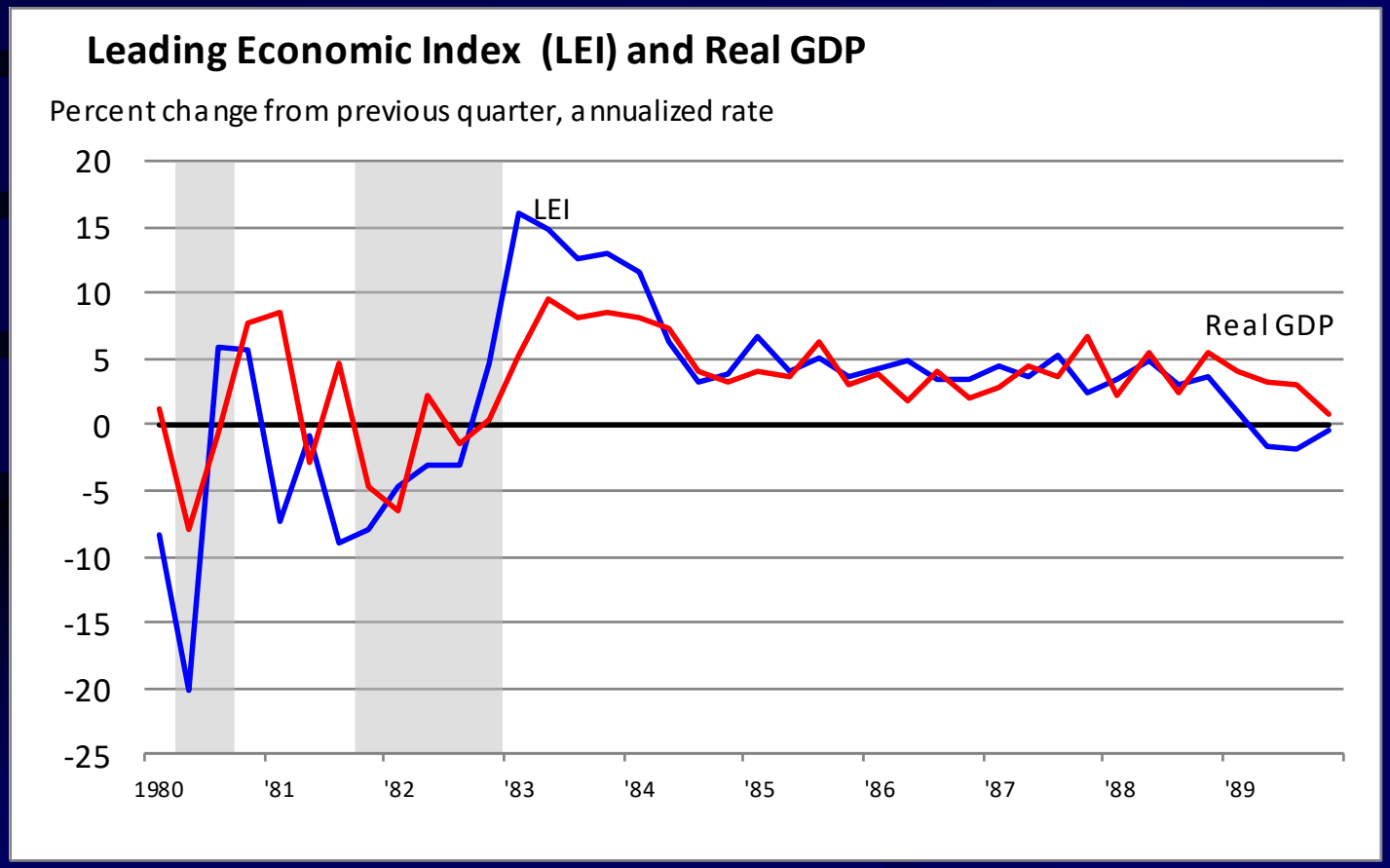
Leading Economic Indicators

- The LEI and real GDP growth – 1980s



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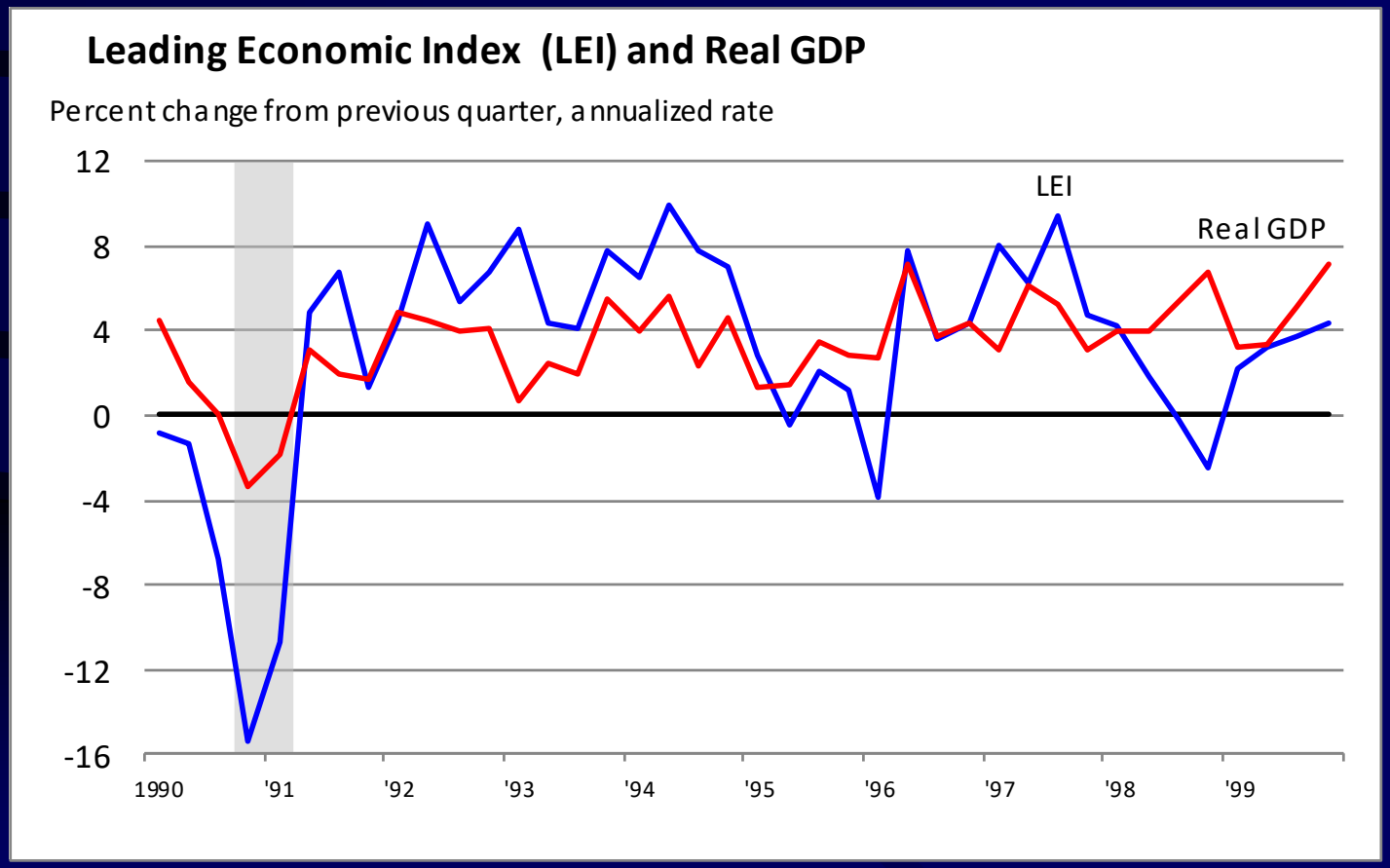
Leading Economic Indicators

- The LEI and real GDP growth – 1990s



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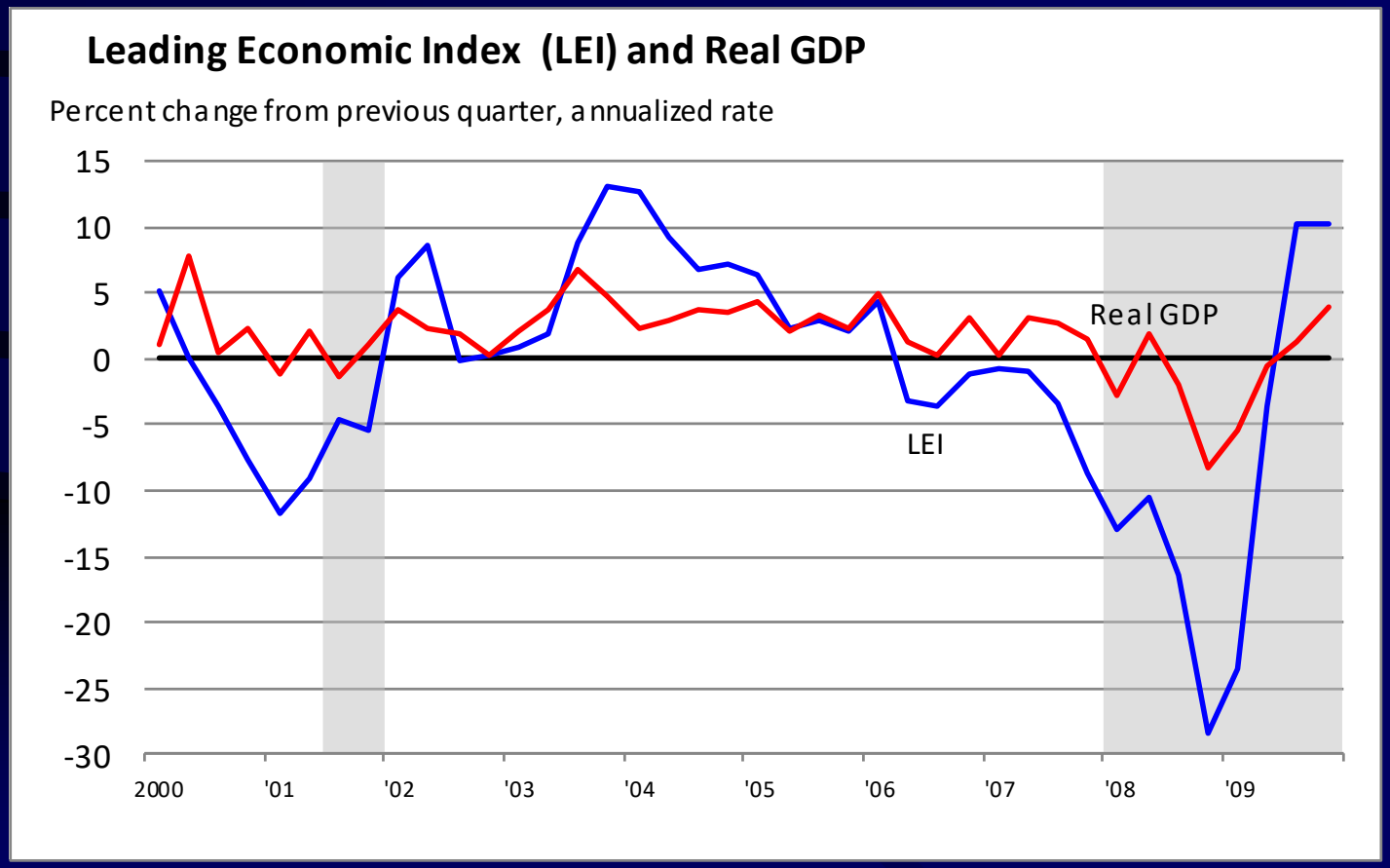
Leading Economic Indicators

- The LEI and real GDP growth – 2000s



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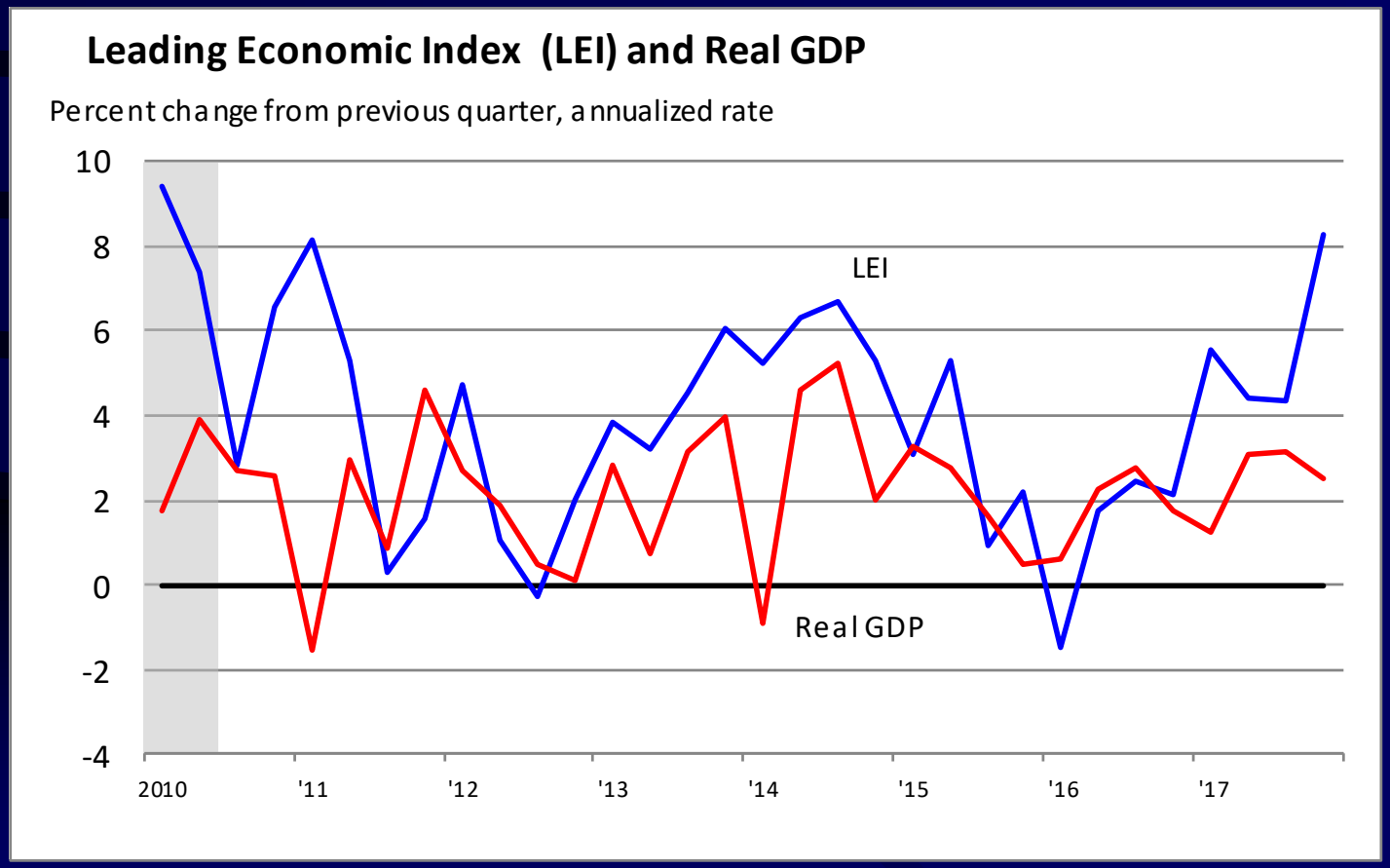
Leading Economic Indicators

- The LEI and real GDP growth – 2010s



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Activity Index

- An activity index is an econometric model (often times based on methodology developed by James Stock of Harvard University and Mark Watson of Princeton University)
  - The idea behind the Stock-Watson approach is that there is some factor common to all of the various inflation indicators, and it is this common factor, or index, that is useful for predicting inflation
- The Chicago Fed National Activity Index (CFNAI) is a weighted average of 85 monthly indicators of national economic activity
- It is constructed to have an average value of zero and a standard deviation of one
  - A positive index reading corresponds to growth above trend and a negative index reading corresponds to growth below trend

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Activity Index

- The 85 economic indicators that are included in the CFNAI are drawn from four broad categories of data
  1) Production and income
  2) Employment, unemployment, and hours
  3) Personal consumption and housing
  4) Sales, orders, and inventories.
- Research has found that the CFNAI provides a useful gauge on current and future economic activity and inflation in the United States

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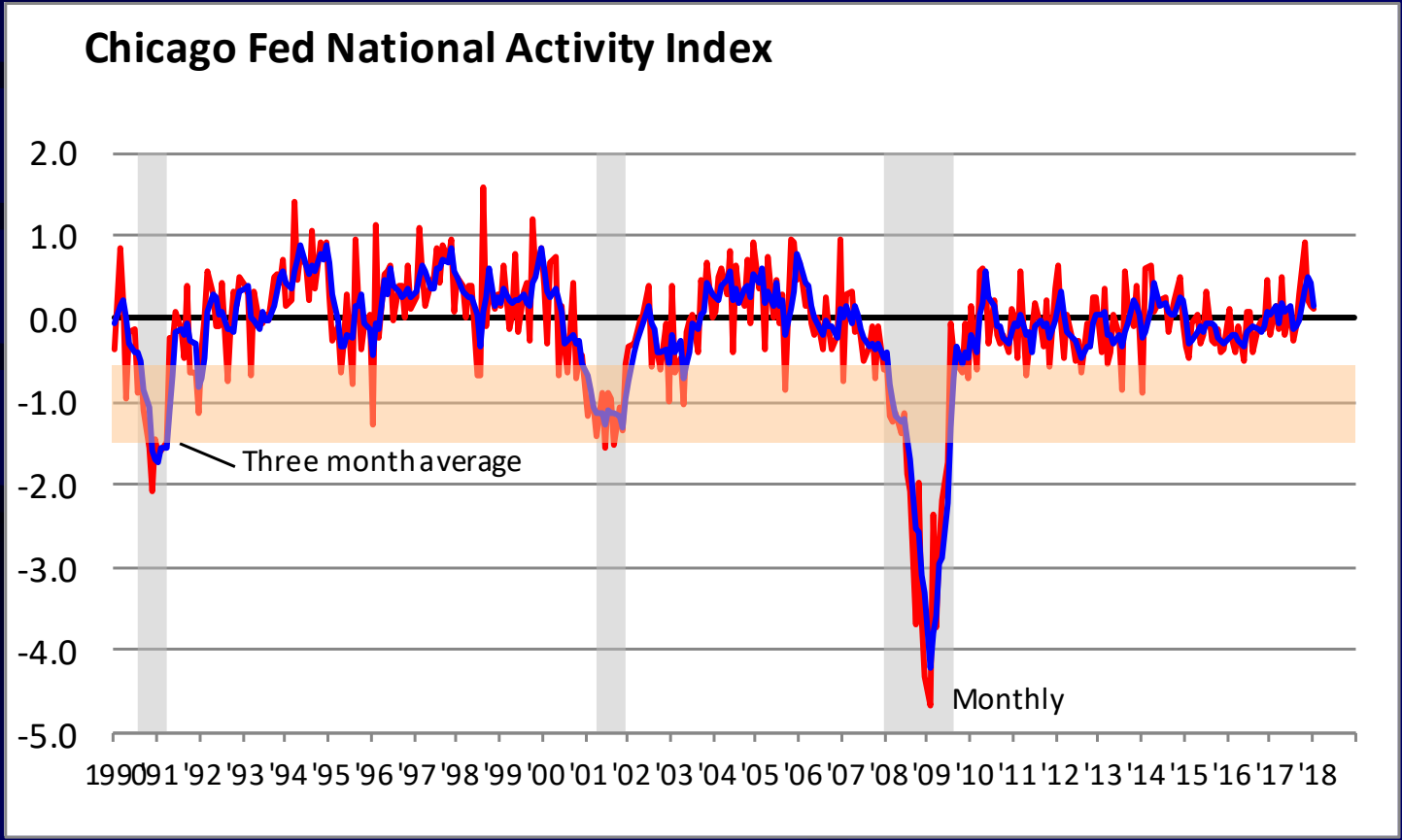
Activity Index



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Summary

- Labor productivity and Unit Labor Costs
- Producer Price Index
- Cost/Price Dynamics in the Business Cycle
- Business Capital Expenditures
- Inventories
- Consumers represent a large share of the U.S. Economy
- Consumer Price Index (CPI)
- Inflation versus deflation
- Employment
- Leading Economic Indicators
- Activity Index

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