LM 4 - Understanding Business Cycles

KIA Fresh Graduates Program - Economics

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May 29, 2024

Learning Outcomes

The candidate should be able to:

1. describe the business cycle and its phases;
2. describe credit cycles;
3. describe how resource use, consumer and business activity, housing sector activity, and external trade sector activity vary as an economy moves through the business cycle;
4. describe theories of the business cycle;
5. interpret a set of economic indicators, and describe their uses and limitations;

Learning Outcomes

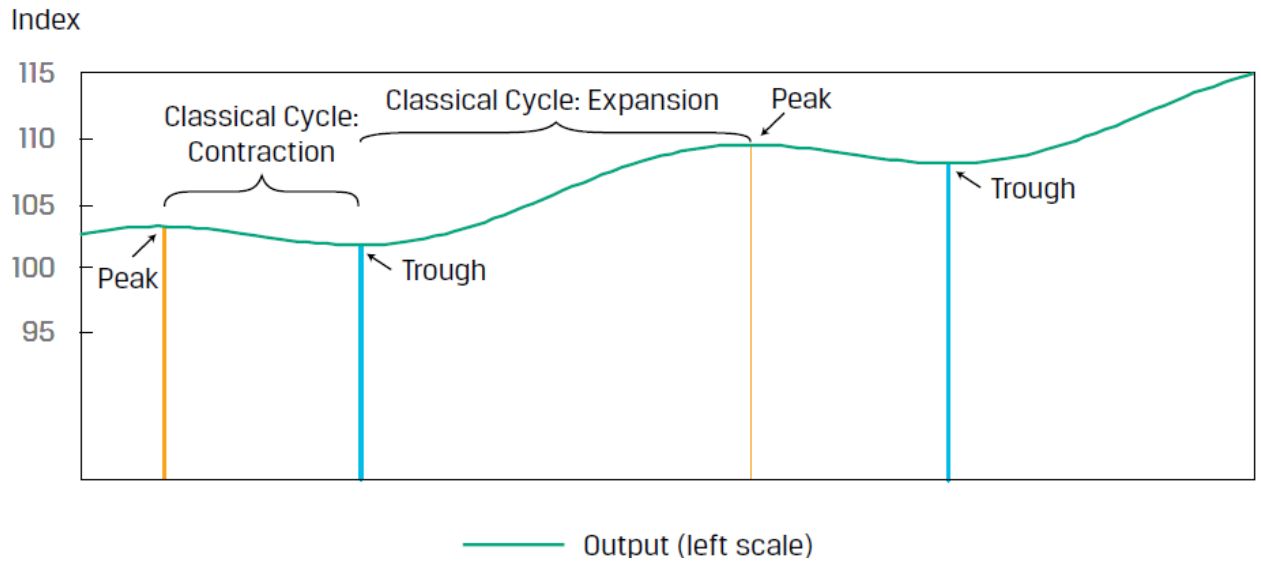
The candidate should be able to:

6. describe types of unemployment, and compare measures of unemployment;
7. explain inflation, hyperinflation, disinflation, and deflation;
8. explain the construction of indexes used to measure inflation;
9. compare inflation measures, including their uses and limitations;
10. contrast cost-push and demand-pull inflation;

Overview

Overview

Business Cycle Definition and Phases



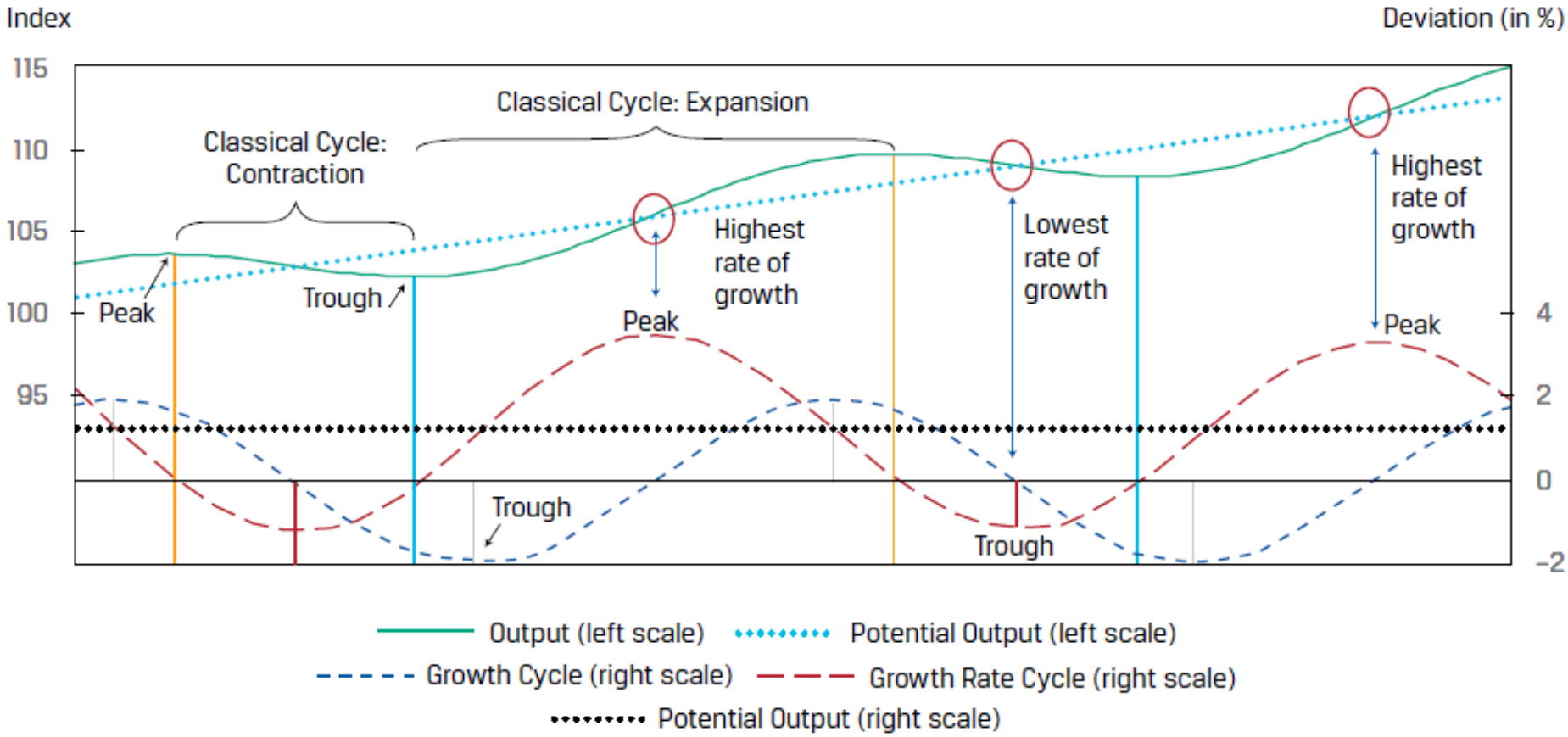
- Business cycles are recurrent expansions and contractions in economic activity affecting broad segments of the economy.
- Typically, two consecutive quarters of growth in real GDP mark the beginning of an expansion and two consecutive quarters of declining real GDP indicate the beginning of a contraction.

Business Cycle Definition and Phases

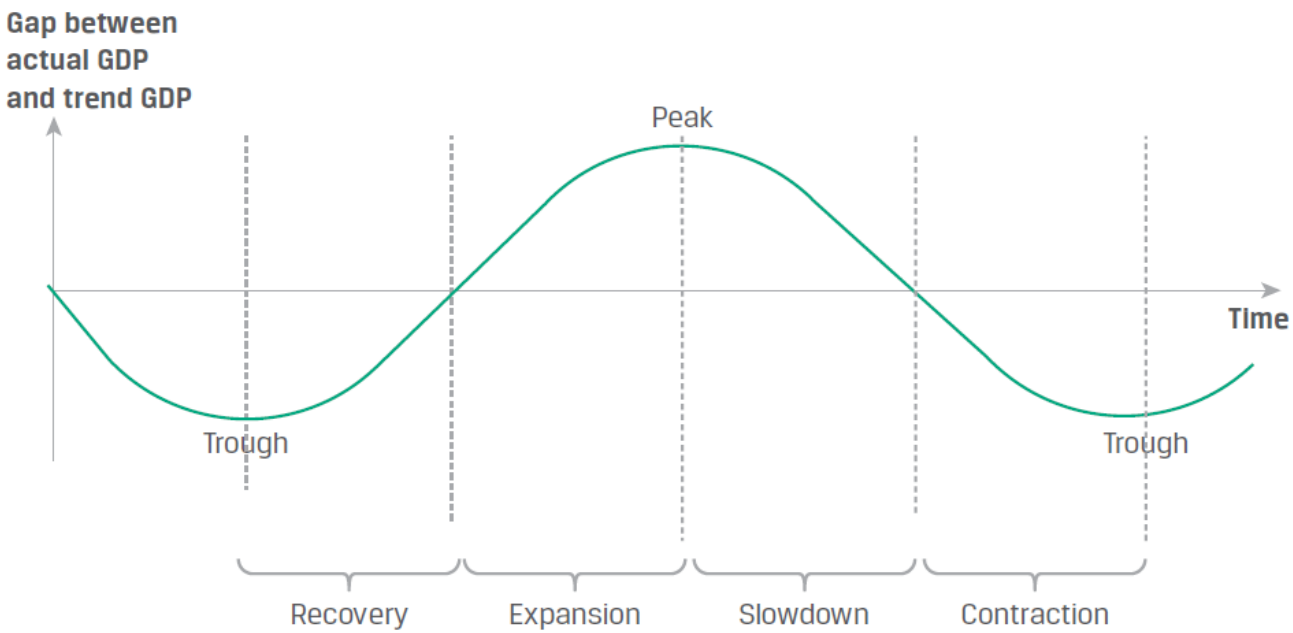
Three possible ways of looking at the Business Cycle:

- Classical cycles: consider directly the raw data.
  - An economic cycle that shows fluctuations in GDP.
  - It has shorter contraction phases and longer expansion phases.
  - Not commonly used due to its inability to distinguish short-term fluctuations from long-term trends.
- Growth cycles: decompose GDP data into trend and cycle (using a linear trend or a statistical filter).
  - Focuses on variations around the long-term trend growth level.
  - Compared with classical cycles, peaks generally are reached earlier and troughs later in time.
- Growth rate cycles: focus on variations in GDP growth rate.
  - Economic cycle defined by changes in GDP growth rate.
  - Peaks and troughs are detected earlier than with classical or growth cycle.
  - Does not require long-term growth trend calculation.

Business Cycle Definition and Phases



Business Cycle Definition and Phases



- The business cycle has four phases: Recovery, expansion, slowdown, contraction.

Business Cycle Definition and Phases

Phase	Recovery	Expansion	Slowdown	Contraction
Description	Economy going through a trough. Negative output gap starts to narrow.	Economy enjoying an upswing. Positive output gap opens.	Economy going through a peak. Positive output gap starts to narrow.	Economy weakens and may go into a recession. Negative output gap opens.
Activity levels – consumers and businesses	Activity levels are below potential but start to increase.	Activity measures show above-average growth rates.	Activity measures are above average but decelerating. Moving to below-average rates of growth.	Activity measures are below potential. Growth is lower than normal.
Employment	Layoffs slow. Businesses rely on overtime before moving to hiring. Unemployment remains higher than average.	Businesses move from using overtime and temporary employees to hiring. Unemployment rate stabilizes and starts falling.	Business continue hiring but at a slower pace. Unemployment rate continues to fall but at decreasing rates.	Businesses first cut hours, eliminate overtime, and freeze hiring, followed by outright layoffs. Unemployment rate starts to rise.
Inflation	Inflation remains moderate.	Inflation picks up modestly.	Inflation further accelerates.	Inflation decelerates but with a lag.

Business Cycle Definition and Phases

Peak	Trough	Length of Recession
July 1953	May 1954	10 months
August 1957	April 1958	8 months
April 1960	February 1961	10 months
December 1969	November 1970	11 months
November 1973	March 1975	16 months
January 1980	July 1980	6 months
July 1981	November 1982	16 months
July 1990	March 1991	8 months
March 2001	November 2001	8 months
December 2007	June 2009	18 months

Source: National Bureau of Economic Research.

- In the US, the National Bureau of Economic Research (NBER) is in charge of dating recessions:
  - "A recession is a significant decline in activity spread across the economy, lasting more than a few months, visible in industrial production, employment, real income, and wholesale-retail trade."

Credit Cycles and Business Cycles

- Credit cycles describe the changing availability and pricing of credit.
- They describe growth in private sector credit and are connected to real economic activity captured by business cycles.
  - When the economy is strong or improving, the willingness of lenders to extend credit is high.
  - When the economy is weak or weakening, lenders pull back, or "tighten" credit, by making it less available and more expensive.
- Credit cycles tend to amplify business cycles.
- Recessions accompanied by financial disruption episodes tend to be longer and deeper (e.g. Great Recession)

Business Activity and Resource Use Fluctuation

- The **ratio of inventory to sales** in many industries trends toward a normal level in times of steady economic growth.
- When an expansion is approaching its peak, sales growth begins to slow, and unsold inventories accumulate
  $\Rightarrow$ inventory-sales ratio above normal level.
- When contraction reaching trough, inventories becoming depleted more quickly once sales growth begins to accelerate.
  $\Rightarrow$ inventory-sales ratio below normal level.

Business Activity and Resource Use Fluctuation

- Firms react to economic fluctuation by adjusting their utilization of labor and physical capital.
- Adjustment over the extensive margin (firing and hiring workers, buying and selling capital) is costly.
- Firms start first by adjusting over the intensive margin: adjusting hours worked using overtime, changing utilization rate of machines, spending less on maintenance, delaying the replacement of equipment.
- Only when its clear that an expansion or recession will persist do firms resort to adjustments over the extensive margin.

Consumer Behavior

- Consumer spending depends on the level of consumers' current incomes and their expectations about their future incomes (consumer confidence).
- Consumer spending increases during expansions and decreases during contractions.
- The more discretionary a category of spending is, the more it will correlate with the business cycle.
- Spending on durable goods is highly cyclical because they are often higher-value purchases.
- Spending on nondurable goods, such as food at home or household products for everyday use, remains relatively stable over the business cycle.

Consumer Behavior

- A rise in the saving rate, usually measured as a percentage of income, may indicate caution among households and signal economic weakening.
- It can also indicate consumers' ability to spend despite possible lower income in the future.

Housing Sector Activity

- Cyclical swings in activity in the housing market can be large which results in a large effect on overall economic activity.
- Important determinants of the level of economic activity in the housing sector are:
  - Mortgage rates.
  - Housing costs relative to income.
  - Speculative activity.
  - Demographic factors.

External Trade Sector Activity

- The most important factors determining the level of a country's imports and exports are:
  - Domestic GDP growth.
  - GDP growth of trading partners.
  - Currency exchange rates.

Typical Business Cycle Characteristics

- **Trough:**
  - GDP growth rate changes from negative to positive.
  - High unemployment rate, increasing use of overtime and temporary workers.
  - Spending on consumer durable goods and housing may increase.
  - Moderate or decreasing inflation rate.
- **Expansion:**
  - GDP growth rate increases.
  - Unemployment rate decreases as hiring accelerates.
  - Investment increases in producers' equipment and home construction.
  - Inflation rate may increase.
  - Imports increase as domestic income growth accelerates.

Typical Business Cycle Characteristics

- **Peak:**
  - GDP growth rate decreases.
  - Unemployment rate decreases but hiring slows.
  - Consumer spending and business investment grow at slower rates.
  - Inflation rate increases.
- **Contraction/Recession:**
  - GDP growth rate is negative.
  - Hours worked decrease, unemployment rate increases.
  - Consumer spending, home construction, and business investment decrease.
  - Inflation rate decreases with a lag.
  - Imports decrease as domestic income growth slows.

Overview

Economic Indicators

- Economic indicators are variables that provide information about the state of economic activity (i.e. position in the cycle) in a country, region or sector.
- Used extensively in economic forecasting.
- Types of indicators:
  - Leading indicators: have turning points that usually precede those of the economy.
  - Coincident indicators: have turning points that typically coincide with those of the economy.
  - Lagging indicators: have turning points that occur later than those of the economy.
- Composite indicator: index generated from multiple indicators that tend to move in the same direction.

Economic Indicators

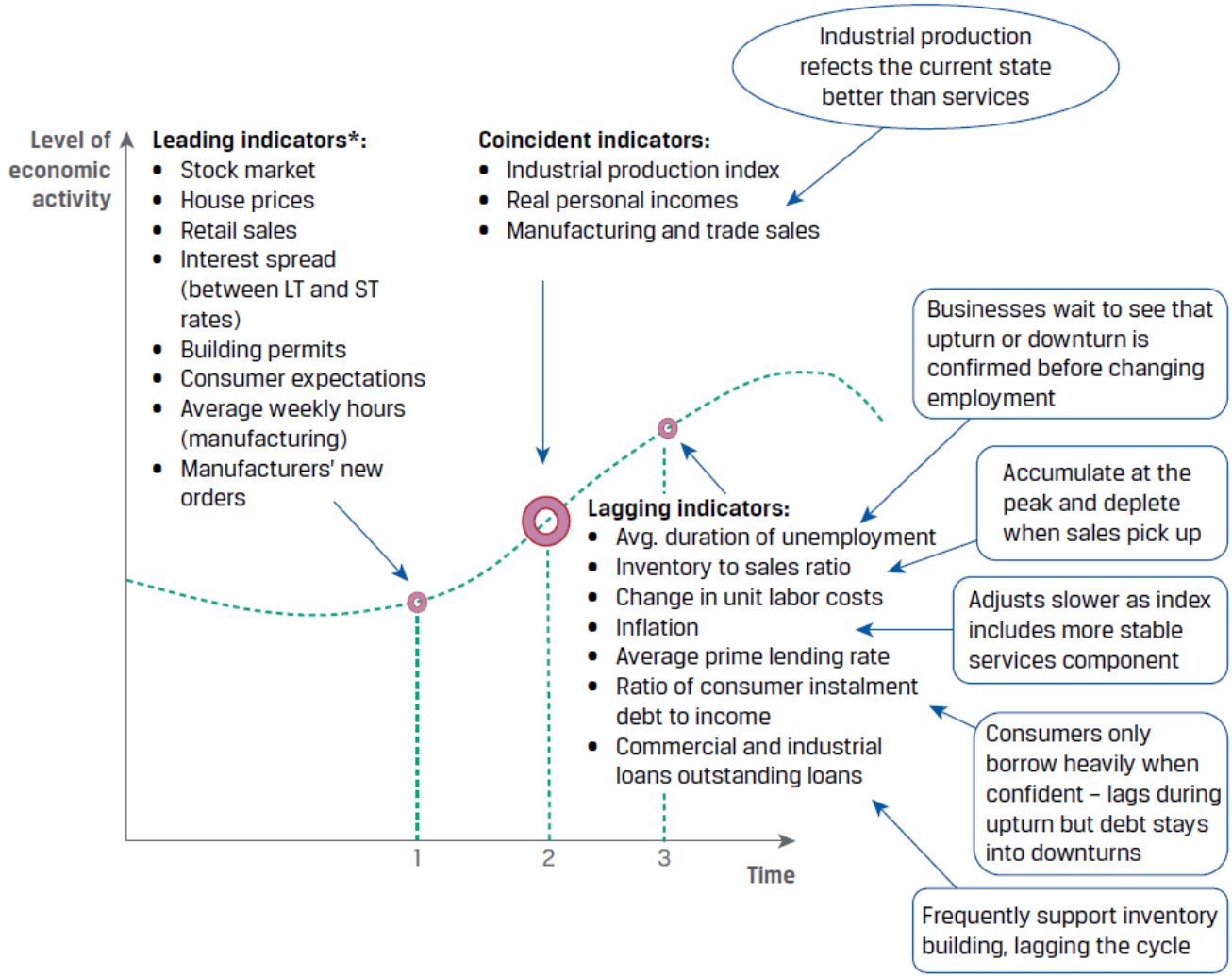


Figure: Types of Economic Indicators.
Source: CFA Institute

Economic Indicators: Example

- In the US, the Conference Board publishes a composite leading indicator called The Conference Board Leading Economic Index (LEI).
- The LEI comprises 10 components:
  1. Average weekly initial claims for unemployment insurance.
  2. Average weekly hours in manufacturing.
  3. Institute of Supply Management (ISM) Manufacturing New Orders Index.
  4. U.S. Census Bureau's Manufacturers' New Orders for Consumer Goods and Materials.
  5. U.S. Census Bureau's Manufacturers' New Orders for Non-Defense Capital Goods Excluding Aircraft
  6. Building Permits for New Private Housing Units
  7. Average Consumer Expectations for Business Conditions.
  8. Interest rate spread between 10-Year Treasury yields and overnight borrowing rates
  9. Leading Credit Index.
  10. S&P 500.

Big Data and Nowcasting: Real-Time Insights

- Big data and nowcasting enables real-time insights by using data from various sources.
- It also provides timely estimates for low-frequency economic indicators.
- Examples: GDPNow, EuroCOIN, Purchasing Manager's Indexes (PMIs).
- Benefits of nowcasting:
  - Gain a more nuanced and dynamic understanding of economic fluctuations.
  - Enables quicker and more informed decision-making across various sectors and industries.

Overview

Business Cycle Theories

Neoclassical/Real Business Cycle theory:

- Cause of Business Cycles: Rational responses to external shocks, technology changes
- Recommended Policy: Don't intervene to counteract business cycles.

Keynesian:

- Cause of Business Cycles: AD shifts with changes in business expectations; contractions persist due to downward sticky wages
- Recommended Policy: Use fiscal and/or monetary policy to restore full employment

New Keynesian:

- Cause of Business Cycles: Same as Keynesian but other input prices also downward sticky
- Recommended Policy: Same as Keynesian

Business Cycle Theories

Monetarist:

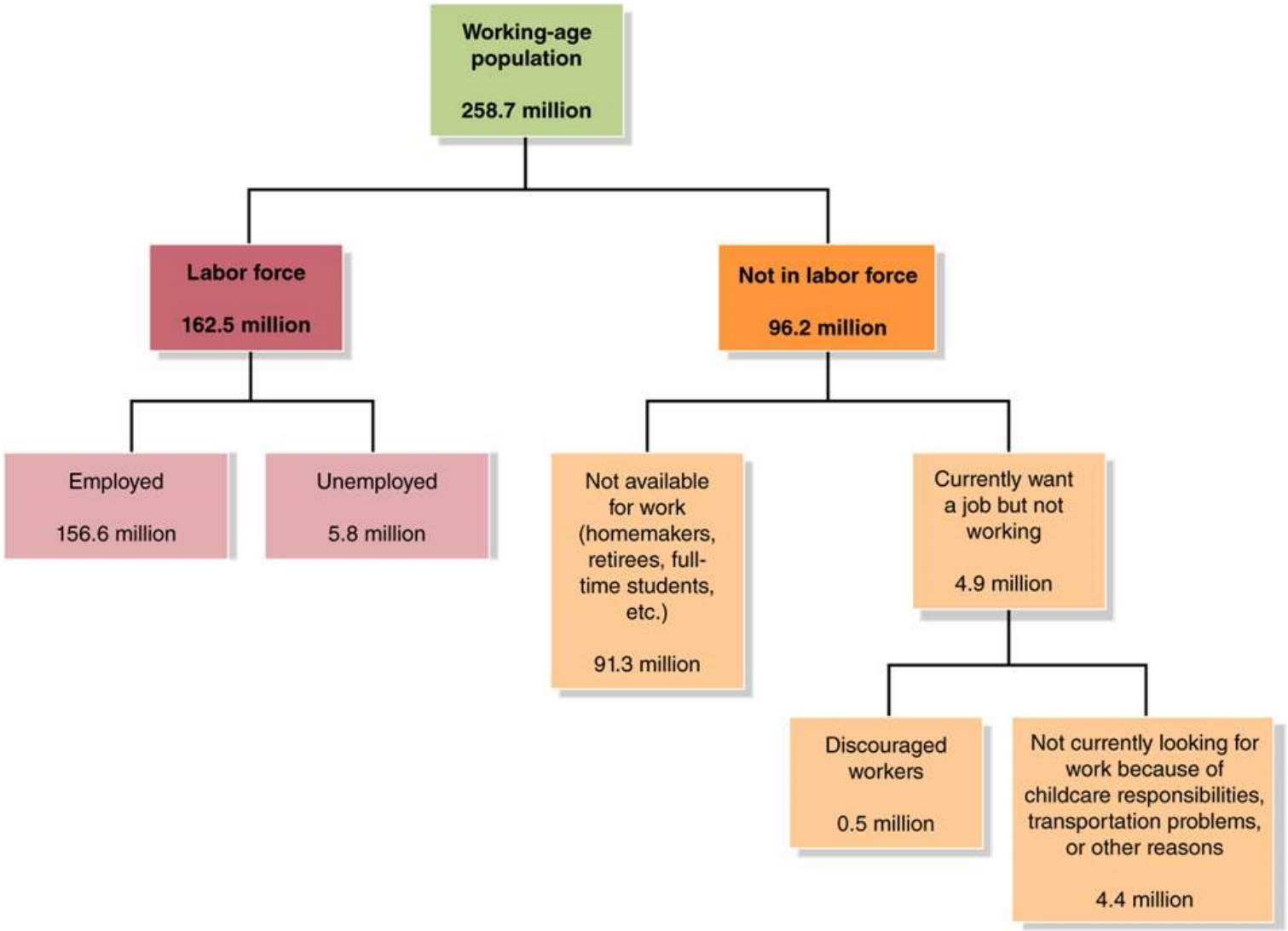
- Cause of Business Cycles: Inappropriate changes in money supply growth rate
- Recommended Policy: Steady, predictable growth rate of money supply

Austrian:

- Cause of Business Cycles: Inappropriate government intervention in economy.
- Recommended Policy: Don't force interest rates to artificially low levels.

Overview

Employment Measures



Employment Measures

- To be unemployed, one must be available for work and actively looking for work.
- Labor force consists of those who are employed and those who are unemployed.
- Unemployment rate = Number of unemployed / Labor force.
- Labor force participation rate = Labor force/ working-age population.
- Discouraged workers are not employed or seeking employment; not counted in labor force.

Types of Unemployment

- **Frictional unemployment** results from time it takes employers and employees to find each other and commence employment.
- **Structural unemployment** results from long-term changes in the economy that require workers to gain new skills to fill new jobs.
- **Cyclical unemployment** results from changes in economic growth; equals zero at full employment.
- When all unemployment is due to frictional and structural factors, we say that the economy is at **full employment**. This means there will always be some unemployment in the economy.
- Economists call this the **natural rate of unemployment**: The normal rate of unemployment, consisting of frictional unemployment and structural unemployment.

Overview

Inflation, Disinflation, and Deflation

- Inflation: Persistent increase in price level over time
- Inflation rate: Percentage increase in price level over a period (usually one year).
- Disinflation: Decrease in positive inflation rate over time.
- Deflation: Persistent decrease in price level over time; negative inflation rate.
- Hyperinflation: Out-of-control high inflation.

Two Types of Inflation

- Cost-push inflation begins with decrease in short-run aggregate supply (e.g., increase in price of an important input).
- Demand-pull inflation begins with an increase in aggregate demand that results in short-run equilibrium greater than full-employment GDP.

Calculating Inflation

- CPI (Laspeyres): U.S. inflation measure
- CPI = (base-year basket at current prices / base-year basket at base year prices) * 100
- CPI (Paasche): reduces substitution bias
- CPI = (current-year basket at current prices / current-year basket at base year prices) * 100
- Fisher index
- Geometric mean of Laspeyres and Paasche indexes

Calculating Inflation: Example

Product	Base Year (2010) Quantity	Base Year (2010) Price	Base Year (2010) Expenditures	2020 Price	2020 Expenditures (on base-year quantities)	2021 Price	2021 Expenditures (on base-year quantities)
Eye examinations	1	$50	$50	$100	$100	$85	$85
Pizzas	20	10	200	15	300	14.00	280
Books	20	25	500	25	500	27.50	550
Total	-	-	**$750**	-	**$900**	-	**$915**

- The table above gives the information we need to create the CPI in 2020 and 2021, using the basket of goods from 2021.

Calculating Inflation: Example

Formula	Applied to 2020	Applied to 2021
$\text{CPI} = \frac{\text{Expenditures in the current year}}{\text{Expenditures in the base year}} \times 100$	$\left(\frac{\$900}{\$750}\right) \times 100 = 120$	$\left(\frac{\$915}{\$750}\right) \times 100 = 122$

- Based on these data, the inflation rate from 2020 to 2021 is the percentage change in the CPI:

$$\left(\frac{122 - 120}{120}\right) \times 100 = 1.7\%$$

Limitations of Inflation Measures

- The CPI is widely believed to overstate the true rate of inflation.
- The most significant biases in the CPI data include:
  - Substitution bias: Consumers may change their purchasing habits away from goods that have increased in price.
  - Increase in quality bias: Difficult to separate improvement in quality from increase in price, say in cars or computers.
  - New product bias: The basket of goods used to change only every 10 years. (Now it updates every 2 years.) There is a delay to including new goods.
  - Outlet bias: CPI used to only survey prices at traditional retail outlets. Now it tries to minimize this bias by surveying people about where they actually buy products.

Headline and Core Inflation

- Price indices that include all goods and services measure headline inflation.
- Core inflation refers to prices of all goods excluding food and energy.
- Food and energy prices are subject to large short-term fluctuations that can magnify or mask the true inflation rate.

PPI Inflation

- The producer price index (PPI) is an average of the prices received by producers of goods and services at all stages of the production process.
- It is conceptually similar to the CPI, in that it uses a basket of goods, but the goods are those used by producers.
- Includes raw materials like coal and crude petroleum, and intermediate goods like flour, yarn, steel, and lumber.
- The PPI can give early warning of future movements in consumer prices.

Overview

Question 1

- The reason analysts follow developments in the availability of credit is that:
  - A. loose private sector credit may contribute to the extent of asset price and real estate bubbles and subsequent crises.
  - B. loose credit helps reduce the extent of asset price and real estate bubbles.
  - C. credit cycles are of same length and depth as business cycles.

Question 2

- The inventory/sales ratio is most likely to be rising:
  - A. as a contraction unfolds.
  - B. partially into a recovery.
  - C. near the top of an economic cycle.

Question 3

- A national government responds to a severe recession by funding numerous infrastructure projects using deficit spending. Which school of economic thought is most consistent with such action?
  - A. Keynesian.
  - B. Monetarist.
  - C. Neoclassical.

Question 4

- The unemployment rate is considered a lagging indicator because:
  - A. new job types must be defined to count their workers.
  - B. multi-worker households change jobs at a slower pace.
  - C. businesses are slow to hire and fire due to related costs.

Question 5

- What is the most important effect of labor productivity in a cost-push inflation scenario?
  - A. Rising productivity indicates a strong economy and a bias towards inflation.
  - B. The productivity level determines the economy's status relative to its "natural rate of unemployment."
  - C. As productivity growth proportionately exceeds wage increases, product price increases are less likely.