

South Carolina Bankers School
Economics / Money & Banking
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Instructor Information

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2002 – 2021
- Various Underwriting / Portfolio Management Roles – First Citizens Bank,
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Class Outline

- I. Keys to Understanding Economic Concepts (ECON 101 in 10-20 Minutes)
- II. Bond Market vs. Stock Market
- III. The Federal Reserve
- IV. Twin Goals of Central Bank Monetary Policy (aka The Dual Mandate)
- V. Independence of a Central Bank is Paramount to the Successful Long-Term Management of an Economy
- VI. Interest Rates Controlled by The Federal Reserve (and Why is the Fed Funds Rate So Important?)
- VII. Key Economic Indicators:
 - Unemployment Rate
 - Inflation Rate ("CPI")
 - Gross Domestic Product ("GDP")
- VIII. Tariffs 101
- IX. Tariffs and South Carolina
- X. Monetary Policy and Oil
- XI. Lagged Effects of Key Economic Indicators
- XII. The Bond Market (and Understanding the Inverse Relationship between Bond Prices and Interest Rates)
- XIII. Term Structure of Interest Rates (aka Determining The Price of Money)
- XIV. Treasury Yield Curve Patterns
- XV. Interest Rate Risk Management
- XVI. How a Central Bank Manages Monetary Policy (Primary Tools and Secondary Tools)
- XVII. Summary:
 - Interpreting Economic Variables
 - Implementing Monetary Policy

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Keys to Understanding Economic Concepts

- Macroeconomics is the study of the aggregate (national) economy.
- Information is the Key Element for examining and understanding Economic Data. Information is Factual Data that has been collected and given value through analysis, interpretation, or compilation in a meaningful form and obtained from a "Reliable Source". Analyzing, interpreting, and compiling Factual Data obtained from a "Reliable Source" is the key to understanding information.
- "Reliable Source" means avoiding Confirmation Bias: the psychological trait of focusing only on information, or sources of information, that supports existing beliefs and opinions and ignoring information, or sources of information, that contradicts, or challenges, those beliefs and opinions.
- Financial Theory in a capitalistic market is contingent upon free trade and is based on rational, unbiased thinking (i) buying where the cost is the lowest and (ii) Maximizing the Risk-Adjusted, Inflation-Adjusted, and After-Tax Rate of Return over the long term.
- Free Trade is based on the economic theory of Comparative Advantage: the economic theory that states countries should specialize in producing goods they can create most efficiently and trade for others, maximizing global wealth and productivity. It advocates for reducing or eliminating government-imposed barriers like tariffs, quotas, and subsidies.
- In general, all Markets operating in a Capitalistic Economic System will constantly be seeking Equilibrium: that Unit Price when the Supply of goods in a particular market matches the Demand for goods.
 - Supply exceeds Demand = Surplus or Excess Inventory. Places Downward Pressure on Price.
 - Demand exceeds Supply = Shortage. Places Upward Pressure on Price.
- The Efficient Market Hypotheses contends that organized markets are always in Equilibrium and that market participants always make rational decisions that will provide them with the greatest benefit/utility. This theory is based on:
 - All Historical Information is immediately factored into the Current Market Price.
 - All Publicly Available Information is immediately factored into the Current Market Price.
 - Expectations regarding Future Information, which differ from market participant to market participant, are immediately acted upon by Market Participants so the expectations from all market participants is therefore immediately factored into the Current Market Price.
 - If a market is operating efficiently, Market Prices will respond only when New Information is different from Market Expectations regarding the New Information.
- **Time Value of Money**: money owned today is worth more than money to be received in the future because (i) money in hand today contains zero risk and (ii) money to be received in the future introduces various risks that must be accounted for and priced appropriately.

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Bond Market vs Stock Market

- The Bond Market is directly linked to Current Interest Rates and expectations regarding Future Interest Rates. **While we care what Interest Rates are today, we care more about what we think Interest Rates will be in the future.**
- Future Interest Rates are directly tied to Inflation Expectations and indirectly influenced by demand and supply of obligations of the Federal Government (Treasury Bills (<1 year), Notes (1-10 years), and Bonds (>10 years)).
- **SUMMARY**: Inflation Expectations, along with intervention by The Federal Reserve to satisfy national interests during periods of financial instability, are the primary driver of the Bond Market over the LT.
- The Stock Market is directly linked to (i) historical Corporate Profits, (ii) estimated growth of Corporate Profits, and (iii) new opportunities, anticipated and unanticipated risks, and timing associated with achieving the estimated future growth rates of Corporate Profits.
- **SUMMARY**: Corporate Profits are the primary driver of the Stock Market over the LT.

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The Federal Reserve

- Central Bank - a banking institution granted the exclusive privilege to lend a government its currency.
- Federal Reserve Bank (aka "The Federal Reserve") - the Central Bank for the United States. The Federal Reserve System was enacted in 1913, with the passing of the Federal Reserve Act.
- The Federal Reserve is governed by The Board of Governors (or Federal Reserve Board), a federal government agency that reports to Congress and is located in Washington, D.C. The 7 members of the Board of Governors is appointed to a non-renewable 14-year term with one term expiring on February 1 of every even numbered year. All Board of Governors members are appointed by the President and confirmed by the Senate. The Chairman and Vice Chairman are appointed by the President and confirmed by the Senate.
- **Primary roles of the Federal Reserve**: (i) Regulating Commercial Banks and (ii) Managing Monetary Policy.
- The Federal Open Market Committee ("FOMC") is the principal organ of United States Monetary Policy. The FOMC is composed of the 7 members of the Federal Reserve Board and 5 of the 12 Federal Reserve Bank presidents (the New York Federal Reserve Bank President has a permanent seat). The Chairman of the Board of Governors serves as Chairman of the FOMC and must give regular reports to Congress to hold it accountable. Jerome H. Powell was appointed Chairman of the Board of Governors by President Trump in 2018 and reappointed by President Biden in 2022. His term expired in May 2026 and he was replaced by Kevin Warsh.
- **Central Bank Independence** refers to the degree of autonomy and freedom a central bank has in conducting its monetary policy and managing the financial system. Central Bank Independence is a key aspect of modern central banking and has its roots in the recognition that monetary policy decisions should be based on the best interests of the economy as a whole rather than being influenced by short-term political considerations. The purpose of central bank independence is to enhance the effectiveness of monetary policy and ensure the stability of the financial system. Loss of Central Bank Independence can lead to short-term political gains that could easily invite long-term economic pains, mainly high inflation and erosion in the value of the domestic currency.

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Independence of a Central Bank is Paramount to the Successful Long-Term Management of an Economy

- From the Federal Reserve website:
<https://www.federalreserve.gov/faqs/why-is-it-important-to-separate-federal-reserve-monetary-policy-decisions-from-political-influence.htm>
- An article from PBS News titled "Why the Federal Reserve's Independence From the White House Matters":
<https://www.pbs.org/newshour/nation/why-the-federal-reserves-independence-from-the-white-house-matters>
- An article from the Brookings Institute (center-left think tank) dated 3/17/2025 and updated on 12/12/2025 titled "Why is the Federal Reserve Independent and What Does That Mean in Practice?":
<https://www.brookings.edu/articles/why-is-the-federal-reserve-independent-and-what-does-that-mean-in-practice/>
- An article from Reuters, "How the Trump administration is testing Fed independence on bank rules":
<https://www.reuters.com/legal/transactional/how-trump-administration-is-testing-fed-independence-bank-rules-2026-03-26/>
- Supreme Court Rulings on Fed, FTC: What They Mean for Consumers
<https://www.cnn.com/2026/06/29/supreme-court-rulings-fed-ftc-consumers.html>
- What the Supreme Court's Ruling in the Cook Case Means for Federal Reserve Independence
<https://apnews.com/article/federal-reserve-cook-supreme-court-trump-439502a2dfe9282547165ba5cd747223>

These articles provide theoretical and empirical economic research showing that economies perform better (by keeping inflation under control and by not being influenced by ST political pressure) under Central Banks that are more independent.

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Twin Goals of Central Bank Monetary Policy (aka The Dual Mandate)

- **Price Stability (Low and Stable Inflation)**
- **Full Employment (Maximum Employment)**
- Details of mandates required by The Federal Reserve Act can be found at the following link:
<https://www.federalreserve.gov/monetarypolicy/monetary-policy-what-are-its-goals-how-does-it-work.htm>
- The Mission Statement of the Federal Reserve can be found at the following website:
<https://www.federalreserve.gov/publications/gpra/2011-mission-values-and-goals-of-the-board-of-governors.htm>

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Interest Rates Controlled by The Federal Reserve

- **Fed Funds** – funds deposited by commercial banks at Federal Reserve Banks. Funds in excess of bank reserve requirements can be loaned to other commercial banks that are a member of the Federal Reserve on an overnight basis at the Fed Funds Rate.
- **Fed Funds Rate** – the Target Interest Rate at which FDIC insured depository institutions lend balances at the Federal Reserve to other FDIC insured depository institutions on an overnight basis. Due to its overnight time period (short duration) and the fact that the operations of the Federal Reserve are backstopped by the U.S. Government, Fed Funds are considered "risk free".
- Per the April 28 - 29, 2026 meeting of the FOMC, the Fed Funds Rate was targeted to trade between 3.50% - 3.75%. As of May 8, 2026, the Effective Fed Funds Rate ("EFFR") was 3.63%. Per the June 16 - 17, 2026 meeting of the FOMC, the first FOMC Meeting headed by new Chairman Warsh, the Fed Funds Rate was targeted to trade between 3.50% - 3.75%. As of June 30, 2026, the EFFR was 3.63%.
- **The 1955 - 2025 Historical Average EFFR = 4.63% with a high rate of 16.38% in 1981 and a low rate of 0.08% in 2021.**
- Historical data for the Fed Funds Rate can be found at the following website:
<https://www.federalreserve.gov/monetarypolicy/openmarket.htm>
- **Discount Rate** – the interest rate at which the Federal Reserve lends directly to FDIC insured depository institutions always with debt obligations of the U.S. Government as collateral ("Lender of Last Resort"). Historically, the Discount Rate was set at 1.00% above the Fed Funds Rate (the "Discount Rate Spread"); however, the Discount Rate Spread has been below 1.00% since the economic downturn that began in 2008.
- As of May 8, 2026, the Discount Rate was 3.75%. As of June 30, 2026, the Discount Rate was 3.75%, a 0.25% spread above the Fed Funds Target Rate.
- Information regarding meetings of the FOMC can be found at the following website:
<https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm>

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KEY CONCEPT: Why is the Fed Funds Rate So Important?

The Fed Funds Rate influences interest rates associated with both bank Assets and Liabilities.

For Bank Liabilities, changes in the Fed Funds Rate should influence rates on all deposits since (by definition) they are short-term in duration.

For Bank Assets, changes in the Fed Funds Rate (i) always influences rates of all variable rate loans and (ii) always impacts the future value of all fixed rate loans and all other interest-rate sensitive investments.

- For Variable Rate Loans, while each bank sets its own Prime Rate, the relationship between the Fed Funds Rate and the Prime Rate is closely correlated with the Prime Rate usually +/- 3.00% above the Fed Funds Rate. The relationship between the Fed Funds Rate and SOFR is less correlated since SOFR is an International Benchmark Interest Rate; however, SOFR tends to also track closely with the US Fed Funds Rate since the US has the largest economy in the world.

- For Fixed Rate Loans, changes in market interest rates creates exposure to Interest Rate Risk – the risk that a change in market interest rates will negatively impact the value of already issued interest rate sensitive investments and loans.

In summary, the Fed Funds Rate has traditionally been the “Base Rate” for pricing associated with all Deposits, is the “Base Rate” for all Variable Rate Loans having Prime or SOFR as their Benchmark Interest Rate, and is the prime determinant of the long-term profitability associated with medium-term and long-term Fixed Rate Loans and Other Interest Rate Sensitive Assets.

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KEY ECONOMIC INDICATORS

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Unemployment Rate

- Unemployment Rate** - measure of the number of willing and able persons not employed as a percentage of the civilian labor force. As such, the “Natural” Unemployment Rate is always > 0%.
- The monthly Release Date for the Unemployment Rate is on or 1 - 2 days before the first Friday of the month.
- Unemployment is released monthly and looks back to the previous month and to the current month from the previous year. The key figure to focus on is the annual number by comparing current month of the current year to current month from the previous year (“YoY”).
- Unemployment Rate expectations can be found at: [Unemployment Rate Expectations](#).
- Scroll down to the box that contains Reference / Actual / Previous / Consensus / and TEF Forecast. Consensus is the Market Expectation while TEF forecast is the expectation of the website.
- Actual Unemployment Rate information can be found at <https://www.bls.gov/cps/#news>
- Unemployment Rate – April 2026 = 4.3% / June 2026 = 4.2% (data released on 7/2/2026)
- Market Expectation – April 2026 = 4.3% / June 2026 = 4.3%
- Average Annual Unemployment Rate for the United States (1948-2025) = 5.7%**
- The Unemployment Rate is a national average and will always be different from regional and local unemployment levels due to the uneven distribution of wealth created by a Capitalistic economic society.

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Inflation Rate (CPI)

- **Inflation Rate** - an increase in the general price level. Technical Definition: Inflation occurs when the growth in money supply [best measured by M2] exceeds growth in goods and services provided [or change in GDP – see below].
- Consumer Price Index ("CPI") - measure of the average change in prices over time ("Inflation") at the end-consumer level.
- The monthly Release Date for CPI varies but is usually during the 2nd / 3rd week of the month, between the 10th and 19th.
- Inflation is released monthly and looks back to the previous month and to the current month from the previous year. The key figure to focus on is the annual number by comparing current month of the current year to current month from the previous year ("YoY").
- Demand-Pull Inflation – when inflation is caused by an increase in demand ("Good Inflation"). Demand-Pull Inflation starts at the end of the production process / supply chain (an increase in price per unit sold) and "pulls" inflation backward thru the production process / supply chain. Demand-Pull Inflation associated with an increase in demand responds well to monetary policy.
- Cost-Push Inflation – when inflation is caused by an increase in cost ("Bad Inflation"). Cost-Push Inflation starts at the beginning of the production process / supply chain (an increase in the cost of raw materials, and/or an increase in the cost of production, and/or an increase in the cost of transportation, and/or geopolitical issues) and "pushes" inflation forward to the end consumer. Cost-Push Inflation is more difficult to manage via monetary policy (i) since many issues involved in the production process are heavily influenced by international market forces and (ii) since the majority of global supply chains are located outside of the United States, reducing and/or eliminating the ability of the Federal Reserve to influence the factors driving the inflation.

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Inflation Rate (CPI) (continued)

Primary Components of CPI:	December 2025
Shelter	35.6% (was 33.3% in 2020)
Transportation	16.3% (was 15.9% in 2023)
Food & Beverage	14.5% (was 13.7% in 2024)
Medical	8.4% (was 8.0% in 2023)
Energy	6.4%
Education & Communication Services	5.8%
Recreation	5.1%
Household Furnishings & Supplies	4.3%
Apparel	2.4%
Other	1.2%

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Inflation Rate (CPI) (continued)

- CPI / Inflation Rate expectations can be found at [Inflation Expectations](#)
- Scroll down to the box that contains Reference / Actual / Previous / Consensus / and TEF Forecast. Consensus is the Market Expectation while TEFforecast is the expectation of the website.
- Actual CPI (Inflation / Deflation) information can be found at <https://www.bls.gov/cpi/>
- Inflation Rate - April 2026 = 3.8% / June 2026 = ____% (data released on 7/14/26)
- Market Expectation - April 2026 = 3.7% / June 2026 = ____%
- Since 2012, US Central Bank Target Inflation Rate = 2.00%
- Average Annual Inflation Rate for the United States (1948-2025) = 3.5%.
- CPI is a national average and will always be different from regional and local inflation levels due to the uneven distribution of wealth created by a Capitalistic economic society.
- Deflation - a decrease in the general price level. Deflation is primarily caused by reduced demand. Periods of Deflation in United States: 1921 - 1922, 1926 - 1928, 1929 - 1932, 1938, 1949, 1954, and 2009. Deflation associated with an decrease in demand responds well to monetary policy.

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Putting Inflation Into Perspective

- Interest Rate – the cost or price of money expressed as an annual percentage (%). Also referred to as the “Actual” or “Nominal” Interest Rate. This is the rate discussed daily and quoted in the media.
- In Finance & Economics, “**Real**” means “Adjusted For Inflation”
- Real** Rate of Return = Actual / Nominal Interest Rate – Inflation Rate
- Actual / Nominal Rate of Return from the S&P 500 YTD thru 6/30/2026 = +9.55%.
- Real** Rate of Return from S&P 500 YTD thru 6/30/2025 = +5.35% calculated as Actual / Nominal Rate of Return thru 6/30/2026 of +9.55% minus the May 2026 Inflation Rate of 4.2%.
- Real** Wage Growth Rate = Actual / Nominal Wage Growth Rate – Inflation Rate
- Average United States Hourly Earnings Growth Rate for the period May 2025 – May 2026 = +3.4%.
- Real** United States Hourly Earnings Growth Rate = **-0.8%** calculated as the May 2026 Actual / Nominal United States Hourly Earnings Growth Rate of +3.4% minus the May 2026 Inflation Rate of 4.2%.
- Real** GDP Growth Rate = Actual / Nominal GDP Growth Rate – Inflation Rate
- Actual / Nominal GDP Growth Rate = 1Q 2026 = (3rd / Final Estimate) = +2.1%.
- Real** GDP Growth Rate for 1Q 2026 = **-2.1%** calculated as Actual / Nominal GDP Growth Rate of +2.1% minus the May 2026 Inflation Rate of 4.2%.

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Gross Domestic Product (GDP)

- Gross Domestic Product (GDP)** - measure of the total market value of all goods and services produced in an economy within a given time period (aka “Output”). Economic growth is measured by the change in GDP of a particular economy.
- The monthly Release Date for GDP is on or 1 - 2 days before the last Friday of the month.
- Factors influencing GDP:
 - +/- Consumer Expenditures: expenditures by households and individuals for durable goods, nondurable goods, and services
 - +/- Business Expenditures: expenditures by for-profit businesses on fixed investments and inventory
 - +/- Government Expenditures: expenditures by federal, state and local governmental units
 - +/- Net Exports: Exports minus Imports.
 - Trade Surplus - when Exports exceed Imports. A positive impact on GDP
 - Trade Deficit - when Imports exceed Exports. A negative impact on GDP

Components of GDP	1975	2000	2010	2020	2025
Consumer Expenditures	62.5%	68.2%	70.5%	67.6%	68.1%
Business Expenditures	14.5%	17.9%	12.4%	17.2%	17.8%
Government Expenditures	22.9%	17.6%	20.7%	18.3%	17.1%
Net Exports	-0.1%	-3.7%	-3.6%	-3.1%	-3.0%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

- GDP is released monthly but provides 3 figures related to the previous calendar quarter: (i) 1st / Advance Estimate (QoQ Advance on website), (ii) 2nd Estimate (QoQ 2nd Estimate on website), and (iii) 3rd / Final Estimate (QoQ Final on website).

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Gross Domestic Product (GDP) (continued)

- GDP expectations can be found at [GDP Expectations](#)
- Scroll down to the box that contains Reference / Actual / Previous / Consensus / and TEF Forecast. Consensus is the Market Expectation while TEF Forecast is the expectation of the website. Previous is the previous calendar quarter.
- Actual GDP information can be found at <https://www.bea.gov/data/gdp/gross-domestic-product>
- GDP Growth Rate - Full Year 2025 = +2.1%
- GDP Growth Rate - 1Q 2026 (1st Estimate) = +2.0%
- Market Expectation - 1Q 2026 (1st Estimate) = +2.3%
- GDP Growth Rate - 1Q 2026 (3rd / Final Estimate) = +1.6%
- Market Expectation - 1Q 2026 (3rd / Final Estimate) = +2.1%
- Optimal Average Annual Growth Rate for Real GDP = between +3.00% - +4.00%.**
- Average Annual United States Real GDP Growth (1948 – 2025) = +3.1%.

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GDP Analysis of Selected Countries	
United States Components of GDP	
Consumer Expenditures	68.1%
Business Expenditures	17.8%
Government Expenditures	17.1%
Net Exports	- 3.0%
TOTAL	100.0%
China Components of GDP	
Consumer Expenditures	40.0%
Business Expenditures	40.5%
Government Expenditures	16.7%
Net Exports	+ 2.8%
TOTAL	100.0%
Germany Components of GDP	
Consumer Expenditures	55.0%
Business Expenditures	20.0%
Government Expenditures	19.0%
Net Exports	+ 5.0%
TOTAL	100.0%

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Tariffs 101 – Part I	
- A Tariff is a tax imposed by a national government on goods manufactured outside the country and then imported into the country imposing the tariff. - Financial Theory in a capitalistic market is contingent on <u>free trade</u> and is based on <u>rational unbiased thinkers</u> (i) buying where the cost is the lowest and (ii) <u>Maximizing the Risk-Adjusted, Inflation Adjusted, and After-Tax Rate of Return over the long-term</u>. Free Trade is based on the economic theory of <u>Competitive Advantage</u>: the economic theory that states countries should specialize in producing goods they can create most efficiently and trade for others, maximizing global wealth and productivity. - Why implement Tariffs? - Protectionism of Domestic Industries (in General) - Prevent exploitation of Competitive Advantages held outside the Domestic Economy - Protectionism of Ageing Industries and/or Infant / Start-Up Industries / Technologies - Prevent exploitation of Competitive Advantages held outside the Domestic Economy - Protectionism Against Unfair Trade Practices / Dumping - Foreign Currency Manipulation – <u>weak currency prices stimulate Exports</u> - Protectionism Against Dumping of Social Costs / Environmental Dumping - Protect National Security Interests - To Reverse the negative impact of Trade Deficits on GDP / to stimulate GDP – provided % change in units sold remains greater than or equal to the % increase in price per unit sold.	

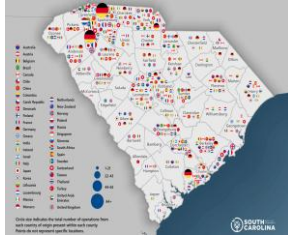
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Tariffs 101 - Part II	
- Tariffs are paid by the Importer. Then what happens? - In order to maximize the Risk-Adjusted, Inflation Adjusted, and After-Tax Rate of Return, all parties involved in the supply chain <u>will want to</u> pass the cost to the next entity in the supply chain until the tariff is eventually passed to the end consumer. - KEY CONCEPT: Can they? Or will competitive pressures intervene? - If the tariff is successfully passed to the end consumer, costs increase throughout the domestic society imposing the tariffs. In addition, the absence of foreign competition further reduces supply, pushing the market out of equilibrium and providing an opportunity for domestic producers to increase prices. <u>Assuming demand remains stable, higher costs = higher Supply Push Inflation that is more difficult to manage via Monetary Policy.</u> - Elasticity of Demand – measures the change in demand for a product as a result in the change in price. Most products have some degree of Elastic Demand meaning demand for a product changes proportionally (up or down) when the price of a good or service changes (up or down). - For products and services having high to medium elastic demand, higher inflation usually leads to lower volume sold. For products and services having inelastic demand, higher inflation may or may not lead to lower volume sold. - Elastic Demand – higher prices leads to lower quantity sold, potentially bringing price down and lowering profits throughout the domestic society imposing the tariffs. Lower Profits leads to Lower Standard of Living. - Inelastic Demand – higher prices either (i) has a minimal impact or (ii) does not have an impact on quantity sold, leading to higher prices and higher inflation throughout the domestic society imposing the tariffs. <u>Higher Prices has a punitive impact on members of society not able to afford the higher prices.</u> - Stagflation: combination of low / stagnant GDP Growth and high inflation.	

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Tariffs and South Carolina

- South Carolina has the highest concentration of FDI jobs in the United States, with 9.8% of South Carolinians employed by international companies in the private sector (National Average = 6.2%). More than 1,100 foreign-affiliated firms have operations in South Carolina.
- Among all international employers, those from Germany (#1), France, other EU countries, Japan, South Korea, other Asian countries, and Canada support the largest number of jobs in South Carolina, respectively.
- Key international companies with significant operations include BMW, Volvo Car USA, Honda, Michelin, Continental Tire, Bridgestone, Samsung, Bosch Automotive Group, ZF Group, Teijin, Technic Industries, Magna International, Siemens, BASF, and Nan Ya Plastics.
- The Real GDP of South Carolina grew by 3.8% in 2024, the 5th highest growth rate in the nation. In 2025, South Carolina's Real GDP of 3.1% tied with Florida for the highest growth rate in the United States.



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Recent BMW / Auto Industry News

- A "Perfect Storm" Points to a Much Smaller U.S. Auto Market by 2040
<https://www.cnbc.com/2026/06/28/us-auto-market.html>
- BMW Stock Slumps to 5-Year Low due to Iran War, Uncertainty Around Tariffs, and Increased Competition from China
<https://www.cnbc.com/2026/06/17/bmw-profit-warning-autos-cars-china-iran.html>
- BMW Completes \$1.7 Billion Expansion at Plant Spartanburg and Plant Woodruff and Unveils All-Electric X5
<https://www.foxbusiness.com/luxury/bmw-completes-1-7-billion-south-carolina-expansion-unveils-all-electric-x5>

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Monetary Policy and Oil

- Petroleum-based products are the primary raw material in a variety of end uses. In general, the price of oil fluctuates with market conditions (supply / demand); however, the price of oil is heavily influenced by international market forces and the majority of global supply chains are located outside of the United States. As a result, the US Central Bank cannot control or directly influence oil prices but can only hope to indirectly influence oil prices by controlling economic growth (demand/GDP).
- Double Impact: high oil prices act as a tax on households and businesses directly purchasing oil and gas. In addition, high oil prices also flow thru the majority of supply chains, fueling Cost-Push Inflation throughout society as oil / petroleum products are a key component in a variety of end uses. Both of these issues slow economic growth.
- A good rule of thumb is that a 10% increase in the price of oil in the U.S. increases inflation by +/-0.2%.
- KEY CONCEPT: Oil is priced in U.S. dollars ("USD").
- Central Bank dilemma in dealing with rising oil prices:
 - Lowering U.S. Interest Rates weakens the U.S. dollar, making dollar-denominated oil cheaper and stimulating the economy in general. This stimulates demand for oil that increases oil prices in U.S. dollar terms, entrenching inflation, slowing the economy further, and increasing unemployment over both the short-term and long-term.
 - Increasing U.S. Interest Rates strengthens the U.S. dollar, making dollar-denominated oil more expensive and slowing the economy in general over the short-term. While the reduction in demand for oil decreases oil prices in U.S. dollar terms, higher interest rates increase the cost of production, cost of borrowing and the Required IRR from equity investing throughout the society, slowing the economy further and increasing unemployment. This then leads to a reduction in demand for oil, lowering oil prices and easing inflation pressures over the long-term. Using history as a guide, this process has historically had a 6-18 Recognition Lag + Implementation Lag + Impact Lag to play out depending upon the factors associated with the situation.
- Stagflation: combination of low / stagnant GDP Growth and high Inflation.

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Lagged Effects of Key Economic Indicators

- Recognition Lag – time between when the problem arises and when it is recognized. Created by dependence on historical (backward-looking) statistics for decision making.
- Implementation Lag – time between when the problem is recognized and when a solution is put in place to solve the problem.
- Impact Lag – time between when the solution is put in place and when the impact is felt in the economy. Impact can be immediate, gradual, or long-term in nature depending upon market conditions. On average, the Impact Lag associated with Monetary Policy = 3-6 months.

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Summary – Interpreting Economic Variables

1. Employment:
 - Measured by Unemployment Rate (willing and able to work).
 - 1948 – 2025 Historical Average = 5.7%.
 - Want number to be low but not “too low” as “too low” will stimulate inflation via salary / compensation increases. High is always bad.
2. Inflation (increase in the general price level):
 - Measured by % change in Consumer Price Index (“CPI”).
 - Housing comprises 35%.
 - 1948 – 2025 Historical Average = 3.5%.
 - Want number to be low but not “too low” as “too low” can indicate an absence of pricing power caused by a lack of demand. High is always bad. Negative (Deflation) can (maybe) be OK ST but is always bad LT.
 - Commodity Prices: used to anticipate inflationary / deflationary impact of raw material prices.
3. Growth:
 - Measured by % change in Gross Domestic Product (“GDP”).
 - Consumer Spending = +/-68%
 - Optimal (Historical) Annual Growth Rate = +/-3.00% - 4.00%.
 - High is OK for ST period but not “too high” as “too high” will stimulate inflation. Low is OK for a ST period, negative is always bad.

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The Bond Market

- Understanding of the Bond Market is critical to bankers as (i) banks are limited by Federal law to investments in bonds, (ii) government bonds must be used as collateral in all borrowings from the Federal Reserve and (iii) bonds and loans are essentially the same thing so they both react to market events the same way.
 - The Bond Market is directly linked to Current Interest Rates and expectations regarding Future Interest Rates. While we care what Interest Rate are today, we care more about what we think Interest Rates will be in the future.
 - Future Interest Rates are directly tied to inflation expectations and indirectly influenced by demand and supply of obligations of the Federal Government (Treasury Bills, Notes, and Bonds).
- Key Bond Definitions:
- Bond - a creditor relationship with a borrowing entity whereby the borrowing entity promises to make specified payments at specified future dates and to repay the principal amount borrowed at or before the maturity date of the bond. Along with cash flow, repayment of bonds is usually supported by collateral serving as a secondary source of repayment.
 - Par Value - stated or face value of a bond, typically \$100 per bond. Treasury Notes and Bonds along with Corporate Bonds are issued at Par (Face) Value with the price then fluctuating on the open market based on current market conditions.
 - Coupon Interest Rate – the stated annual interest rate on a bond. The Coupon Interest Rate is determined at the Issue Date and stays fixed for the life of the bond (“Fixed Rate”).
 - Yield-to-Maturity (“YTM”) - term used to determine the Rate of Return received if a Fixed Rate interest-bearing asset is purchased after the Issue Date at a Market Price other than Par Value and is held to its Maturity Date.
 - Maturity Date – a date determined at the Issue Date on which the Par Value of a Bond must be repaid.

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KEY CONCEPT:**Inverse Relationship between Bond Prices and Interest Rates**

- Bonds are issued at Par (Face) Value. The value of the bond is determined by the stated interest rate (Coupon Interest Rate) plus the bond's time to maturity with the market price of a bond driven by changes in domestic interest rates after the bond is issued. Bond Prices and Interest Rates are inversely related. When market interest rates rise, bond prices fall and when market interest rates fall, bond prices rise. The price of a bond and interest rates move inversely to each other in order to keep the Yield-To-Maturity in the marketplace as close to the Coupon Interest Rate as possible.
- Premium - the amount by which a bond trades above par value. A bond will sell at a Premium when the Market Interest Rate is less than the Coupon Interest Rate (i.e – Market Interest Rates drop after the Coupon Interest Rate is fixed in conjunction with the Issue Date).
- Discount - the amount by which a bond trades below par value. A bond will sell at a Discount when the Market Interest Rate is greater than the Coupon Interest Rate (i.e – Market Interest Rates rise after the Coupon Interest Rate is fixed in conjunction with the Issue Date).
- Financial Return from a Bond = Interest Income (Coupon Interest Rate) and then either
 - + Premium (Price Appreciation) or
 - Discount (Price Depreciation).

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Term Structure of Interest Rates (aka Determining The Price of Money)

Determinants of Market Interest Rates

Nominal / Actual Domestic Interest Rate (r_d) = $r^* + IP + MRP + DRP + LP$ Risk Free Rate of Return (r^*) = Treasury Yield for the investment time period.

+Inflation Premium (IP) – to compensate for the reduction in return / purchasing power caused by inflation. The IP can be either (i) upward sloping if Inflation Expectations are positive or (ii) downward sloping if Inflation Expectations are negative.

+Time / Maturity Risk Premium (MRP) - to compensate for (i) additional market risk / uncertainty embodied in long-term securities and (ii) psychological cost to compensate for the human trait of favoring present consumption over saving. By definition, the MRP is always present (upward sloping) but increases during periods of macro economic uncertainty / distress and decreases during periods of macro economic recovery / prosperity. The MRP is always upward sloping due to (i) the longer the time to receive a cash flow the higher the probability the cash flow might not be received, (ii) the longer the time to receive a cash flow the more things that can go wrong, and (iii) the longer the time to receive a cash flow the higher the probability inflation will reduce the return.

+Credit / Default Risk Premium (DRP) – to compensate for the risk that either interest and/or principal will not be repaid by the issuer of a bond, creating a payment default. The DRP is always upward sloping with the degree of slope dependent upon the credit risk associated with (specific to) the issuer of the Bond. Bond Ratings attempt to quantify the Credit / Default Risk associated with a Publicly Traded Bond. Using Standard & Poor's Ratings Definitions, Publicly Traded Bonds are rated AAA (Best), AA, A, BBB, BB, B, CCC, CC, C, D with D signifying a Bankruptcy. Investment Grade Bonds have a bond rating of between AAA – BBB. Junk / Speculative Bonds have a rating of between BB – D.

+Liquidity Premium (LP) - to compensate for (i) the cost and / or (ii) loss incurred in converting an investment back into Cash. The LP is always upward sloping with the degree of slope dependent upon the specifics to the situation.

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Term Structure of Interest Rates (continued)

- The Term Structure of Interest Rates measures the relationship between length of time to maturity and the level of interest rates (yield), holding constant all other factors. It reflects the market's expectation of future Federal Reserve policy moves, highlighting anticipated changes to the Federal Funds Rate.
- The Treasury Yield Curve (published daily) is a graphic representation of the Term Structure of Interest Rates and is calculated as:
Risk Free Rate of Return (r^*) + Inflation Premium (IP) + Time / Maturity Risk Premium (MRP)

since (i) the Default Risk Premium (DRP) and Liquidity Premium (LP) are 0.00% for obligations of the U.S. Government. This is due to the fact that the U.S. Government has the ability to print money and/or raise taxes to pay all debt, eliminating default and significantly enhancing liquidity. It should be noted; however, that the ability of the U.S. Government to print money by issuing additional debt is dependent upon (i) market willingness to purchase the debt, (ii) the Executive and Legislative Branches of the U.S. Government implementing prudent Fiscal Policies (spending & taxes) in order to maintain the highest Sovereign Debt Bond Rating, and/or (as necessary) (iii) the Executive and Legislative Branches of the U.S. Government electing to increase the debt ceiling and/or define verifiable sources of repayment (only two choices are to raise taxes and / or to reduce expenses) to repay the debt.
- **KEY CONCEPT:** Since the Time / Maturity Risk Premium (MRP) is always positive, the primary purpose of the Yield Curve is to measure market expectations concerning Future Inflation (IP) which is the driving factor in determining the price of money at specified future dates.
- The Yield Curve can be found at https://www.ustreasurysupplycurve.com/#google_vignette

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Is the Default Risk Premium of 0.00% in Jeopardy?

- In May 2025, Moody's Credit Rating Agency lowered the Bond Credit Rating on the sovereign debt of the United States to Aa1 from Aaa (Highest Rating) citing (i) the large fiscal deficit of \$1.83 trillion during FY2024 (FY = 9/30), (ii) projected large annual fiscal deficits for the foreseeable future, (iii) the outstanding debt of the United States of \$35.2 trillion at 12/31/2024, representing 122% of GDP (anything over 77% of GDP is considered high), and (iv) rising annual interest expense due to both (a) the large and projected higher levels of outstanding debt owed by the US Government and (b) projected higher interest rates.
- Moody's downgrade follows Fitch Credit Rating downgrade to AA+ from AAA (Highest Rating) in August 2023 and S&P's Credit Rating downgrade to AA+ from AAA (Highest Rating) in August 2011.
- US Government Fiscal Policy has created deficit spending every year since FY2001. From FY2019 – FY2021, federal spending increased by 50% during the COVID-19 pandemic.
- In May 2025, Moody's cut its rating for deposits, downgraded senior debt, and lowered the counterparty risk rating at some of the largest US banks, including Bank of America and JPMorgan Chase, to Aa2 from Aa1. Moody's cited the weakened ability of the US Government to support the banking sector as the basis for the decision.

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Treasury Yield Curve Patterns

The FOMC determines the Fed Funds Rate (the shortest short-term interest rate [overnight]). Market expectations concerning inflation, along with governmental intervention in the bond market and currency / foreign exchange market in an attempt to pursue national macroeconomic goals and objectives, determine medium and long-term interest rates.

- **Ascending** - occurs when short-term rates are lower than long-term rates. An Ascending Yield Curve is generally a leading indicator of a period of Economic Prosperity (positive GDP) as market participants expect interest rates to rise due to inflation. An ascending Yield Curve is the predominant Yield Curve and has been in effect approximately 85% of the time.
- **Flat** - occurs when short-term rates equal long-term rates, meaning market participants expect interest rates to remain the same. A Flat Yield Curve is not a normal Yield Curve pattern; it is generally an indicator that the market is in a period of transition / confusion as to the direction of future interest rates.
- **Inverted** - occurs when short-term rates exceed long-term rates. An Inverted Yield Curve is generally a leading indicator of a period of Economic Distress (Negative GDP) as market participants expect interest rates to decline due to Reduced Demand / Deflation.
- **The Federal Reserve defines an Inverted Yield Curve as occurring when the yield on the 2-Year Treasury Note is greater than the yield on the 10-Year Treasury Note. Inversion of the 2-Year Treasury Note and 10-Year Treasury Note had occurred prior to each cyclical downturn from 1960 - 2024 (100% accuracy) and was inverted prior to 14 of the 18 cyclical downturns from 1910 - 2024 (78% accuracy). Warning is usually between 6 - 18 months (average). Although an Inverted Yield Curve is the rarest of the Yield Curve Patterns, it is probably the most important and should never be ignored!!**
- Has the Yield Curve lost its highly predictable ability to predict cyclical downturns? The 2022-2024 U.S. Treasury yield curve inversion of 26 months represented the longest continuous inversion in modern economic history, challenging traditional indicators by failing to trigger an immediate recession. Since 1968, the longest inverted Yield Curve prior to a cyclical downturn was 24 months.

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KEY CONCEPTS: Treasury Yield Curve Patterns

- **The goal is for the Treasury Yield Curve to be "Slightly Ascending" meaning LT Rates are slightly / marginally higher than ST Rates, indicating an "Acceptable Level of Expected Inflation".**
 - "Acceptable Level of Expected Inflation" can be defined as (i) US Central Bank Target Inflation Rate of 2.00% and/or (ii) Average Annual Inflation Rate for the United States (1940-2025) of 3.5%.
 - The lower the Level of Expected Inflation relative to the Acceptable Level of Inflation (as defined), the less ascending the slope associated with an ascending Yield Curve.
 - The higher the Level of Expected Inflation relative to the Acceptable Level of Inflation (as defined), the steeper the slope associated with an ascending Yield Curve.
 - If the Level of Expected Inflation is the same as the Acceptable Level of Expected Inflation (as defined), the Yield Curve will be flat.
 - If the Level of Expected Inflation is lower than the Acceptable Level of Expected Inflation (as defined), the Yield Curve will be inverted.
- **ST Rates (<10 years) are influenced by BOTH (i) Central Bank intervention and (ii) market participants. LT Rates (>10 years) are influenced primarily by market participants and secondarily by Central Bank intervention. In summary, Treasury Bonds having a Maturity Date of less than 10 years are more sensitive to Federal Reserve policy / influence, while Treasury Bonds having a Maturity Date of 10 years or greater are more sensitive to Inflation Expectations / Market Participants. As such, ST Rates change more frequently than LT Rates.**

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Interest Rate Risk Management

Interest Rate Risk - the risk that a change in market interest rates will negatively impact the value of already issued interest rate sensitive investments and loans. Whenever Interest Rate Risk is present, there will be absolute winners and absolute losers between the owners of the interest rate sensitive assets and owners of the interest rate sensitive liabilities. **Zero Sum Game.**

Goal / Objective of the owners of interest rate sensitive assets is to pass Interest Rate Risk to the owners of interest rate sensitive liabilities.

Goal / Objective of the owners of interest rate liabilities is to pass Interest Rate Risk to the owners of interest rate sensitive assets.

If Market Interest Rates **increase**:

- **Owners of Fixed Interest Rate assets lose.** Since the borrower has locked in their borrowing cost at a low interest rate, the lender has assumed the Interest Rate Risk since the return from their Fixed Interest Rate asset will now be less than the return available from assets priced at current (higher) interest rates. In this scenario, Fixed Interest Rate asset can only be sold at a discount.
- **Owners of Variable Interest Rate assets win.** Lender has eliminated the Interest Rate Risk by passing it to the borrower since the Variable Interest Rate will rise in conjunction with current (higher) interest rates. Variable Interest Rate asset can then be sold at par or at a premium depending upon market conditions.
- **Owners of Fixed Interest Rate liabilities win.** Since the borrower has locked in their borrowing cost at a low rate, borrower has eliminated the Interest Rate Risk by passing it to the lender.
- **Owners of Variable Interest Rate liabilities lose.** Borrower has assumed the Interest Rate Risk since the Variable Interest Rate will rise in conjunction with current (higher) interest rates.

If Market Interest Rates **decrease**:

- **Owners of Fixed Interest Rate assets win.** Since the borrower has locked in their borrowing cost at a high rate, the lender has eliminated the Interest Rate Risk by passing it to the borrower since the return from their Fixed Interest Rate asset will be greater than the return available from assets priced at current (lower) interest rates. In this scenario, Fixed Interest Rate asset can always be sold at a premium.
- **Owners of Variable Interest Rate assets lose.** Lender has assumed the Interest Rate Risk since the return associated with the Variable Interest Rate asset will decline in concert with current (lower) interest rates. Variable Interest Rate asset can then most likely only be sold at par.
- **Owners of Fixed Interest Rate liabilities lose.** Since the borrower has locked in their borrowing cost at a high rate, borrower has assumed the Interest Rate Risk since their Fixed Interest Rate will not fall in conjunction with current (lower) interest rates.
- **Owners of Variable Interest Rate liabilities win.** Borrower has passed the Interest Rate Risk to the lender since the Variable Interest Rate will fall in concert with current (lower) interest rates.

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How a Central Bank Manages Monetary Policy Primary Tools

Primary Tools

1. **Controls** the Fed Funds Rate (Short-Term Interest Rates) via the FOMC. The Federal Reserve controls the short-term end of the yield curve (via the Fed Funds Rate). The FOMC meets eight times a year and the meeting lasts for 2 days.
2. **Influences** Prices and Interest Rates on Intermediate Term and Long-Term Governmental Notes and Bonds via its Trading Desk.
 - If the goal is to stimulate the economy / spur growth and/or increase inflation, the Central Bank will want to decrease short-term, intermediate term and long-term interest rates by:
 - Decreasing the Fed Funds Rate, lowering short-term interest rates
 - Decreasing intermediate-term interest rates and long-term interest rates by buying domestic Government Obligations (Bond Prices increase, Interest Rates decrease).
 - If the goal is to slow down the economy / slow growth and/or reduce inflation, the Central Bank will want to increase short-term, intermediate term and long-term interest rates by:
 - Increasing the Fed Funds Rate, raising short-term interest rates
 - Increasing intermediate-term interest rates and long-term interest rates by selling domestic Government obligations (Bond Prices decrease, Interest Rates increase).
3. **Influences** the value of the Domestic Currency.
 - If the goal is to stimulate the economy / spur growth (GDP) and / or increase inflation, the Central Bank will want to decrease short-term, intermediate term and long-term interest rates by buying the domestic currency, causing the currency to appreciate. When the domestic currency appreciates (strengthens) relative to a foreign currency, the cost to foreign buyers of domestic made goods increases and the cost to domestic buyers of foreign made goods decreases. This will stimulate exports that will cause a trade deficit in the domestic economy as imports will exceed exports which (by itself) should place downward pressure on domestic interest rates over the long term.
 - If the goal is to slow down the economy / slow growth (GDP) and / or reduce inflation, the Central Bank will want to increase short-term, intermediate term and long-term interest rates by selling the domestic currency, causing the currency to depreciate. When the domestic currency depreciates (weakens) relative to a foreign currency, the cost to foreign buyers of domestic made goods decreases and the cost to domestic buyers of foreign made goods increases. This will stimulate exports that will cause a trade surplus in the domestic economy as exports will exceed imports which (by itself) should place upward pressure on interest rates over the long term.

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How a Central Bank Manages Monetary Policy Secondary Tools

4. **Controls** the Discount Rate via the FOMC. Historically, the Discount Rate was set at 1.00% above the Fed Funds Rate (the "Discount Rate Spread"); however, the Discount Rate Spread has been below 1.00% since the economic downturn that began in 2008. **Discount Rate = 3.75% as of June 30, 2026, a 0.25% spread over the Fed Funds Rate.**
 - If the goal is to stimulate the economy / spur growth (GDP) and/or increase inflation, the Central Bank will decrease the spread between the Discount Rate and the Fed Funds Rate.
 - If the goal is to slow down the economy / slow growth (GDP) and/or reduce inflation, the Central Bank will increase the spread between the Discount Rate and the Fed Funds Rate.
5. **Adjusts** the Reserve Requirement. The Reserve Requirement is a Central Bank regulation that sets the minimum percentage of customer deposits and notes that each FDIC insured commercial bank must hold in reserve (other than lend out) as a percentage of specified deposit liabilities. Historically 10%, effective March 26, 2020, the Federal Reserve reduced the Reserve Requirement Ratio to 5% for all depository institutions in response to the COVID pandemic. The 0% Reserve Requirement remains in effect.
 - If the goal is to stimulate the economy / spur growth (GDP) and/or increase inflation, the Central Bank will decrease the reserve requirement, increasing the supply of loanable funds to stimulate bank lending and investing.
 - If the goal is to slow down the economy / slow growth (GDP) and/or reduce inflation, the Central Bank will increase the reserve requirement, decreasing the supply of loanable funds to slow bank lending and investing.
6. **Adjusts** the level of the Loan to Deposit Ratio. The Loan-to-Deposit Ratio is the amount of a bank's loans divided by the amount of its deposits at any given time. The higher the ratio, the more the bank is relying on borrowed funds, which are generally more costly than most types of deposits, increasing the level of operational risk. The lower the ratio, the more the bank is relying on deposits, which are generally less costly than borrowed funds, decreasing the level of operational risk. Break Even = 100%.
 - If the goal is to stimulate the economy / spur growth (GDP) and/or increase inflation, the Central Bank will recommend / require FDIC insured institutions to increase their Loan to Deposit Ratio, increasing the supply of loanable funds to stimulate bank lending and investing.
 - If the goal is to slow down the economy / spur growth (GDP) and/or reduce inflation, the Central Bank will recommend / require FDIC insured institutions to decrease their Loan to Deposit Ratio, reducing the supply of loanable funds to slow bank lending and investing.

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Summary - Implementing Monetary Policy

- Assuming the Central Bank has a high degree of independence, if the macroeconomic goal is to stimulate the economy:
- the Central Bank will lower the Fed Funds Rate to lower short-term interest rates.
 - the Central Bank will buy medium-term and long-term bonds, pushing price up and yields down.
 - the Central Bank will buy the domestic currency, causing the currency to appreciate (strengthen) which will cause a trade deficit in the domestic economy as imports will exceed exports which (by itself) should place downward pressure on domestic interest rates over the long-term.
 - the Central Bank will decrease the spread between the Discount Rate and the Fed Funds Rate
 - the Central Bank will decrease the Reserve Requirement, increasing the supply of loanable funds to stimulate bank lending and investing.
 - the Central Bank will increase the Loan-to-Deposit Ratio, increasing the supply of loanable funds to stimulate bank lending and investing.

- Assuming the Central Bank has a high degree of independence, if the macroeconomic goal is to slow down the economy:
- the Central Bank will raise the Fed Funds Rate to increase short-term interest rates.
 - the Central Bank will sell medium-term and long-term bonds, pushing price down and yields up.
 - the Central Bank will sell the domestic currency, causing the currency to depreciate (weaken) which will cause a trade surplus in the domestic economy as exports will exceed imports which (by itself) should place upward pressure on domestic interest rates over the long-term.
 - the Central Bank will increase the spread between the Discount Rate and the Fed Funds Rate
 - the Central Bank will increase the Reserve Requirement, decreasing the supply of loanable funds to slow bank lending and investing.
 - the Central Bank will decrease the Loan-to-Deposit Ratio, decreasing the supply of loanable funds to slow bank lending and investing.
