

**SOUTH CAROLINA BANKERS SCHOOL**  
**ECONOMICS / MONEY & BANKING**  
**2022 SYLLABUS**

INSTRUCTOR: Rusty Copsey

Furman University – Visiting Professor of Finance, Greenville SC

University of South Carolina, B.S. in Finance – 1986 / MBA - 1990

Phone (cell): 864-704-0976 / E-Mail (personal): [rcopsey44@gmail.com](mailto:rcopsey44@gmail.com)

**COURSE OVERVIEW:** The purpose of this course is to introduce and develop macroeconomic terms and to provide a framework for interpreting economic variables. Specifically, this course will define key financial and economic terms and overview the key financial markets from the banker's perspective as well as to provide clear and up-to-date coverage of such fundamental topics as the determinants of supply and demand, the various components of interest rates, a brief description of the Federal Reserve System, the determinants of foreign exchange rates, and the primary factors influencing U.S. monetary policy. The course will also include a discussion of the general level of current interest rates, the impact of interest rate changes on a bank's income statement, and the basis for fixed vs. variable rates in a bank's pricing of both loans and deposits. At the conclusion of this course, you should have an analytical framework for interpreting and analyzing macroeconomic data.

**CLASS OUTLINE:**

- I. Sources of Financial and Economic Information
- II. Keys to Understanding Economic Concepts
- III. What is Economics?
- IV. The Federal Reserve
- V. Goals of Central Bank Policies (aka The Dual Mandate)
- VI. Key Definitions
- VII. Determinants of Foreign Exchange Rates
- VIII. The Bond Market
- IX. Term Structure of Interest Rates (aka Determining The Price Of Money)
- X. How the Central Bank Controls Money Supply
- XI. Lagged Effects of Monetary Policy

**I. SOURCES OF FINANCIAL / ECONOMIC INFORMATION**

TV: CNBC

CNBC World

Fox Business Channel

Bloomberg TV

Internet: [www.nytimes.com/ref/business/business-navigator.html](http://www.nytimes.com/ref/business/business-navigator.html)

<http://www.nytimes.com/pages/business/economy/index.html?src=busfn>

<https://www.wsj.com/news/economy>

<http://blogs.wsj.com/economics/>

<http://library.law.yale.edu/news/75-sources-economic-data-statistics-reports-and-commentary>

[www.economagic.com/](http://www.economagic.com/)

[www.econlib.org/library/sourcesUS.html](http://www.econlib.org/library/sourcesUS.html)

[www.bea.gov](http://www.bea.gov)

[www.bls.gov](http://www.bls.gov)

<https://fred.stlouisfed.org/>

[www.federalreserve.gov](http://www.federalreserve.gov)

[www.economist.com](http://www.economist.com)

[www.ft.com/home/us](http://www.ft.com/home/us)

[www.bloomberg.com](http://www.bloomberg.com)

[www.marketwatch.com](http://www.marketwatch.com)

[www.moneycentral.msn.com/investor/home.asp](http://www.moneycentral.msn.com/investor/home.asp)

[www.cnn.com](http://www.cnn.com)

[www.money.cnn.com](http://www.money.cnn.com)

[www.finance.yahoo.com](http://www.finance.yahoo.com)

[www.mises.org](http://www.mises.org)

[www.gurufocus.com](http://www.gurufocus.com)

[www.seekingalpha.com](http://www.seekingalpha.com)

[www.fool.com](http://www.fool.com)

Newspapers: The Wall Street Journal ("WSJ"), New York Times

## II. KEYS TO UNDERSTANDING ECONOMIC CONCEPTS:

- A. Information is the Key Element for examining and understanding Economic Data. Information is Data whose facts and statistics have been collected together and given value through analysis, interpretation, or compilation in a meaningful form.
- B. 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 demand.
  - a. Supply exceeds Demand - surplus or excess inventory. Places downward pressure on price.
  - b. Demand exceeds Supply - shortage. Places upward pressure on price.
- C. Understand the Market Expectation.
  - a. Efficient Market Hypotheses contend that organized markets are always in equilibrium. These theories are based on:
    - 1. All historical information is immediately factored into the current market price.
    - 2. All publicly available information is fully reflected into the current market price.
    - 3. Expectations regarding future information have already been acted upon by market participants and therefore is fully reflected into the current market price.
    - 4. Participation by governmental entities is expected to remain constant with historical activity levels.

If a market is operating efficiently, prices will respond only when New Information is different from Market Expectations regarding that Information.

## III. WHAT IS ECONOMICS?

Macroeconomics is the study of the aggregate (national) economy. Macroeconomics in General (the “Ground Rules”):

- 1. The Bond Market is directly linked to Current Interest Rates and expectations regarding Future Interest Rates.
- 2. 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).
- 3. The Stock Market is directly linked to (i) historical corporate profits, (ii) estimated growth of corporate profits, and (iii) risk(s) and timing associated with achieving the estimated future growth rates and indirectly to (a) general economic conditions and (b) interest rates.
- 4. In a Capitalistic economic society:
  - a. a portion of Capital (“Private Capital”) will always flow to where the Cost is the lowest and the Market Participant’s Risk Adjusted, Inflation Adjusted, and After-Tax Rate of Return is the highest.
  - b. a portion of Capital (“Public Capital”) will always flow to where the Government Rate of Return is the highest.
- 5. In a pure Socialist economic society, all Capital is Public Capital so it will always flow to where the Government Rate of Return is the highest.
- 6. Financial Theory is based on the Maximization of the Risk-Adjusted, Inflation Adjusted, and After-Tax Rate of Return over the long-term being the only goal of all market participants operating in a Capitalistic economic society. However, other goals have increased in importance over the past several years such as:
  - a. Stakeholder Engagement (Employees, Suppliers, Creditors, Community, etc.)
  - b. Social Concerns (Gun Control, Racial/Gender Inequality, Hostile Work Environment, etc.)

See Exhibit #1 for Article from the Corporate Finance Institute identifying Various Stakeholders and defining the various interest (or stake) each Stakeholder has in a Business Organization and the outcomes of its actions.

See Exhibit #2 for WSJ Article discussing a recent / current example of Business Organizations heightened involvement on social issues and increased engagement in political issues.

#### IV. THE FEDERAL RESERVE:

Central Bank - a banking institution granted the exclusive privilege to lend a government its currency.

Federal Reserve Bank - 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 Bank 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. Each member of the Board of Governors is appointed to a non-renewable 14-year term with one term expiring every even numbered year. The long-term nature of the appointment is to reduce short-term political pressure. The long-term nature of the appointment is to reduce short-term political pressure as by law, the appointments must yield a "fair representation of the financial, agricultural, industrial, and commercial interests and geographical divisions of the country". All members of the Board of Governors are appointed by the President and approved by the Senate. Primary roles: (i) regulating commercial banks and (ii) managing monetary policy.

The Federal Open Market Committee (FOMC) it is the principal organ of United States national Monetary Policy. The FOMC is composed of the seven members of the Federal Reserve Board and five of the twelve Federal Reserve Bank presidents (the New York Federal Reserve Bank President has a permanent seat), which oversees open market operations, the principal tool of US monetary policy. The Chairman of the Board of Governors serves as Chairman of the FOMC.

See Exhibit #3 for WSJ Opinion Article dated January 2022 titled "A Politicized Fed Endangers the Economy". This provides an op-ed on the recent actions (some dating back to 2010) of the Fed outside of managing Monetary Policy and into social and political issues.

See Exhibit #4 for press releases from the Federal Reserve and WSJ Article associated with the scheduled May 3-4, 2022 meeting of the FOMC announcing (i) a 50 basis point (0.50%) increase in the Fed Funds Target Interest Rate to a target range for the Fed Funds Rate of between 0.75% - 1.00% and (ii) the FOMC's plan to reduce the size of the Federal Reserve's Balance Sheet (mainly holdings of US Treasury Securities and US Government Agency Debt and US Government Agency Mortgage -Backed Securities). The Press Release from the May 3-4, 2022 FOMC meeting can be found at:  
<https://www.federalreserve.gov/newsevents/pressreleases/monetary20220504a.htm>

The next scheduled meeting of the FOMC after the May 3-4, 2022 meeting was June 14-15, 2022.

The next scheduled meeting of the FOMC after this class is July 26-27, 2022.

Reserve Requirement - a Central Bank regulation that sets the minimum percentage of customer deposits and notes that each FDIC member institution must hold in reserve (rather than lend out) as a percentage of specified deposit liabilities. These required reserves are either (i) cash stored physically at the bank or (ii) on deposit at the closest regional Federal Reserve Bank. Interest Rate paid on Reserve Requirements = 0%. The Reserve Requirement has historically been 10%. Effective March 16, 2020, the Federal Reserve reduced the Reserve Requirement Ratio to 0% for all depository institutions in response to the COVID pandemic. The 0% Reserve Requirement remains in effect.

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.

Effective May 5, 2022, the Fed Funds Target Interest Rate is currently targeted to trade between 0.75% - 1.00%. Current Effective Fed Funds Rate = 0.83% as of 5/6/2022. The 1955 - 2021 Historical Average Fed Funds Rate = 4.67% with a high rate of 16.38% in 1981 and a low rate of 0.08% in 2021.

See Exhibit #5 for history of the Fed Funds Target Interest Rate going back to 2003. Details can be found at <https://www.federalreserve.gov/monetarypolicy/openmarket.htm>.

#### **KEY CONCEPT:**

**The Fed Funds Rate influences interest rates associated with both bank assets and liabilities. For Bank Liabilities, changes in the Fed Funds Rate influences rates on all deposits since (by definition) they are short-term in duration. For Bank Assets, changes in the Fed Funds Rate influences rates on all 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 / LIBOR is less correlated since SOFR / LIBOR is an international benchmark rate; however, SOFR / LIBOR tends to also track closely with the US Fed Funds Rate since the United States has the largest economy in the world. In summary, the Fed Funds Rate is the “Base Rate” for pricing associated with all deposits and all variable rate loans having Prime or SOFR / LIBOR as the benchmark rate.**

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. The Discount Rate Spread was lowered to 0.50% over the Fed Funds Rate at the December 2008 meeting of the FOMC and after several increases, lowered to 0.25% over the Fed Funds Rate at the unscheduled March 15, 2020 meeting of the FOMC. Discount Rate = 1.00% as of 5/11/2022 representing a 0.25% Discount Rate Spread.

See Exhibit #6 for Borrowing Benchmarks and Money Rates as of 5/10/2022 published in the WSJ. This information can be found at the following link:

[https://www.wsj.com/market-data/bonds/keyinterestrates?mod=md\\_bond\\_view\\_key\\_int\\_rates\\_full](https://www.wsj.com/market-data/bonds/keyinterestrates?mod=md_bond_view_key_int_rates_full)

#### **KEY CONCEPT:**

- Economic Units operating in a Capitalistic economic society will always change spending behaviors in response to higher interest rates and higher taxes.**
- Economic Units operating in a Capitalistic economic society will not always change spending behaviors in response to lower interest rates and lower taxes.**

#### **V. GOALS OF CENTRAL BANK POLICIES (aka THE DUAL MANDATE):**

1. Price Stability (Low Inflation)
2. Full Employment (Maximum Unemployment)

#### **VI. KEY DEFINITIONS**

Capitalism - An economic system in which (i) private ownership of property exists, (ii) economic units are relatively free to compete with others for their own economic gain, and (iii) the profit motive is basic to economic life.

Government Economic Policy in a Capitalistic Economic System takes one of two forms:

1. Monetary Policy - regulation of economic policy by controlling money supply. This is done (i) by changing short-term interest rates (the fed funds rate), (ii) by influencing supply and demand of obligations (bills, notes, bonds) of the Federal Government, and (iii) by influencing supply and demand of the domestic currency.
2. Fiscal Policy - regulation of the economy via Federal taxation and governmental spending policies.

Monetary Policy (management of the money supply) in the United States is implemented by the Central Bank.

Fiscal Policy (management of spending and taxation) in the United States is implemented jointly by the Legislative Branch of Government and the Executive Branch of Government.

Unemployment Rate - measure of the number of willing and able persons not employed as a percentage of the civilian labor force. The “Natural” Unemployment Rate is always > 0%.

Unemployment Rate information can be found at <https://www.bls.gov/cps/#news>

The monthly Release Date for the Unemployment Rate is on or 1 - 2 days before the first Friday of the month.

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>
Unemployment Rate	7.4%	6.2%	5.3%	4.9%	4.4%	3.9%	3.7%	8.1%	5.3%

Unemployment Rate – April 2022 = 3.6%

See Exhibit #7 for WSJ Article discussing April US Unemployment Report (released on 5/6/2021).

**Average Annual Unemployment Rate for the United States (1927-2021) = 7.0%.**

**Average Annual Unemployment Rate for the United States (1990-2021) = 6.0%.**

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.

Inflation - an increase in the general price level. Inflation occurs when the growth in money supply [best measured by M2] exceeds growth in goods and services provided [or change in GDP].

Demand-Pull Inflation – when inflation is caused by an increase in demand (“Good Inflation”). Demand Pull Inflation is primarily caused by an expanding economy, stimulative Monetary Policy (lowering interest rates, manipulating domestic currency), and stimulative Fiscal Policy (increased government spending, lower tax policies). Inflation starts with the end consumer and pulls backward thru the production process. Demand-Pull Inflation responds well to monetary policy and fiscal policy measures.

Cost-Push Inflation – when inflation is caused by an increase in cost (“Bad Inflation”). Cost-Push Inflation is primarily caused by 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. Inflation starts at the beginning of the production process and pushes forward to the end consumer. Cost-Push Inflation is more difficult to manage via monetary policy and fiscal policy measures.

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; however, the price of oil is determined by oil producers / oil exporting countries and not by Central Bankers. So for a net oil importer like the United States, 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).

Deflation - a decrease in the general price level. Deflation is caused by either:

1. technological advances (considered good since increase in quantity sold > decrease in price)
2. increased productivity (considered good since increase in quantity sold > decrease in price) or
3. a reduction in demand (considered bad due to a decrease in both quantity sold and price).

Consumer Price Index (“CPI”) - measure of the average change in prices over time ("Inflation").

CPI (Inflation / Deflation) information can be found at <https://www.bls.gov/cpi/>

The monthly Release Date for CPI varies but is usually during the 3<sup>rd</sup> week of the month, between the 13<sup>th</sup> and 19<sup>th</sup> of the month.

Primary Components of CPI:

<u>Category</u>	<u>2021</u>
Shelter	32.9%
Transportation	18.2%
Food & Beverage	13.4%
Medical	8.5%
Energy	7.3%
Education & Communication Service	6.4%
Recreation	5.1%
Household Furnishings & Supplies	4.8%
Apparel	1.8%
Other	1.6%

“Core” CPI - statistical measure of the average change in prices of a specified set of consumer goods and services over time ("Inflation") but excluding goods and services with high price volatility, primarily food / beverage (13.4% of 2021 CPI) and energy (7.3% of 2021 CPI) prices. So Core CPI comprised 79.3% of Total CPI during 2021.

	<u>2013</u>	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>
Average U.S. Inflation Rate	1.5%	1.6%	0.1%	1.3%	2.1%	2.4%	1.8%	1.2%	4.7%

Inflation Rate – April 2022 = 8.3%, highest since 1981 (10.3% annual average)

Core Inflation Rate – April 2022 = 6.2%, highest since 1981 (10.4% annual average)

**Since 2012, US Central Bank Target Inflation Rate = 2.00%**

**Average Annual Inflation Rate for the United States (1914-2021) = 3.2%.**

**Average Annual Inflation Rate for the United States (1990-2021) = 2.4%.**

Periods of Deflation in United States: 1921 - 1922, 1926 - 1928, 1929 - 1932, 1938, 1949, 1954, and 2009.

See Exhibit #8 for WSJ Article discussing the US Inflation Rate (CPI) in April (released on 5/11/2022).

See Exhibit #9 for WSJ Article titled “Inflation is Headed Lower – but Maybe Not Low Enough”.

Average United States Hourly Pay Wage Growth Rate in 2021 = 4.5%, the highest increase since 1983.

Real Wage Growth Rate = -0.2% calculated as Actual Wage Growth Rate (4.5%) minus Inflation Rate (4.7%).

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. The variance between the national average and regional / local Inflation Rates may be significant or subtle with the variance usually associated with the +/- 37% impact from housing / housing improvements.

Gross Domestic Product (GDP) - measure of the total market value of all goods and services produced in an economy within a given time period ("Output"). Factors influencing GDP:

1. +/-Consumer Expenditures: expenditures by households, individuals, and nonprofit economic units for durable goods, nondurable goods, and services
2. +/-Business Expenditures: expenditures by businesses on fixed investments and changes in business inventories
3. +/-Government Expenditures: expenditures by federal, state and local governmental units
4. +/-Net Exports: Exports minus Imports. Trade Deficit / Surplus - the excess / shortfall of imports over exports. A negative number indicates that imports exceeded exports.

GDP information can be found at <https://www.bea.gov/data/gdp/gross-domestic-product>

The monthly Release Date for GDP is on or 1 - 2 days before the last Friday of the month.

Components of GDP	<u>1975</u>	<u>2000</u>	<u>2010</u>	<u>2020</u>	<u>2021</u>
Consumer Expenditures	62.5%	68.2%	70.5%	67.6%	68.5%
Business Expenditures	14.5%	17.9%	12.4%	17.2%	17.9%
Governmental Expenditures	22.9%	17.6%	20.7%	18.3%	17.6%
Net Exports	<u>0.1%</u>	<u>- 3.7%</u>	<u>- 3.6%</u>	<u>- 3.1%</u>	<u>- 4.0%</u>
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%

Economic Growth - measured by the change in GDP of a particular economy.

Real GDP Growth Rate = Nominal (Actual) GDP Growth Rate minus the Inflation Rate. Real GDP can better track a country's economic progress over time by truthfully revealing how many more goods are being produced and how valuable they are. The real GDP calculates in how much inflation has occurred, and subtracts that out, so the real value of goods and services being produced is tracked.

**Optimal Average Annual Growth Rate for Real GDP = between 3.00% - 4.00%.**

**Average Annual United States Real GDP Growth (1948 – 2021) = 3.1%.**

**Average Annual United States Real GDP Growth (1990 – 2021) = 2.4%.**

	<u>2014</u>	<u>2015</u>	<u>2016</u>	<u>2017</u>	<u>2018</u>	<u>2019</u>	<u>2020</u>	<u>2021</u>
Real U.S. GDP Growth Rate:	2.3%	2.7%	1.7%	2.3%	2.9%	2.3%	-3.4%	5.7%

GDP Growth Rate = Q4 2021= (3<sup>rd</sup> / Final Estimate) = 6.9%

GDP Growth Rate – Q1 2022 (2<sup>nd</sup> Estimate) = -1.5%

See Exhibit #10 for WSJ Article discussing the 1<sup>st</sup> Estimate for GDP for the 1<sup>st</sup> Quarter of 2022 (released on 4/28/2022) showing that the negative GDP Growth Rate was caused primarily by a widening trade deficit (Imports > Exports) and a reduction in Business Inventories. Consumer Spending increased by 3.7% and Business Spending (excluding inventory spending) increased by 9.2%. The 3<sup>rd</sup> / Final Estimate for GDP for the 1<sup>st</sup> Quarter of 2022 was released on 6/29/2022.

See Exhibit #11 for WSJ Article titled “The GDP Mirage”.

## KEY CONCEPT:

Compare change in Money Supply (“M2”) (1990 – 2021 Annual Average = 6.22%) to change in GDP (1990 – 2021 Annual Average = 2.40%). Per economic theory, Inflation should occur when an economy’s money supply (M2) grows at a rate that exceeds GDP growth; however, growth in M2 has exceeded growth in GDP on an annual basis since 1994.

2020 - M2 Growth = 19.15% / Real GDP Growth = -3.40%

2021 - M2 Growth = 16.25% / Real GDP Growth = 5.67%

Stagflation – combination of low economic growth and high unemployment with high inflation.

Oil prices shocks have a stagflationary effect on the macroeconomy of an oil importing country by simultaneously slowing down the rate of growth (GDP) and increasing the general price level (inflation). An oil price hike also acts like a tax on consumption and, for a net oil importer like the United States, the benefits of the “tax” go to major oil producers (in the form of increased profits) rather than directly to the U.S. Government. US Government receives indirect impact via higher income taxes paid on the higher profits.

Recession - two consecutive calendar quarters of negative GDP growth. Recessions are a normal (albeit unpleasant) part of the business / economic cycle. Average Duration of Recessions occurring since 1900 = 12 – 18 months.

Depression - a severe economic downturn that lasts greater than 12 - 18 months.

## VII. DETERMINANTS OF FOREIGN EXCHANGE RATES

International Private and Public Capital will always flow to where the Risk Adjusted, Inflation Adjusted, Political Risk Adjusted and After-Tax Rate of Return is the highest. If other countries offer debt that provide lower risk and/or a higher real rate of return than investing in domestic governmental bonds, domestic investors will be drawn to the international bonds and the domestic funds will be diverted out of the domestic economy.

For domestic investors to invest outside the domestic economy, the domestic currency must be sold and the foreign currency must be bought, causing the domestic currency to depreciate (weaken / buy less of a foreign currency) and the foreign currency to appreciate (strengthen / buy more of a foreign currency).

For foreign investors to invest in another country, the foreign currency must be sold and the currency associated with the country where they are investing must be bought, causing the foreign currency to depreciate (weaken) and the currency associated with the country where they are investing to appreciate (strengthen).

“Weak” / Depreciated Currency stimulates exports and slows down demand for imports, stimulating the domestic economy in the short-term and placing upward pressure on domestic interest rates over the long-term.

“Strong” / Appreciated Currency stimulates imports and slows down demand for exports, slowing down the domestic economy in the short-term and placing downward pressure on domestic interest rates over the long-term.

See Exhibit #12 for Foreign Exchange Rates as of 5/11/2022 published in the WSJ. This chart shows the US Dollar has strengthened / appreciated against all major international currencies except five (Russia, Brazil, Uruguay, Mexico, and Saudi Arabia). This information can be found at the following link: <https://www.wsj.com/market-data/currencies/exchangerates>

See Exhibit #13 for WSJ article titled “Dollar Strength Bucks Inflation Woes”

## VIII. THE BOND MARKET

Understanding of the Bond Market is critical to bankers as (i) banks are limited by Federal law to investments in bonds and (ii) government bonds must be used as collateral in all borrowings from the Federal Reserve.

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.

Financial Return from a Bond is derived from interest (coupon) income +/- price appreciation / depreciation.

### Key Bond Definitions:

Par Value - stated or face value of a bond, typically \$100 or \$1,000 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 always stays fixed for the life of the bond.

Yield to Maturity (YTM) - term used to determine the rate of return an investor will receive if an interest-bearing investment is purchased after the Issue Date and is held to its Maturity Date.

Maturity Date – a predetermined date on which the par value of a bond must be repaid.

**KEY CONCEPT: Bonds are issued at Par (Face) Value. The value of the bond is determined by the stated interest rate (coupon 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.

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.

## IX. 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.

+ The Financial Risks in investing in domestic bonds:

Inflation Premium (IP) – to compensate for the reduction in return / purchasing power caused by inflation. Calculated as the average expected inflation rate for the investment time period (expected inflation is rarely the same as the current inflation rate).

See Exhibit #14 for WSJ Article titled “It’s the Worst Bond Market Since 1842. That’s the Good News” that discusses the impact of current inflation and high inflation expectations on the bond market.

Time / Maturity Risk Premium (MRP) - to compensate for (i) additional market risk / uncertainty embodied in long-term securities, (ii) opportunity cost since the investor will be unable to change investment options, and (iii) psychological cost to compensate for the human trait of favoring present consumption over future consumption. By definition, the MRP is always positive (present) but increases during periods of uncertainly / distress and decreases during periods of economic recovery / prosperity. The longer the time to maturity, the more things that can go wrong.

Credit / Default Risk Premium (DRP) – to compensate for the risk that either interest and/or principal will not be paid by the issuer of a bond, creating a payment default. Also known as the stand-alone risk, the Credit / Default Risk Premium is specific to the issuer of the bond and cannot be eliminated. Bond Ratings attempt to quantify the Credit / Default Risk associated with a Bond. Bonds are rated from AAA down to CCC with D signifying a Bankruptcy. Investment Grade Bonds have a bond rating of between AAA – BBB. Junk / Speculative Bonds have a rating of BB - CC.

See Exhibit #15 for S&P’s Bond Ratings Definitions.

Spread – quantification of the Credit / Default Risk Premium, spread is the difference in Bond Yields between bonds having different Bond Ratings / risk parameters. Major categories are: U.S. Government Bonds, Investment Grade Corporate Bonds, Speculative / Junk Corporate Bonds. Spread quantifies the Credit / Default Risk Premium with the magnitude of the spread / risk premium increasing in periods of recession and other times of economic uncertainly / distress and contracting during periods of economic recovery / prosperity.

See Exhibit #16 for Interest Rate Yields and Spreads over Treasury Yields for Various Bond Benchmarks as of 5/11/2022 published in the WSJ.

Liquidity Premium (LP) - to compensate for (i) the cost and / or (ii) loss incurred in converting investments back into cash. By definition, the LP increases the longer the time to maturity.

### Term Structure of Interest Rates

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.

The Treasury Yield Curve (published daily) is a graphic representation of the Term Structure of Interest Rates and is calculated as:

$$\text{Risk Free Rate of Return (r*)} + \text{Inflation Premium (IP)} + \text{Time / Maturity Risk Premium (MRP)}$$

since (i) the Default Risk Premium (DRP) and Liquidity Premium (LP) are 0.00% for obligations of the U.S. Government.

Since the MRP is always positive, the Yield Curve is used to measure market expectations concerning future inflation. Expected Inflation is also quantified as the difference between the yield associated with an “Inflation-Indexed” Bond and the yield from a “Normal Bond” for the same time period (MRP is the same).

Yield Curve can be found at <https://www.wsj.com/market-data/bonds> or [https://www.gurufocus.com/yield\\_curve.php](https://www.gurufocus.com/yield_curve.php). WSJ Yield Curve includes the Current Year Yield Curve (2022) and Last Year's Yield Curve (2021). Gurufocus.com Yield Curve includes the Current Year Yield Curve, Last Year's Yield Curve, and Yield Curve from Two Years Ago.

See Exhibit #17 for a graphic representation of the US Treasury Yield Curve as of 5/11/2022, 5/28/2021, 5/28/2020, 7/5/2019, 7/6/2018, 5/5/2017, and 6/8/2016. Note the Y Coordinate (aka the Fed Funds Rate) and Slope of the Curve on each of the graphs.

### Yield Curve Patterns:

The Federal Reserve [via Monetary Policy] 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. In summary, Treasury Bonds having a Maturity Date of less than 10 years are more sensitive to Federal Reserve policy, while Treasury Bonds having a Maturity Date of 10 years or greater are more sensitive to Inflation Expectations.

Ascending - occurs when short-term rates are lower than long-term rates. An ascending Yield Curve indicates that market participants expect interest rates to rise. The Yield Curve is normally steeper / sharply ascending when the general level of interest rates is low with the differential between short-term and long-term rates diminishing as the general level of interest rates rises. An ascending Yield Curve is the predominant Yield Curve and has been in effect approximately 85% of the time.

Flat - occurs when short-term rate equal long-term rates. A flat Yield Curve indicates that market participants expect interest rates to remain the same. The Yield Curve is typically flatter when the general level of interest rates is high.

Inverted – occurs when short-term rates exceed long-term rates. An inverted Yield Curve indicates that market participants expect interest rates to decline. The Federal Reserve defines an Inverted Yield Curve using the yield differential between the 2-Month Treasury Bill and the 10-Year Treasury Note since inversion of the yield between the 2-Month Treasury Bill and the 10-Year Treasury Note has occurred prior to each recession since 1960. Warning is 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!!!

At the trough of a business cycle, short-term rates move permanently below long-term rates and the yield curve becomes strongly ascending. With a strongly ascending yield curve, companies and individuals are encouraged to borrow, output rises, and growth intensifies, all of which should intensify inflation expectations. The Time / Maturity Risk Premium (MRP) is always positive so risk adverse investors sell short-term securities and reinvest in long-term securities to maximize the Real Rate of Return. For short-term securities, price decreases and yield increases. For long-term securities, price increases and yield decreases. If a slightly ascending yield curve does not occur, continued direct intervention by the Central Bank to “force” short-term rates higher and / or long-term rates lower will be required. With a strongly ascending yield curve, output rises, growth intensifies, and short-term rates rise more strongly than long-term rates.

Near the peak of a business cycle, the yield curve flattens out at a high interest rate level. Since the Time / Maturity Risk Premium (MRP) is always positive, the Inflation Premium (IP) must be negative to create the flat yield curve. With a flat yield curve, companies and individuals are not encouraged to borrow, output slows, and growth slows / stalls, all of which should create deflation expectations. As such, risk adverse investors sell long-term securities and reinvest in short-term securities, causing short-term rates to decrease and long-term rates to increase in order to create the “normal” slightly ascending rate curve. If a slightly ascending yield curve does not occur, continued direct intervention by the Central Bank to “force” short-term rates higher and / or long-term rates lower will be required.

If intervention by the Central Bank does not create the slightly ascending yield curve, short-term rates move permanently above long-term rates and the yield curve remains inverted. An inverted yield curve occurs at the peak of the business cycle. Since the Time / Maturity Risk Premium (MRP) is always positive, the Inflation Premium (IP) is now “very” negative to create the inverted yield curve. With a flat yield curve, companies and individuals are not encouraged to borrow, output slows, and growth slows / stalls, all of which should create deflation expectations. As such, risk adverse investors sell long-term securities and reinvest in short-term securities, causing short-term rates to decrease and long-term rates to increase in order to create the “normal” slightly ascending rate curve. If a slightly ascending yield curve does not occur, continued direct intervention by the Central Bank to “force” short-term rates higher and / or long-term rates lower will be required.

Near the trough of a slow growth period / recession, short-term interest rates decline faster than long-term rates. The reduction in short-term rates is created by (i) market participants and (ii) direct intervention by the Central Bank. The change in long-term rates is created entirely by market participants based primarily on inflation expectations; the Time / Maturity Risk Premium (MRP) is always positive so investors begin selling short-term securities and reinvesting in long-term securities. For short-term securities, price decreases and yield increases. For long-term securities, price increases and yield decreases.

## **X. HOW THE CENTRAL BANK CONTROLS MONEY SUPPLY**

### **Primary Tools**

1. **Controls** 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. Announcements from the meeting are made at 2:30 on Day 2 of the meeting.
2. **Influences** Intermediate Term and Long-Term Interest Rates on Governmental Notes and Bonds via its Trading Desk. Prices and Interest Rates associated with intermediate term and long-term bonds are determined by market participants.

Private Capital Investors will be looking to maximize their Rate of Return over a long-term time period.

Private Capital Speculators will be looking to maximize their Rate of Return over a short-term time period.

Public Capital Participants are from the Domestic Country and Other Foreign Governments. Public Capital will always flow in an attempt to satisfy national goals (domestic and foreign) and economic objectives. 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:

1. Decreasing the Fed Funds Rate, lowering short-term interest rates
2. Decreasing intermediate-term interest rates and long-term interest rates by buying domestic Government Obligations (Bond Price increases, Interest Rate decreases).

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:

1. Increasing the Fed Funds Rate, raising short-term interest rates
2. Increasing intermediate-term interest rates and long-term interest rates by selling domestic Government obligations (Bond Price decreases, Interest Rate increases).

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:

1. the cost to foreign buyers of domestic made goods increases and
2. the cost to domestic buyers of foreign made goods decreases.

This will stimulate imports 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:

1. the cost to foreign buyers of domestic made goods decreases and
2. 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.

### 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. Current Discount Rate = 1.00% as of 5/12/2022, 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 (rather 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 0% 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. **Intensifies** management 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. Break Even = 1.00x.

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.

## **SUMMARY:**

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 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.

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 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.

## **XI. LAGGED EFFECTS OF MONETARY POLICY**

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.