Deutsche Bank
Wealth Management

NextGen
Summer Seminar – Fixed Income

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1 Bond Market Fundamentals

- What is a Bond?
- Sources of Risk and Return
- Types of Fixed Income Instruments

Bond Basics

What is a Bond?

- Bonds are debt securities issued by companies, governments, and other institutions
- When a company or government issues bonds to investors, one of the most common structures is borrowing money in exchange for a fixed interest payment at set intervals (usually twice a year) until maturity. At maturity, the issuer pays back the original amount borrowed
- Borrowers have to offer an interest rate (coupon) that is attractive enough to incentivize investors to lend them money and assume the risk that the company or government fails to repay the debt

Why Issue a Bond?

- Once companies reach the point where their operations do not generate enough cash to support continued growth, two of the options available to them are to sell stock or take on debt
- Most large companies choose to raise debt by issuing bonds in the public market rather than borrowing directly from a bank
- Governments need money for infrastructure projects and government-sponsored programs, among other things

Why Invest in Bonds?

- In the case of the borrower's bankruptcy, a bondholder will be paid before someone who owns stock
- Bond prices may be less volatile than stock prices, making them an appropriate choice for many investors with short-term liquidity needs or those approaching retirement
- Bonds have low historical correlation to equities, which can result in diversification benefits when held together
- While many stocks pay regular cash dividends, corporations can stop paying dividends under some circumstances
- Bond coupons provide fixed income throughout the bond's life unless, for example, the company defaults or the bond is called prior to maturity

Bond Risks

2 Major Risks of Bond Investing

Interest Rate Risk

- A factor that strongly impacts bond prices is the level of interest rates in the market
- If interest rates rise, bond prices would be expected to fall (inverse relationship)
- As interest rates rise, new bonds may be issued with higher coupons, making existing bonds relatively less attractive
- Interest rates can rise in response to an increase in economic growth, tighter monetary policy, an increase in expected inflation, or a change in loan market fundamentals (an increase in the demand for loans or a decrease in the supply of loans), among other things

Credit Risk

- The risk that a borrower fails to make principal or interest payments in a timely manner
- Generally, an increase in credit risk results in an increase in the yield that bond investors will require to lend the borrower money
- The risk is that a bond already held by an investor will decrease in credit quality, resulting in an increased yield and therefore a decreased price
- The worst case scenario is that a borrower defaults on its obligation and investors receive a fraction or none of their original investment

Sub-Types of Interest Rate Risk

Call Risk

- Some bonds are callable, meaning the issuer has the option to redeem the bonds on certain dates prior to maturity
- The risk to investors is that a bond will be called when interest rates are falling (firm can re-issue at a lower coupon rate), meaning they will likely have to re-invest their money in a lower rate environment

Extension Risk

- The risk to investors is that, as interest rates rise, their expected redemption date will extend
- If a callable bond's price is above 100, it will most likely trade in the market as if the call date is its final maturity
- If interest rates rise enough that the bond's price falls below 100, the investor could have to wait until maturity to re-invest her money or risk selling at a price loss

Key Fixed Income Terminology

Face/Par Amount

- The amount of money the investor will get back once a bond matures
- Most bonds are issued at par (a price of 100) and the issuer repays the par amount at maturity
- One exception: zero coupon bonds are issued at a price below 100 and the borrower repays the bondholder 100 at maturity; the increase from the issuance price to 100 is considered interest

Coupon Rate

- Bonds generally make semi-annual cash interest payments based on the fixed coupon rate
- The coupon rate represents the annual cash flow from a bond as a percentage of the par amount
- e.g. If an investor owns 100,000 in par value of a bond with a 5% coupon rate, the investor is entitled to two payments of $2,500 every year

Market Price

- The market price of a bond is dependent on its coupon, maturity, issuer, and yield, among other factors
- If a bond has a market price below 100, it is said to be trading at a discount; if a bond has a market price above 100, it is said to be trading at a premium

Total Return

- Income Return + Price Return
- The current yield at the beginning of the year represents the income return
- The total bond return for the year will be the income return +/- the change in price

Duration

- Measures the sensitivity of a bond's price to a change in interest rates
- If interest rates rise, a bond with a longer duration will generally decrease more in price
- All else equal, a bond with a higher coupon will have a lower duration as a greater proportion of the total cash flows come prior to maturity
- For a zero coupon bond, duration is equal to time to maturity

Yield Curve

- A graph that plots the yields for bonds with the same credit quality but different maturities
- The most commonly cited yield curve is the U.S. Treasury curve
- A normal yield curve is one in which longer maturity bonds have a higher yield than shorter-maturity bonds
- An inverted yield curve can be a sign of upcoming recession

Credit Rating

- An assessment of a borrower's ability to repay debt principal and interest
- A higher rating indicates that a borrower is less likely to default on its debt
- Rating agencies are paid by the entity that they are rating, presenting a potential conflict of interest

Fixed Income Yield

Definitions	
Current Yield	• Annual Cash Flow ÷ Market Price • The return an investor would receive for one year if the price was unchanged (not a realistic assumption)
Yield to Maturity	• The expected annual return on a bond if purchased today and held to maturity • Does not account for the fact that callable bonds are likely to be called by the issuer if the price is above 100, which will decrease the total return to the investor
Yield to Worst	• The lowest potential total return on a bond held until maturity/call without the issuer defaulting
Taxable Equivalent Yield	• The pre-tax yield required on a taxable bond to match a municipal bond's after-tax yield because municipal bond interest is exempt from federal taxes • Municipal bond interest from municipals issued in an investor's state of residence is exempt from federal, state, and local taxes*

Coupon
For 100,000 in par value, the investor will receive $5,000 in annual income.

Yield to Maturity
The investor can expect to return 2.19% annually if she holds the bond to maturity.

Yield to Worst
Because the issuer may call the bond in June 2018 and it currently has a price above 100, the yield to worst is calculated by assuming that the bond will be called in June 2018.

New York City Water & Sewer Revenue Bonds	
CUSIP: 64972FWC6, Maturity: 6/15/2020, Call: 6/15/2018	
Price	115.03
Yield to Maturity	2.19%
Yield to Worst	0.89%
Coupon	5.00%
Current Yield	4.35%
Taxable Equivalent Yield to Maturity	4.28%

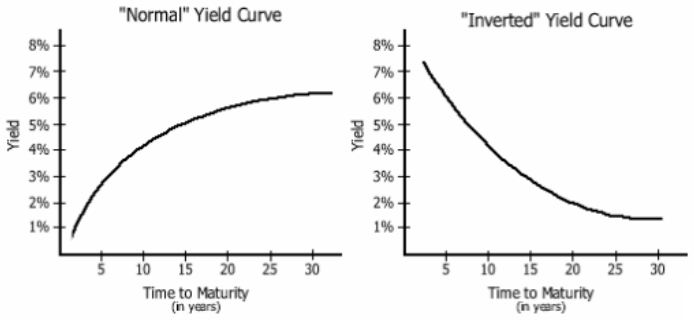
Current Yield
5.000 (Coupon) ÷ 115.003 (Price)

Taxable Equivalent Yield
For a New York state resident, a taxable bond would need a yield to maturity of 4.28% to match the 2.19% yield to maturity on this municipal bond on an after-tax basis. This calculation includes the 3.8% health care tax, the highest New York State marginal tax rate, and the highest Federal marginal tax rate but no local tax.

The Yield Curve

Basics

- The yield curve is a visual representation on the term premium associated with investing in bonds (i.e. the additional return that an investor will command by investing in a longer dated security, all else equal.
- A normal yield curve is upward sloping, however the curve can sometimes be flat or inverted.

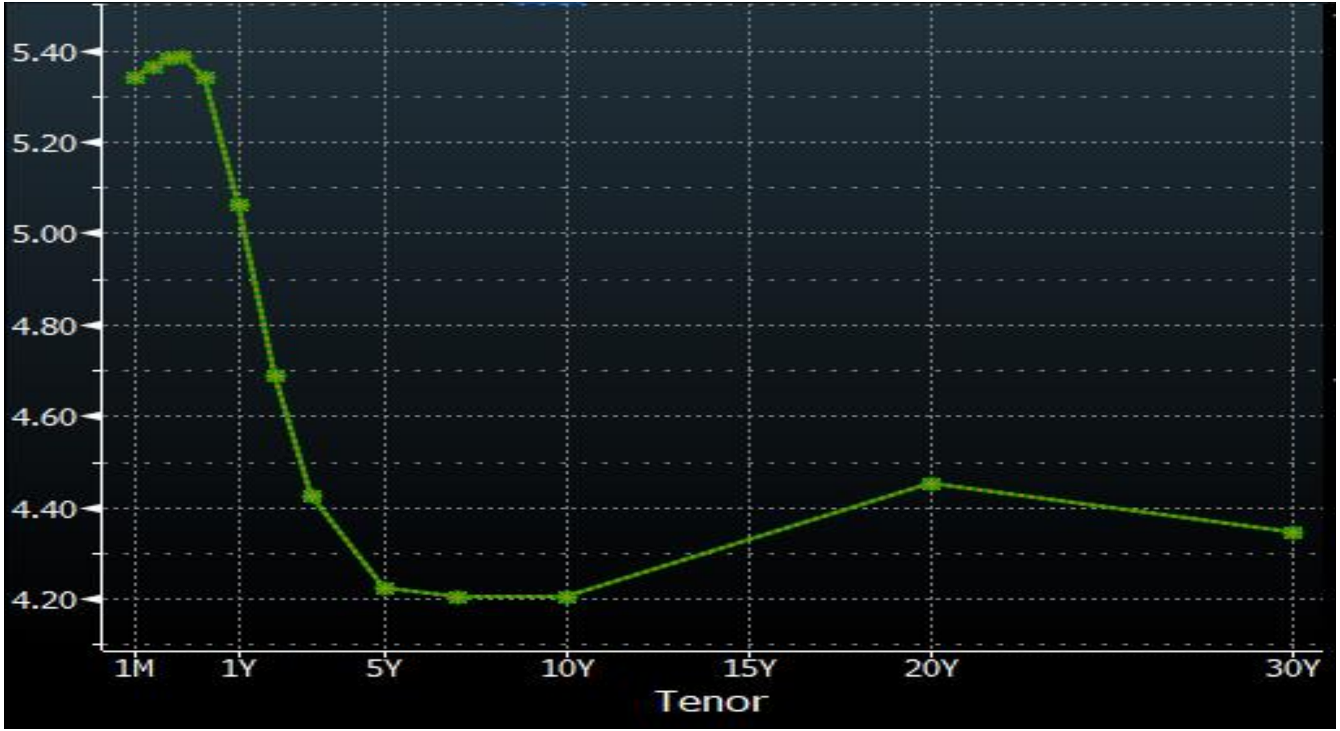


Why it Matters:

The yield curve is a helpful tool because it encapsulates the market's general expectations for future levels of inflation and economic growth.

- By buying a bond, an investor is effectively delaying their consumption (spending) of goods/services.
- Hence, the investor will require a return that will compensate them for this, while also accounting for expected inflation.

Today's Yield Curve



Types of Bond Issuers

Government/Sovereigns

- Issued by national governments and some government agencies.
- Government bonds are generally backed by the full faith and credit of the issuing country.
- The credit risk on U.S. Treasuries is considered to be de minimis, and therefore Treasuries tend to be used as a benchmark for market rates.
    - Hence the term “risk-free rate”

Corporates

- For-profit entities issue bonds to raise working capital and to fund expansions and acquisitions,
- Generally corporate bonds can be classified as either Investment-Grade (>BBB-), or High Yield (<BB+).

Municipals

- Bonds issued by state or municipal-level governments and agencies.
- Generally, interest received is not subject to federal income tax.
- 2 primary types, General Obligation (GO) and Revenue bonds.
- General Obligation bonds are backed by the full faith and credit of the issuing entity.
- Revenue bonds are backed by revenue from a specific program or asset (i.e. toll road)

Municipal Bonds

General Obligation (GO) Bonds

- Bonds backed by the full faith and credit of the issuer, which includes the municipality's taxing authority
- Key factors to consider when evaluating credit quality include the municipality's population, demographics, debt level, budgetary outlook, and debt repayment history
- GO bonds are generally considered to have lower default risk than revenue bonds because the municipality issuing a GO bond has a wider array of cash sources (i.e. it can raise taxes) that it can use to make debt payments
- Most GO bonds are only created with taxpayer approval. This means the municipality's population is committed to the expenditure and there is usually sufficient assets/taxing power built into the voting language to ensure bond repayment
- Two subcategories
- Unlimited tax GO bonds: backed by the full taxing power of the issuer; considered to have lower credit risk
- Limited tax GO bonds: backed by specific, narrow taxing power

Revenue Bonds

- Bonds backed by revenue generated by the specific project being financed by the bond issue
- Common projects include hospitals, airports, toll roads, housing projects, and bridges
- Essential services revenue bonds: projects related to water, sewer, and power systems
- Essential services bonds are seen as lower risk because the underlying projects tend to have more reliable revenue streams
- In general, revenue bonds are considered to have higher default risk than GO bonds because revenue from the underlying project is typically the only source of repayment
- The issuer of a revenue bond is not obligated to make principal and interest payments from any sources that are not specifically pledged to the bond
- As a result, it is very important to have a strong understanding of the underlying project's financial profile
- If the project fails to generate the revenue necessary to support debt payments, the probability of default will be high

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- Revenue bonds tend to offer higher yields than GO bonds due to their higher historical default rates
- A strong credit research team can perform in-depth analysis of a revenue bond project's financials and give portfolio managers the confidence to invest a significant portion of the portfolio in revenue bonds
- Historically, we have invested about 60% of our municipal portfolios in revenue bonds; we focus on essential services bonds and higher quality non-essential services bonds that are approved by our credit research team

Municipal Bonds: Tax Treatment

In-State Municipal Bonds	• Income from municipal bonds issued in the investor’s state of residence are exempt from federal, state, and local taxes • This is especially important in states with high income taxes (e.g. California, New York, New Jersey)
Out-of-State Municipal Bonds	• Income from municipal bonds issued outside of the investor’s state of residence are exempt from federal taxes but are not exempt from state and local taxes • e.g. If a New York City resident buys a Connecticut municipal bond, she will not have to pay federal taxes on the coupon income but will have to pay New York state taxes and New York City taxes
Taxes on Gains	• Municipal bonds may be subject to capital gains tax if they are sold at a profit or result in a profit when held to maturity
Taxable Municipal Bonds	• There are situations in which a governmental issuer will sell taxable municipal bonds because the federal government will not subsidize the financing of certain activities that do not provide a significant benefit to the general public • Investor-led housing, local sports facilities, refunding of a refunded issue and borrowing to replenish a municipality’s underfunded pension plan are just four examples of bond issues that are federally taxable
Municipal Bonds Subject to AMT	• Definition: municipal bonds that do not “serve the public good” and are subject to the Alternative Minimum Tax • If a taxpayer’s regular federal income tax is lower than the calculated AMT tax, she must pay the higher AMT amount • Common examples of projects that may be subject to the AMT include housing, airports, and other private activities • AMT bonds offer a higher yield to offset the fact that they are subject to the AMT and because demnd for municipals subject to the AMT is lower

Common Bond Sub-Types

High Yield

- Bonds that carry a rating of BB+ or lower, generally considered more risky from a credit perspective.
- HY bonds are more sensitive to the economic cycle than higher rated securities, as defaults will likely rise in down markets.

Preferred Equity

- Though not technically bonds, some kinds of preferred equity possess many of the characteristics of fixed income.
- Preferred stock is senior to common stock in the capital stack, and often pays a set dividend.
- However, unlike bonds, preferred stock is not an obligation, and the company is not considered in default if they do not deliver the dividend to the investor.

Investment Grade

- Bonds that carry a rating of BBB- or better, generally considered less risky from a credit perspective.
- For IG bonds, interest rate risk is the primary concern

Emerging Markets Debt

- Debt issued by both government and corporate entities in developing countries.
- If the obligation is denominated in the currency of the issuing country, the bond is referred to as a "local currency" bond.
- Conversely, if the obligation is denominated in USD or another DM currency, the bond is considered "hard currency".

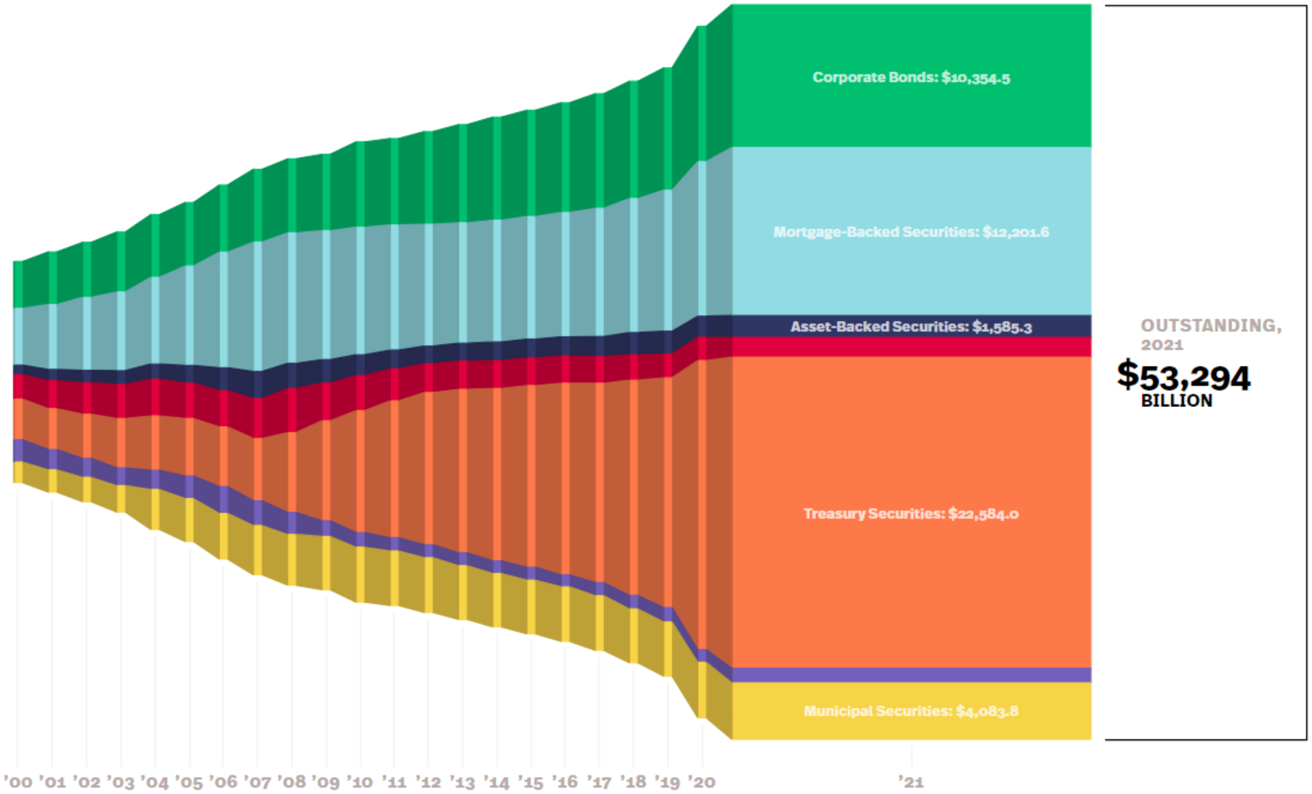
Treasury Inflation-Protected Securities (TIPS)

- Treasury securities that are indexed to specific measure of domestic inflation.

Convertible Bonds

- A bond that includes the option for the bondholder to convert the bond in to shares of the issuing company at a given implied strike price.

Fixed Income Outstanding



Fixed Income Outstanding (source: SIFMA)

2 Fixed Income Portfolio Management

Key Portfolio Management Concepts

Portfolio Duration

This is the aggregate measure of interest rate risk within a portfolio of bonds.

From a portfolio managers perspective:
the portfolio duration relative to that of the benchmark indicates his/her active risk with regard to interest rates.

- A PM that believes rates will fall will be "overweight" duration.
- A PM that believes rates will rise will be "underweight" duration.

Average Credit Rating

This is the market value-weighted average credit rating of a portfolio of bonds.

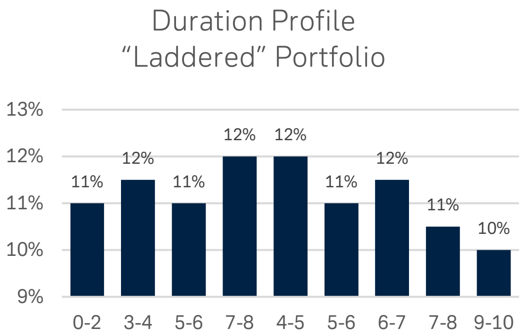
From a portfolio managers perspective:
the portfolio duration relative to that of the benchmark indicates his/her active risk with regard to credit spreads.

- A PM that believes spreads will narrow will be "overweight" credit.
- A PM that believes spreads will widen will be "underweight" credit.

Common Portfolio Structures

Laddered

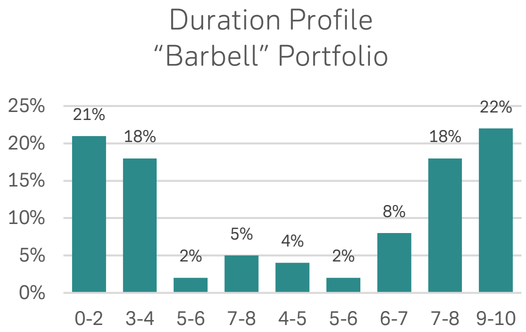
Distribute the portfolio across the yield curve.



Characteristics:
- More or less equal exposure to each point on the yield curve.
- Balances between reinvestment and price risk
- Attractive in stable, upward sloping yield curve environments

Barbell

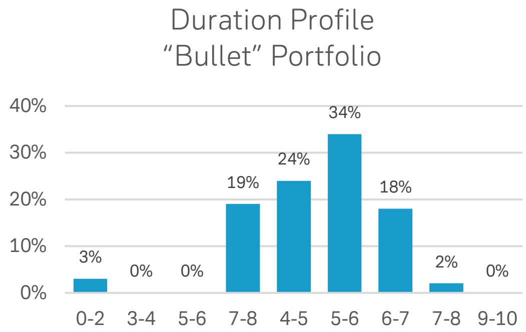
Assign heavier weighting to the short and long ends of the yield curve



Characteristics:
- More exposed to shorter and longer term rates.
- Takes advantage of a flattening yield curve

Bullet

Concentrating the portfolio in bonds of a similar duration



Characteristics:
- Concentrated exposure to a certain point on the curve
- Takes advantage of a steepening yield curve

3 Deutsche Bank WM Fixed Income Offering

- RCM
- Core & Core Plus

Fixed Income Offerings

Strategy Objectives

Deutsche Bank's dedicated fixed income group has provided industry leading investment management for the firm's Wealth Management clients since 1984

Investment Overview	• Deutsche Bank's Core Fixed Income strategy seeks to generate return consistent with prudent investment management by investing for both current income and moderate capital appreciation. • Each client receives a separately managed fixed income portfolio tailored to their specific needs and objectives.
Investment Universe	• Fixed income portfolios provide investors with tax specific strategies with bond maturities extending out to ten years and average durations ranging from three to six years. Investments focus on investment grade rated corporate bonds, U.S. government securities, tax-exempt municipals, and taxable municipal bonds.
Investment Process	• Assets are actively managed by monitoring historical relationships between credits, sector spreads and maturities. Credit analysts conduct original research and assign internal ratings to approved issues. They emphasize issuers with improving credit trends and monitor all current bond holdings. Best execution practices are applied to our client universe and we do not charge a commission on individual bond transactions nor do we purchase individual bonds out of a proprietary inventory.

Deutsche Bank's portfolio managers recommend the appropriate strategy based on each individual investors risk tolerance and target investment objective. Portfolio managers act in a fiduciary capacity and have no incentive to steer client's toward any one specific product or service. Past performance does not guarantee future returns.
Deutsche Bank does not provide tax advice. Please consult your tax advisor when deciding between taxable and tax-exempt investment options
Further details are provided upon request via individual strategy tear sheets

Fixed Income Offerings

Strategy Profiles

Fixed Income offerings are recommended based on investor suitability, risk tolerance and investment objectives

Deutsche Bank Fixed Income Offerings

All strategies can be offered utilizing taxable and/or tax-exempt investments

	Reserve Cash Management	Core Fixed Income	Core Plus
Risk Profile	Max Capital Preservation	Capital Preservation	Enhanced Yield
Interest Rate Sensitivity	Low	Moderate	Moderate
Duration Range	0.1–1.0	3.0–6.0	3.0–6.0
Max Maturity	2 years	10 years	10 years
Average Rating (target)	AA/Aa2	AA-/Aa3	BBB+/Baa1
Ratings Mix	Investment Grade	Investment Grade	Investment Grade & Non-investment Grade

Investing involves risk, including possible loss of principal. The values of the fixed income instruments will fluctuate and may lose value, as bond values decline as interest rates rise. Bonds are subject to interest rate risk. When interest rates rise, bond prices fall; generally the longer a bond's maturity, the more sensitive it is to this risk. Bonds may also be subject to call risk, which is the risk that the issuer will redeem the debt at its option, fully or partially, before the scheduled maturity date. The market value of debt instruments may fluctuate, and proceeds from sales prior to maturity may be more or less than the amount originally invested or the maturity value due to changes in market conditions or changes in the credit quality of the issuer. Bonds are subject to the credit risk of the issuer. This is the risk that the issuer might be unable to make interest and/or principal payments on a timely basis. Bonds are also subject to reinvestment risk, which is the risk that principal and/or interest payments from a given investment may be reinvested at a lower interest rate. Clients are advised to refer to FINRA's online learning center Smart Bond Investing, which provides a wealth of information about bonds and bond investing, and is available at via the website http://apps.finra.org/investor_Information/smart/bonds/000100.asp

Investment Process

Adding Value Through Active Portfolio Management

While interest rates play a role in our active management approach, they are only one of several characteristics we take into account when managing risk and return. We primarily focus on relative value to include sector valuations, credit spreads, maturity spreads, changes in the yield curve, bond structure and the issuer's credit

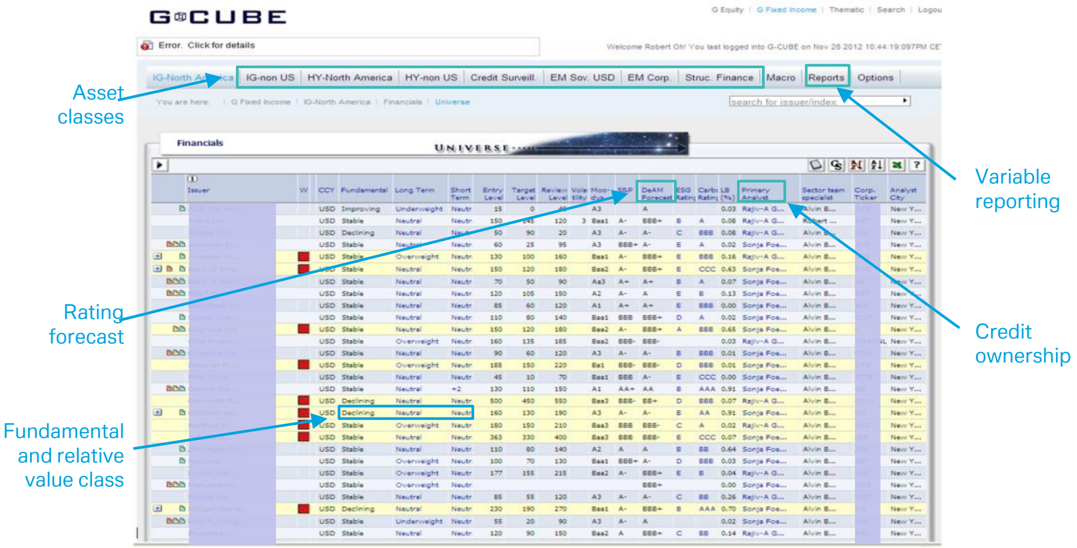
1 Issuer Selection	• Proprietary Credit Research • Approved holdings based on internal credit ratings and relative valuations
2 Sector Allocation	• Identify sectors with greatest return potential • Employ multiple sectors for greater diversification
3 Structure Analysis	• Identify undervalued securities with alternative structures • e.g. sinking fund, callable & puttable bonds, etc.
4 Yield Curve Analysis	• Analyze yield curve exposure relative to stated benchmarks • Determine the optimal distribution of securities across the range of maturities
5 Duration and Maturity	• Seek the most efficient mix of risk /return based on: Global Economic Outlook, Interest Rate Forecasts, & Technical Trend Analysis
6 Trade Execution	• Effective Trade Execution • Block Trading • Institutional Pricing • Extensive Dealer Network

Deutsche Bank uses a proprietary method of evaluating securities based on internal and external factors. Past performance is not indicative of future returns

Credit Selection

Deutsche Bank’s Disciplined Proprietary Research Process is at the Foundation of our Investment Process

- Internal credit ratings assess an issuer’s creditworthiness, credits with favorable rating are added to our “approved list”
- Our proprietary electronic database holds all credit information including analysis, rationale, and supporting documentation
- Our “approved credit” list is actively maintained and reviewed on an on-going basis (credits are added & removed). Analysts continuously review issuer’s creditworthiness with the objective of greatly reducing the risk of principal loss due to default.



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4 The Federal Reserve System

The Federal Reserve

What is it?

The Federal Reserve System is the central bank of the United States.

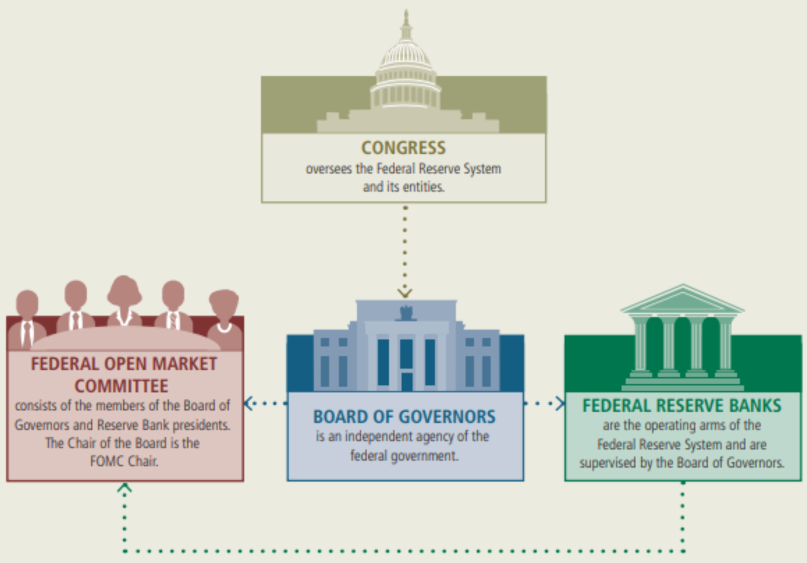
What does the Fed do?

- conducts the nation's monetary policy to promote maximum employment, stable prices, and moderate long-term interest rates in the U.S. economy;
- promotes the stability of the financial system and seeks to minimize and contain systemic risks through active monitoring and engagement in the U.S. and abroad;
- promotes the safety and soundness of individual financial institutions and monitors their impact on the financial system as a whole;
- fosters payment and settlement system safety and efficiency through services to the banking industry and the U.S. government that facilitate U.S.-dollar transactions and payments; and
- promotes consumer protection and community development through consumer-focused supervision and examination, research and analysis of emerging consumer issues and trends, community economic development activities, and the administration of consumer laws and regulations.

Structure of the Fed

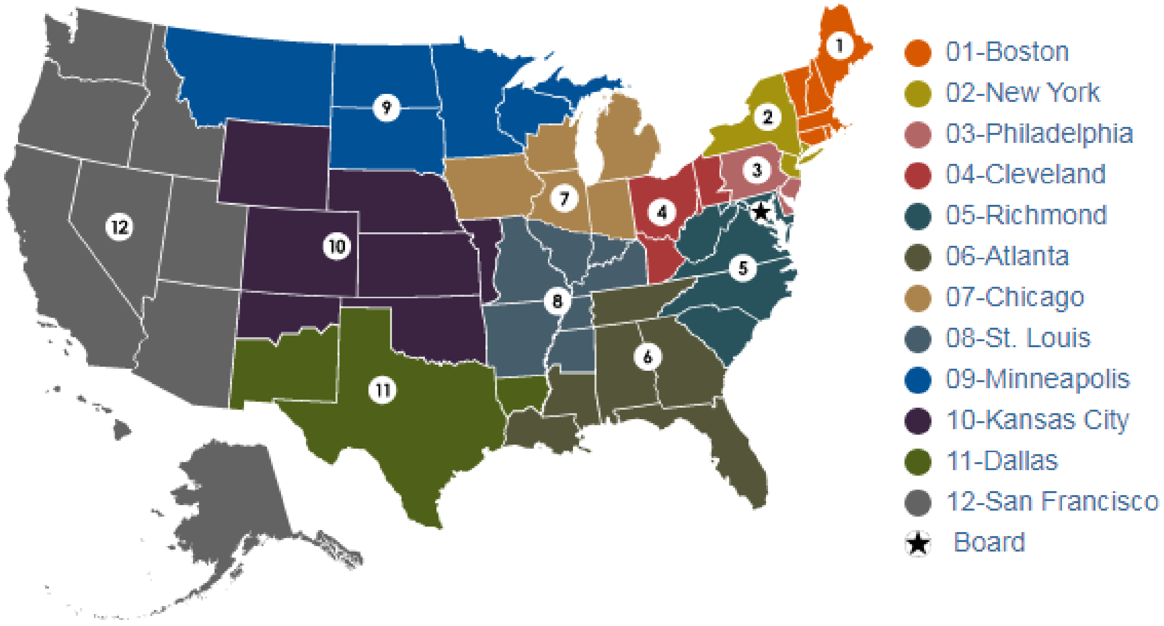
Figure 1.2. Three key entities, serving the public interest

The framers of the Federal Reserve Act developed a central banking system that would broadly represent the public interest.



The Federal Reserve

Regional Banks



The Federal Reserve officially identifies Districts by number and Reserve Bank city.
In the 12th District, the Seattle Brand serves Alaska, and the San Francisco Bank serves Hawaii. The System serves commonwealths and territories as follows: the New York Bank serves the Commonwealth of Puerto Rico and the U.S. Virgin Islands; the San Francisco Bank serves American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. The Board of Governors revised the brand boundaries of the System in February 1996;