Carolinas Cash Adventure – 2018: CTP Track

Money Markets – S/T Investing & Borrowing

Session #6 (Mon. 1:30 – 2:30 pm)

The Treasury Academy
New Frontiers in Treasury Education

- ***ETM5-Chapter 5:*** *Money Markets*
- ***ETM5-Chapter 13:*** *Short-Term Investing and Borrowing*

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As a prep course for the CTP exam, significant portions of these lectures are based on materials from the ***Essentials*** text.

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Overview of Chapter 5 Topics

- Introduction
- Global Money Markets
- Short-Term Money Markets in US

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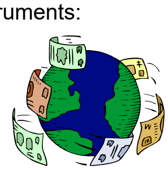
Money Market Participants

- Issuers of money market instruments:
  - Government entities
  - Securities dealers
  - Commercial banks
  - Non-financial corporations
- Investors
  - Direct purchases of money market instruments
  - Purchases of money market funds
- Broker-Dealers
  - Can trade on their own account or on behalf of their customers



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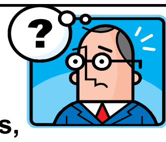
Group Exercise



- **Working in your groups, answer the following questions:**
- Are you involved at all in the investment management for your company or bank?
- What do you think is the key difference between managing short-term investments vs. long-term investments (aside from the obvious difference in maturities)?

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Investment Risk Considerations

- Default or Credit Risk
- Liquidity Risk
- Interest Rate Risk
  - Price Risk vs. Reinvestment Risk
- Foreign Exchange(FX) Risk

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Comparison of Short-Term Investments

	COMMERCIAL PAPER (CP)	ASSET-BACKED COMMERCIAL PAPER (ABCP)	BANK OBLIGATIONS	GOVERNMENT PAPER	FLOATING-RATE NOTES (FRNs)	REPURCHASE AGREEMENTS (REPOS)
MATURITY	Overnight-270 days (average = 30 days)*	Overnight-270 days (typically <45 days)*	1 day-2 years	4-52 weeks	Variable	Wholly negotiable
ISSUED BY	Companies and financial institutions	Companies and financial institutions	Banks	Governments and municipalities	Companies and financial institutions	Companies and financial institutions
INTEREST RATE	Fixed	Fixed	Fixed***	Fixed	Variable, with periodic reset dates	Negotiable
INTEREST PAID	On maturity**	On maturity**	During term or on maturity**	On maturity**	During term or on maturity	On maturity**
HOW ISSUED	Discount	Discount	Interest-bearing	Discount	Interest-bearing	Specified sales and repurchase price
SECURED	No	Yes	No	No	Yes/No	Yes
ACCESS TO CAPITAL BEFORE MATURITY	Sell on secondary market	Sell on secondary market	Sell on secondary market (for negotiable certificates of deposit and BAs)	Sell on secondary market	Sell on secondary market	Negotiable
INVESTMENT RISKS****	- Credit - Price	- Credit - Liquidity - Price	- Credit - Liquidity	- Credit - Liquidity - Price	- Credit - Liquidity	- Credit - Liquidity

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Commercial Paper (CP)

- Tradable promissory notes issued by companies
- Maturity from overnight to 270 days (but average maturity is 30 days)
- Issued at a discount with face value paid at maturity
- Active secondary market, but most is held to term
- Standard CP is not secured but may be credit enhanced

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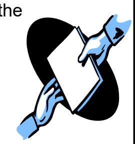
Asset-Backed Commercial Paper (ABCP)

- ABCP has most of the features of standard CP but is secured against specific assets
- Typically issued through a sponsoring financial institution (Conduit), rather than directly by an issuing company
- The assets are usually short-term trade receivables
  - Single Seller ABCP: single company assets
  - Multi-Seller ABCP: multiple company assets
- Primary advantage is protection offered by the assets
- May also include credit enhancements
- Disadvantage is complex structure that makes it harder to appraise credit risk



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Bank Obligations

- Time Deposits
  - Savings accounts
  - Certificates of Deposit (CD)
  - Negotiable CDs
- Eurodollar Market
  - (USD deposits/issues held outside of the US)
- Yankee CDs
  - (USD deposits/issues in US branches of non-US banks)
- Repurchase Agreements (Repo)
- Banker's Acceptances (BAs)
  - A time draft arising from a commercial trade obligation that has been "accepted" by a bank
  - Represents an unconditional promise by the bank to pay the draft upon maturity

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Government Paper

- Issued by national, state and local government entities
- Typically called T-bills or tradable promissory notes issued by governments
- Market is generally liquid and highly active, with a wide range of maturities available
- Default risk and returns are usually low
- Most short-term government debt is issued at discount
- U.S. T-bills are considered to be risk-free the benchmark for government issues
- Some sovereign debt may be very risky

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T-Bill Quotes

- Dealers typically utilize a bid-ask quote framework
- Bid quote is the price at which the dealer will BUY a T-Bill
- Ask quote is the price at which the dealer will SELL a T-Bill
- Ask yield is the yield to an investor purchasing a T-Bill at the ask discount

Maturity Date	Days to Maturity	Bid Discount	Ask Discount	Ask Yield (Percent)
April 18	36	0.075	0.065	0.066
April 25	43	0.075	0.035	0.035
May 2	50	0.070	0.066	0.066
May 9	57	0.055	0.050	0.051

Purchase Price = Par Value – Dollar Discount

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Floating Rate Notes (FRNs)

- Both companies and banks issue FRNs to raise funds in the short-term market
- Maturities are typically one year or longer
- Pay a coupon plus face value at maturity
- Interest rate resets periodically, usually based on LIBOR or Euribor
- Also perpetual FRNs, with no maturity date
- Most issues have a published credit rating
- Disadvantage is that FRN capital value can fluctuate between interest-rate resets
- Bid-offer spread is wider than other MM instruments
- Issued with fairly large minimum denominations

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Repurchase Agreements (REPOs)

- A bank or securities dealer sells government securities to an investor and agrees to repurchase them at a later date and at a slightly higher price
- Referred to as "repo" from the perspective of the entity selling the securities & agreeing to repurchase them as at a later date (the borrower)
- Referred to as "reverse-repo" from the perspective of the entity that buys the security with the promise to sell it back at a later date (the investor)

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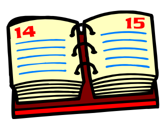
More on Repos



- Maturity
  - Overnight
  - Term (2 days to 1-year)
  - Open (no maturity date, but either party can terminate on day-by-day basis)
- Each repo is negotiated individually between two parties, making it easy to tailor it to almost any situation
- Taking legal possession of the underlying security (usually through a broker/dealer) gives investor a high degree of comfort

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Other Types of Money Market Investments

- Money Market Funds (MMF)
  - Commingled pools of MM instruments
  - NAV generally fixed at one currency unit
  - Convenient and highly liquid
- Short-duration Mutual Funds
  - Longer maturities than MMFs (1-3 years)
  - NAV is NOT fixed – floating NAV
  - May offer higher returns than MMFs
- Investment Sweep Accounts
  - Offered by most depository institutions to sweep excess, end-off-day funds into an investment account
  - Loan sweeps may also be offered

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Common Types of MMFs

- US Treasury Funds
  - Invested only in US Treasuries
- Government Funds
  - 99.5% of total assets must be invested in cash, government securities and Repos collateralized by government securities
- Institutional Prime Funds
  - Commercial paper, CDs, government securities, Repos and other ST investments
- Institutional Municipal/Tax-Exempt Funds
  - Tax-exempt securities issued by state and local governments
- Retail Funds
  - Funds offered to individuals
  - Institutional investors are NOT permitted to hold these as of October 2016

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Money Market Fund Changes in Oct. 2016

- Floating NAV
- Redemption fees if funds fall below threshold
- Ability to suspend redemption for up to 10 days (redemption gates)

TYPE OF FUND	NET ASSET VALUE (NAV)	REDEMPTION FEES	REDEMPTION GATES
US Treasury	Stable	No	No
Government	Stable	No	No
Institutional Prime	Floating	Yes	Yes
Institutional Municipal/Tax-Exempt	Floating	Yes	Yes
Retail	Stable	Yes	Yes

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Money Markets in US

- Processing and Clearing of S-T Investments in US
- US Money Market Participants
- US Federal Agency and Government Sponsored Enterprise(GSE) Securities
- Municipal Notes, Variable-Rate Demand Obligations(VRDOs), and Tax-Exempt Commercial Paper(CP)

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Processing & Clearing of S-T Investments in U.S.

- Commercial Book-Entry System (CBES)
  - Nearly all short-term securities are issued in book-entry form and registered and transferred electronically
  - CBES is a multi-tiered automated system for purchasing, holding and transferring marketable securities
  - Top-tier is the National Book-Entry System (NBES) which is operated by the Fed for Treasuries
  - Mid-tier, depository institutions hold book-entry accounts for its customers
  - CBES has succeeded in replacing paper securities with electronic records

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Processing & Clearing of S-T Investments in U.S.

- Depository Trust and Clearing Corp. (DTCC)
  - Industry-owned corporation that works to provide clearing, settlement and info services for a wide range of securities
  - Combo of Depository Trust Corp. (DTC) and National Securities Clearing Corp (NSCC)
  - Act as a legal depository for security certificates
  - Net transactions between brokers, dealers, mutual funds, insurance companies and other large institutional investors
  - Operate on an at-cost basis for their members
  - Registered with SEC

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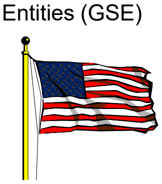
U.S. Money Market Participants

- U.S. Treasury
- Federal agencies
- Government Sponsored Entities (GSE)
- Securities dealers
- Commercial banks
- Thrift institutions
- Municipalities
- Corporations
- Federal Reserve
  - Settlement of most book-entry sales/purchases
  - FOMC
  - Fiscal agent of the treasury



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U.S. Money Market Instruments

- U.S. Treasury Bills (T-Bills)
  - Sold at discount in regular auctions
- Bank debt obligations
  - CDs of various types
- Commercial paper (CP)
  - Unsecured, discounted, rated, credit-enhanced
- U.S. Federal agency and GSE securities
  - Direct debt vs. asset-backed
- Municipal notes, VRDOs & Tax-exempt CP
  - Also: BANs and TANs, active secondary market
- MMFs
  - Prime, government, treasury, tax-exempt

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Overview of Chapter 13 Topics

- Introduction
- Managing Short-Term Investments
- Pricing and Yields on Short-Term Investments
- Managing Short-Term Financing
- Debt Financing

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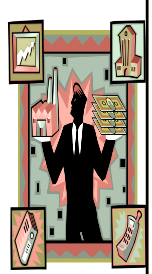
Management of S-T Investment Portfolio

- In-House Management
  - Typically seen in larger organizations
  - Driven by investment policies
  - Must have resources, training and experience in investment management
- Outsourced Management
  - Assign S-T investment portfolio management to 3rd party money manager
  - May have greater resources and experience than internal money managers
  - Guidelines must be clearly communicated
  - MMFs may be an option here



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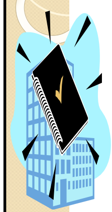
Short-term Investment Policy



- Typical board-approved policy includes:
  - Investment objectives (risk and return)
  - Permissible and prohibited investments
  - Minimum acceptable security ratings
  - Maximum maturity for individual securities
  - Maximum weighted average maturity or duration for the portfolio
  - Maximum percentages for asset classifications
  - Policies/guidelines for foreign securities
  - Specific responsibilities for implementing policy
  - Methods of monitoring compliance
  - Provisions for performance measurement, evaluation and reporting
  - Responsibilities and reporting requirements
  - Exception management and related approval processes

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Investment Strategies

- Conservative investor may prefer a passive strategy, employing a ***buy-and-hold to maturity*** approach
- More aggressive investor may prefer ***active portfolio management***
- High-tax bracket corporate investor may favor ***tax-based strategies***
- A company without the resources to actively manage a S-T portfolio may choose to hold one or more of the MMFs discussed earlier
- These strategies may be used individually or in combination

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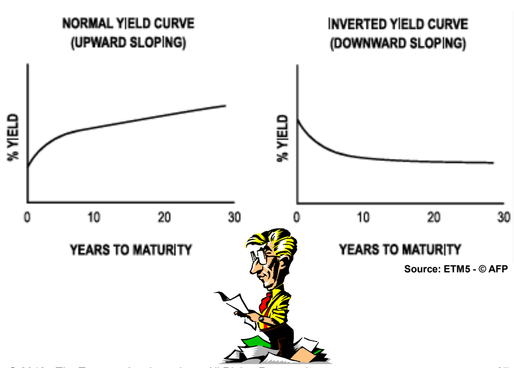
Yield Curves



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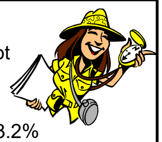
Tax Status



- When computing taxable vs. tax-exempt instruments, use the formula below
- Assume a taxable security with a 4.6% yield and a tax-exempt security with a 3.2% yield (both have similar risk and maturity) – marginal tax rate is 35%

$$\text{Taxable Equivalent Yield} = \frac{\text{Tax-exempt Yield}}{(1 - \text{Investor's Marginal Tax Rate})}$$

$$\text{Taxable Equivalent Yield} = \frac{0.032}{(1 - 0.35)} = 0.0492 \text{ or } 4.92\%$$

After-Tax Yield = Taxable Yield x (1 – Marginal Tax Rate)

After-Tax Yield = 4.60% x (1 – 0.35) = 2.99%

In this example – the tax-exempt security should be chosen

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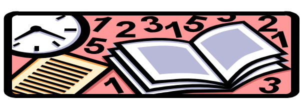
Yield Calculations for S-T Investments

- Usually made on a simple interest basis
- Yield is usually a function of:
  - Cash flows received from the investment
  - Amount paid for that investment
  - Maturity or holding period
- Different types of yield
  - Holding period yield
  - Money market yield (360 day year basis)
  - Bond equivalent yield (365 day year basis)



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The Key Formulas for Investing and Borrowing

$$\frac{\text{What You Get}}{\text{What You Pay}}$$

$$\frac{\text{What You Pay}}{\text{What You Get}}$$

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Yield Calculations

$$\text{Holding Period Yield} = \frac{\text{Cash Rec. at Maturity} - \text{Amt Invested}}{\text{Amt Invested}}$$

$$\text{Annual Yield} = \text{Holding Period Yield} \times \frac{\text{Days in Year}}{\text{Days to Maturity}}$$

Assume a $100,000, 90-day T-bill sells for $98,800

$$\text{Holding Period Yield} = \frac{\$100{,}000 - \$98{,}800}{\$98{,}800}$$

$$= \frac{\$1{,}200}{\$98{,}800} = 0.01215 \text{ or } 1.215\%$$

$$\text{360-Day Basis Yield} = 0.01215 \times \frac{360}{90}$$

$$= 0.01215 \times 4 = 0.0486 \text{ or } 4.86\%$$

Source: ETM5 - © AFP

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Converting Year Basis

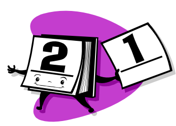
- To determine the yield on a 365-day basis versus a 360-day basis use the following:

$$\text{365-Day Basis Yield} = \text{360-Day Basis Yield} \times \frac{365}{360}$$

Using the information from the previous slide:

$$\text{365-Day Basis Yield} = 0.0486 \times \frac{365}{360} = 0.0493 \text{ or } 4.93\%$$

Source: ETM5 - © AFP



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Managing Short-Term Financing

- Short-Term Funding Alternatives
  - Trade credit
  - Intercompany loans
  - Selling of receivables
    - Factoring
    - Securitization
  - Supply chain credit
  - Commercial bank credit
  - Single payment notes
  - Repurchase agreement (Repo)
  - Commercial Paper (CP) issuance
  - Asset-based borrowing

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Commercial Bank Credit

- Loan Syndications and Participations
  - Allow banks to offer larger loans than they could on their own due to capital requirements
- Syndication
  - Multiple financial institutions share the funding of a single credit facility
  - All members share common documentation, but each lender has a promissory note
- Participation
  - An institution purchases an interest in another lender's credit facility
  - Purchaser is a participant, seller is lead institution
  - In blind participation, agreement is not disclosed to borrower

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Commercial Bank Line of Credit

- Lender gives borrower access to funds up to a max amount over a specified period of time
  - Can provide short-term financing, back up for a CP program or provide temporary liquidity
- Most lines are revolving, some are multi-year
- May be secured or unsecured
  - Secured by A/R or inventory
- May be committed or uncommitted
  - Commitment fee and/or compensating balances
- Requirements and conditions include:
  - Clean-up period, credit sub-limits, covenants, MAC
- Guidance lines are used by banks to accommodate credit exposure arising from non-borrowing activities, such as daylight overdrafts, ACH or FX exposure

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Other Bank Credit Facilities

- Single Payment Notes
  - Short-Term and for a specific purpose
- Repurchase Agreement (Repo)
  - Securities are sold with agreement to buy them back at a slightly higher price in the future
- Commercial Paper Issuance
  - Issued at discount & rolled over on a regular basis
  - Require credit enhancements & strong credit rating
  - Costs: dealer fees, back-up credit facility fees, rating agency charges or other credit enhancement fees
- Asset-Based Borrowing
  - WC loans typically secured by A/R or inventory to support temporary financing needs

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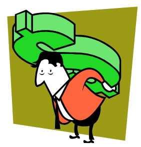
Debt Financing

- Costs of Borrowing
  - Include costs of credit enhancements, fees paid to rating agencies, legal, etc.
- Basic Components in Interest Rates
- Base Rates
- Short-Term Versus Long-Term Borrowing
- Loan Agreements and Covenants
- Credit Rating Agencies



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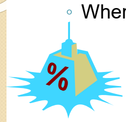
Basic Components in Interest Rates

- Interest rates depend on many factors
- $r = r^*_{RF} + IP + DP + LP + MP$
  - Where: r^*_{RF} = Real risk-free interest rate
    IP = Inflation premium
    DP = Default premium
    LP = Liquidity premium
    MP = Maturity premium
- Some observations
  - Treasuries: DP and LP = 0
  - Both corporate and muni's have DP and LP
  - Most L-T bonds have some MP
  - MP increases with issue's time to maturity



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Calculation of Interest Rates

Calculation of Interest Rates or Yields on Different Investments

Investment	Real Risk-Free Rate	Inflation Premium	Default Premium	Liquidity Premium	Maturity Premium	Cost of Borrowing
1-year Treasury	0.0%	0.5%	0.0%	0.0%	0.0%	0.5%
5-year Treasury	0.0%	2.5%	0.0%	0.0%	0.4%	2.9%
10-year Treasury	0.0%	4.0%	0.0%	0.0%	0.9%	4.9%
1-year Corporate	0.0%	0.5%	2.5%	0.5%	0%	3.5%
5-year Corporate	0.0%	2.5%	2.5%	0.5%	0.4%	5.9%
10-year Corporate	0.0%	4.0%	2.5%	0.5%	0.9%	7.9%
1-year Municipal	0.0%	0.5%	1.5%	1.0%	0%	3.0%
5-year Municipal	0.0%	2.5%	1.5%	1.0%	0.4%	5.4%
10-year Municipal	0.0%	4.0%	1.5%	1.0%	0.9%	7.4%

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Base Rates

- For most borrowers, the cost of funds is expressed as the sum of some base rate, plus an appropriate adjustment (or spread) to account for other risks involved in the arrangement.
- Base rate will include adjustments for inflation and maturity premiums
- Spread will factor in adjustments for the default and liquidity premiums
- Popular base rates include:
  - LIBOR, Prime & Fed Funds

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Short-Term vs. Long-Term Borrowing

- Benefits of short-term borrowing:
  - Historically, short-term rates are usually lower than long-term rates
  - Offers ease of access and flexibility
- Risks of borrowing on short-term basis
  - Fluctuating market rates could mean rising costs of short-term funds
  - Availability of funding is not guaranteed
- Advantage of long-term borrowing:
  - Borrowing on a fixed-rate basis stabilizes interest costs or it provides a narrow range for fluctuations in interest costs

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Loan Agreements & Covenants

- Loan covenants typically have a significant impact on financial decision making in an organization
- Lenders use covenants to protect their interests in a loan agreement
- Typical restrictive covenants:
  - Ability to sell certain assets
  - Right of an organization to issue additional bonds
  - Use of second or junior mortgages
  - Key ratios that limit flexibility in financial decision making
  - Payment of dividends

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Credit Rating Agencies

- Most publicly issued debt by corporations and muni's are rating by one or more NRSROs
- Rating agencies have access to internal information and are widely accepted by market participants and regulators
- Part of Dodd-Frank was directed at ratings agencies
  - Greater disclosure of models and methodologies
  - Subjects them to greater liability

Long-Term Bond Credit Ratings

Definitions	Moody's	S&P	Fitch	DBRS	JCR
Investment Grade					
Prime (Maximum Safety)	Aaa	AAA	AAA	AAA	AAA
High Grade (High Quality)	Aa1 to Aa3	AA+ to AA-	AA+ to AA-	AA	AA
Upper Medium Grade	A1 to A3	A+ to A-	A+ to A-	A	A
Lower Medium Grade	Baa1 to Baa3	BBB+ to BBB-	BBB+ to BBB-	BBB	BBB
Below or Non-Investment Grade					
Below Investment Grade	Ba1	BB+	BB+	–	–
Speculative	Ba2 to Ba3	BB to BB-	BB to BB-	BB	BB
Highly Speculative	B1 to B3	B+ to B-	B+ to B-	B	B
Substantial Risk	Caa	CCC+	CCC	CCC to C	CCC
In Poor Standing	–	CCC to CCC-	–	–	CC
Extremely Speculative	Ca	CC	CC	–	C
May Be in Default	C	C	C	–	LD
Default	–	D	DDD to D	D	D

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Short-Term Credit Ratings

Definitions	S&P	Moody's	Fitch	JCR
Investment Grade				
Highest Quality	A-1	Prime-1	F1	J-1
Good Quality	A-2	Prime-2	F2	J-2
Adequate Credit	A-3	Prime-3	F3	J-3
Speculative Grade				
Vulnerable to Changes	B-1 to B-3	NP	B	NJ
High Default Risk	C	NP	C	NJ
Under Regulatory Supervision	R	NP	RD	NJ
Default	SD or D	NP	D	NJ

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Session Wrap-up

Session 6: Money Markets and Short-Term Investing/Borrowing

- ***What did we learn in this session?***
- ***What topics do we need to learn more about?***

Carolinas Cash Adventure – 2018: CTP Track

Money Markets & S/T Investing/Borrowing

End of This Session

We will reconvene at 2:45 pm Today.

The topic will be:

More Key Concepts

Review of Basic CTP Calculations