**T-Bills**

* T-Bills
	+ T-notes have maturities longer than 1 year, up to 10 years
	+ T-bonds have maturities of 10+ years
	+ Maturities
		- 28 days (1 month)
		- 91 days (3 months)
		- 182 days (6 months)
		- 364 days (1 year)
	+ Highly liquid
		- Liquidity: able to sell an asset quickly and at a known price
	+ Issued in weekly auctions
		- Competitive and non-competitive bids
	+ Zero coupon
		- Sold at discount to maturity value
	+ Most common denomination is $10,000
* T-Bill Example

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Maturity | Bid | Asked | Change | Asked Yield |
| 11/2/2017 | 0.933 | 0.923 | 0.055 | 0.935 |
| 11/9/2017 | 0.938 | 0.928 | 0.055 | 0.941 |

* What does it mean?
	+ T-bills are quoted in percentage terms
		- The quote represents the yield implied by the price you are buying and selling at
		- The Bid and Asked are calculated using the bank discount method
			* The Asked Yield recalculates the Asked using the bond equivalent yield method
			* Change represents the change in yield for this particular bond vs. the previous day
* Bank Discount Method
	+ Bid and Asked prices are quotes using this method
	+ 2 differences from normal:
		- Reported as a % of par value($10,000)
		- Discount from par is “annualized” based on a 360 day year
* Bank Discount Method: Getting the Price
	+ The discount is the difference in par value and price
	+ So we can find price by solving for the discount:
* Bond Equivalent Yield
	+ Need to convert the discount rate in order to compare to a bond
	+ Bond yield calculated on an APR method:
	+ Note:
		- 365 day year
		- Discount from price, not par
* Effective Annual Yield
	+ Bond equivalent yield is an APR method
	+ Convert to EAY:
	+ Also referred to as:
		- Effective annual rate (EAR)
		- Annual percentage yield (APY)
* Example: Price
	+ Consider the 11/30 T-bill quote:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Maturity | Bid | Asked | Change | Asked Yield |
| 11/30/2017 | 0.988 | 0.988 | 0.013 | 1.002 |

* + What price would an investor have paid to buy the T-bill on 10/31/2017?
	+ What is the bond equivalent yield?
	+ What is the effective annual yield?
* Example: Bank Discount Rate
	+ Consider a T-bill with 90 days to maturity currently priced at $9,980. What is the bank discount rate?
* Ex. BEY and EAY
	+ Consider the same T-bill with 90 days to maturity currently priced at $9,980. What is the BEY and EAY?