

## BOND NOTES

**DEFINITION:** A bond is a commitment by the issuer (the company that is borrowing the money) to pay a rate of interest for a pre-determined period of time. By selling bonds, the issuing company has raised spending power by borrowing. *This is called Debt Financing.*

## BOND TERMS

The following is a [very crude] example of a corporate bond.

- The left side of the bond is called the bond's **principal**.
- The \$1,000 is the bond's **PAR** value or the **FACE** amount. When the bond is first issued, it is sold for \$1,000. Bond holders are loaning the issuing corporation \$1,000 in exchange for 30 years of interest. At the end of the term [when the bond matures] the bondholder's \$1,000 is returned.
- The issuing corporation's name is listed on the face of the bond. In our example case, the issuer is **AT&T**.
- 8% in our example is the **coupon rate**. That is the rate of interest (as an annual rate) promised by the issuing corporation for the use of your money. You are paid 8% of \$1,000 per year for as many years as you own this bond. The payments are made semi-annually. We will be glad to know that there is no fancy math necessary to make this calculation. Interest is paid on a *simple interest* basis. 8% of \$1,000 = \$80, which will be paid in two \$40 installments.
- The date listed on the bond's face is the **maturity date**. Typically 30 years, this is the date that the bondholder is paid \$1,000 and the date that the bond dissolves. The debt is paid, this bond issue is over.
- The dashed lines toward the bottom of the bond's principal represent the **indenture**, where the terms and conditions of the bond issue are listed. The indenture could be short or 100 pages long, we will see what special circumstances a corporation could include in the indenture as our study of bonds progress.
- The squares to the right of the principal are the bond's coupons.

Principal

Bond's coupons. In a 30-year bond, there are 60 coupons

\$1000	\$40			\$40
☺	1/1/33			7/1/03
AT & T				\$40
8%				1/1/04
				\$40
				7/1/04

1/1/33				
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Indenture				
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BOND RETIREMENT FEATURES	
Being Paid-off @ maturity.	The bond matures naturally.
Retired Serially	Serial bonds mature at different dates rather than all at once. A portion of the issue is retired annually throughout the bond's term. Investors can pick maturity dates to meet their needs.

Retired by Sinking Fund	Additional protection to bond holders; a sinking fund forces the issuing company to set aside funds during the bond's term. At maturity, the company has saved the money necessary to retire the principal.
Being Called by the issuer.	<p>Corporate Treasurers and CFO's are no dummies, they install Call Features into the <i>Indenture</i> to protect the company from interest rate risk. An example being if the company borrows money in a high interest rate environment and interest rates fall, as they have in year 2008; the company can refinance the issue as a person would refinance their house to take advantage of the lower rates.</p> <p>If the bond is FREELY CALLABLE, the investor has NO CALL PROTECTION. The company can call the bond at any time after issue.</p> <p>If the bond is NON CALLABLE, the investor has FULL PROTECTION against the call. The bond will not be retired until it matured.</p> <p>If the bond has a DEFERRED CALL - The investor has LIMITED CALL PROTECTION. The bond may be called within the first 5 years or the last half of its life. Those are examples. The company can name its call features, they have to be spelled out in the Indenture.</p>

### BOND RATINGS

This table illustrates ratings of the two principal bond rating agencies, Standard & Poors (S&P) and Moody's.

QUALITY	S&P	Moody's	Description
High Grade	AAA	Aaa	Bonds judged to be of the best quality. They carry the smallest degree of investment risk. Interest payments are protected by a large, stable margin. Principal is secure.
	AA	Aa	Bonds that are judged to be of high quality by all standards. They are rated lower than the best bonds because margins of protection may not be as large. AAA and AA bonds are referred to as "High Grade."
Medium Grade	A	A	Upper-medium grade obligations. Factors giving security to principal and interest are considered adequate.
Bottom rung of Investment Grade Bonds	BBB	Baa	Bonds that are considered as medium-grade obligations -- they are neither highly protected or poorly secured.

Speculative Grade	BB	Ba	Bonds that have speculative elements. Protection of principal and interest may be moderate.
	B	B	Bonds that lack the characteristics of a desirable investment. There may be small assurance of principal and interest payments over any long period.
Default	CCC	Caa	Bonds of poor standing. These issues may be in default or there may be elements of danger present with respect to principal and interest.
	CC	Ca	Obligations speculative to a high degree. These issues are often in default.
		C	Lowest rated class in Moody's list.
	C		Rating given to income bonds on which interest is not being paid.
	D		Issues in arrears in interest and/or principal payments.

**BOND YIELDS - Used to evaluate a bond before purchase.**

**WARNING. NOTICE. ADVICE.** As soon as you see a bond coupon rate, the wheels of your brain need to start turning....since the bond's par value is seldom on bond information sources, Wall Street, investment professionals, assume that you know it.

**Test 2 earns the lowest grades. Semester after semester, the distribution is poor and the points are lost from the following calculations. Students fail to remember to (1) use the coupon rate to calculate the annual dividend and (2) do not convert a bond quotation into a price.**

**Know what you are doing.**

COUPON RATE/YIELD	Stated on the face of the bond. Technically, the coupon rate is derived by dividing the ANNUAL INTEREST by the PAR value.
CURRENT YIELD	Defined as: ANNUAL INTEREST divided by (MARKET) PRICE. Once the bond is issued and is in the secondary market (has begun trading), an investor may pay a price for the bond different from par. In this case, the annual income divided by the price paid, will give the investor a more accurate yield than the coupon yield. The coupon yield will equal the current yield if the bond can be purchased at par.
YIELD TO MATURITY	The promised compounded rate of return an investor will receive from a bond purchased at the current market price and held to maturity. It captures the coupon interest to be received on the bond as well as any capital gains or losses realized by purchasing at a discount or premium.

	<p>YTM = { Annual Interest+[(Face Value @ Maturity-Price)/# yrs to maturity]} / [(face value @ maturity + price)/2]</p> <p><b>REALIZED COMPOUNDED YIELD: The YTM calculation assumes that the investor reinvests all coupons received from a bond at a rate equal to the computed YTM, thereby earning interest-on-interest over the life of the bond.</b></p> <p><b>PROMISED YIELD: The YTM is referred to as Promised because investors will only earn that rate if the bond is held to maturity and coupon payments are reinvested at the YTM.</b></p> <p>The risk that the investor faces with the YTM calculation is REINVESTMENT risk. The possibility that the coupons CANNOT be reinvested at that YTM.</p>
YIELD-TO-CALL	<p>YTC = { Annual Interest+[(Call Price - Price)/# yrs to call]} / [(Call Price + Price)/2]</p> <p>The Yield-to-Call calculation is identical to the Yield-to-maturity with logical substitutions of elements. The number of years to maturity in the YTM formula is replaced with the number of years to call. The Face Value @ Maturity is replaced with the Call Price. These are usually the same, BUT the company may pay a different price from par when the bond is called. Sometimes referred to as a guilt coupon, the firm may add one coupon to the price on the call date, compensating investors (in some way) for calling the bond before maturity.</p>

### BOND VALUATION

Bond valuation is the process of calculating the *intrinsic* value of the bond given changes in market interest rates. This process describes interest rate risk.

For example, we have an 8%, \$1,000, 30 year bond, paying \$40 semi-annual coupons.

We know that the bond cost \$1,000 new, when issued. It costs \$1,000 because that is the face value, *it also costs \$1,000 because that is the present value of its parts*. If we calculate the present value of the bond's principal (a single sum) and added it to the present value of the coupons (an annuity), we would have \$1,000.

$$\$1000 * (1 + .08/2)^{-60} = \$95.06$$

$$\$40 * [1 - (1 + .08/2)^{-60}] / (.08/2) = \$904.94$$

$$\text{TOTAL} = \$1000$$

The biggest risk of bond ownership is **interest rate risk**. We know that interest rates and bond prices are inversely related. When interest rates increase, bond prices decrease and vice-versa.

Given our sample bond, let's say that interest rates increase from 8% to 9%. We know that the price of our bond will decrease, but how much? Bond valuation will determine the new price of the bond given this change in the market. The process is the same, we have to take the present value of the bond's principal and add it to the present value of the coupons **using the current interest rate of 9%**.

$$\$1000 * (1 + .09/2)^{-60} = \$71.28$$

$$\$40 * [1 - (1 + .09/2)^{-60}] / (.09/2) = \$825.52$$

$$\text{TOTAL} = \$896.80$$

The same process would be used for decreasing interest rates.

## RISKS AND ADVANTAGES OF BONDS

### RISKS

Interest Rate Risk	THIS IS THE BIGGEST RISK OF BOND OWNERSHIP. Bond prices move inversely with interest rates. Other risks can be avoided or minimized, interest rate risk is more difficult to avoid. Usually bond professionals are the only ones that can sufficiently protect a portfolio against this risk.
Default Risk	Second biggest risk, the risk of the issuing corporation filing for bankruptcy protection or otherwise defaulting on their obligation to pay. Default can come in many forms. If the company is late on a coupon payment, if they do not contribute to the sinking fund (if required), if they violate the parameters of the call features, any of these plus many more, constitute default, not just failure to pay. Investors probably perceive the failure to pay as the most serious because they are not getting paid for their investment.
Inflation Risk	Since bonds are fixed income securities, inflation risk (rising prices) could consume several percentage points if not all of the bond's rate of return.
Reinvestment Risk	If interest rates have fallen, coupons would be reinvested at a lower interest rate, thus lowering the yield to maturity. [Discussed in Yield-to-Maturity]
Maturity Risk	Risk in investing in long term securities.
Call Risk	The risk that a callable bond will be called.
Liquidity Risk	This is coupled with quality. Thinly traded bonds may not be quickly sold.

### ADVANTAGES

Aside from regular cash payments, Bond holders have a senior position over stock holders in event the firm is liquidated or files for bankruptcy. Bond holders get paid first, then preferred stockholders, then common stockholders.

Debenture Bonds: Are backed only by the "full faith and credit" of the issuer. The bonds are unsecured debt.

### **ZERO COUPON BONDS**

ZERO's Earn interest during the bonds life. They are sold at a "deep discount" from the face amount and mature at face. For example, a zero may be sold for \$200 and mature, 20 years later at \$1000. The owner gets no interest during that time (hence the name, ZERO coupon).

The primary disadvantages of owning Zero's:

- Taxes are paid on earnings annually as if interest was received. The investor will be billed annually for the 'accrued' or accumulated value of the bond.
- Zero's can experience violent price swings more than a coupon bond due to their having no periodic coupon payments to buffer changes in market interest rates. These violent price swings could be used as a distinct advantage for the bondholder, zeros could be purchased when there is an expectation of falling interest rates. When the rates fell, zero prices would rise more than coupon bonds.

12/27/16

## GOVERNMENT BONDS

### U.S. GOVERNMENT ISSUES

There is no safer debt obligation than those issued by the US Government. US Treasury issues more debt than any other entity. Obligations are backed by the full faith and credit of the US Government. **They are free of default risk, are non-callable and are tax exempt on state and local level.** Treasuries can be purchased through brokerage firms (with commission) or through the Federal Reserve Banks free of charge.

The three primary marketable securities issued by the Treasury are: Bonds, Notes and Bills.

Type	Par	Term	Coupons	Callable	Taxable
Bill	\$10000	3-12 mos.	No	No	Federal Only
Note	\$1000	2-10 yrs.	Yes	No	Federal Only
Bond	\$1000	10-30 yrs.	Yes	No	Federal Only

**TREASURY BILLS:** They are sold at a discount from face value and mature at face value. Federal Reserve Bank holds weekly auctions. Firms and individuals use T-Bills to park cash and defer income taxes into the next calendar year. Taxes are paid when bills mature.

**TREASURY NOTES:** They pay semi-annual coupons like corporate bonds.

**TREASURY BONDS:** They pay semi-annual coupons like corporate bonds. The 30-year Treasury bond is the flagship of the bond world. Many financial instruments and benchmarks are set off of the 30-year bond rate.

The following table is an excerpt from the Wall Street Journal. Quotations are "a percent of the par value." With the par values of bonds and notes listed in the above table.

On Treasury Bills, they are sold at a discount from the face value (face value is in the above table). They pay no coupons. For a Bill with an Bid discount percentage of 0.105 (this is the last one in the table listed below), we would figure the price like this.

*Start with 100% of the par value, subtract the Ask discount (0.105%) then multiply the result by par (\$10,000). Thus:  $100\% - 0.105\% = 99.895\% \times \$10,000 = \$9,989.50$ . Done.*

The point here is to calculate the price of a Bill. To purchase the last bill on the table (below), it would cost \$9989.50, it would mature on September 20, 2012 for par (\$10,000), the investor would earn \$10.50 in interest.



**U.S. Treasury Quotes**  
**TREASURY NOTES & BONDS**

**Tuesday, October 04, 2011**

Treasury note and bond data are representative over-the-counter quotations as of 3pm Eastern time. For notes and bonds callable prior to maturity, yields are computed to the earliest call date for issues quoted above par and to the maturity date for issues below par.

<b>Maturity</b>	<b>Coupon</b>	<b>Bid</b>	<b>Asked</b>	<b>Chg</b>	<b>Asked yield</b>
10/31/2011	1.000	100.0313	100.1016	-0.0078	-0.415
10/31/2011	4.625	100.2969	100.3594	-0.0078	-0.431
11/15/2011	1.750	100.1641	100.2266	0.0000	-0.268
11/30/2011	0.750	100.0781	100.1406	0.0000	-0.159
11/30/2011	4.500	100.6563	100.7188	-0.0078	-0.184
12/15/2011	1.125	100.1797	100.2422	-0.0078	-0.116
12/31/2011	1.000	100.1953	100.2578	-0.0234	-0.084
12/31/2011	4.625	101.0469	101.1172	-0.0391	-0.093
1/15/2012	1.125	100.2656	100.3281	-0.0156	-0.053
1/31/2012	0.875	100.2266	100.2969	-0.0234	-0.046
1/31/2012	4.750	101.4844	101.5469	-0.0313	-0.068
2/15/2012	1.375	100.4453	100.5078	0.0078	-0.026
2/15/2012	4.875	101.7031	101.7813	-0.0156	-0.052
2/29/2012	0.875	100.2969	100.3594	0.0156	-0.011
2/15/2019	8.875	153.1719	153.2031	0.0625	1.279
5/15/2019	3.125	112.2969	112.3594	-0.0313	1.407
8/15/2019	3.625	116.1094	116.1406	-0.0156	1.445
8/15/2019	8.125	150.0469	150.0938	-0.1406	1.379
11/15/2028	5.250	139.4063	139.4375	0.2656	2.421
2/15/2029	5.250	139.7656	139.8125	0.2344	2.426
8/15/2029	6.125	153.3594	153.4063	0.2188	2.423
5/15/2030	6.250	156.5781	156.6250	0.1875	2.445
2/15/2031	5.375	144.1875	144.2188	0.1719	2.484

2/15/2036	4.500	133.0625	133.1094	0.2188	2.647
2/15/2037	4.750	138.0469	138.0781	0.1719	2.673
5/15/2037	5.000	143.1094	143.1563	0.1875	2.664
2/15/2038	4.375	131.2344	131.2813	0.1406	2.707
5/15/2038	4.500	133.8750	133.9063	0.2969	2.704
2/15/2039	3.500	114.5000	114.5781	0.1875	2.739
5/15/2039	4.250	129.4688	129.5000	0.2031	2.723
8/15/2039	4.500	134.5000	134.5469	0.0938	2.723
11/15/2039	4.375	132.1406	132.1719	0.0781	2.729
2/15/2040	4.625	137.3438	137.3906	0.0625	2.724
5/15/2040	4.375	132.4375	132.5156	0.1250	2.730
8/15/2040	3.875	122.3125	122.3594	0.0781	2.748
11/15/2040	4.250	130.0938	130.1406	0.0625	2.740
2/15/2041	4.750	140.5469	140.5938	0.0156	2.731
5/15/2041	4.375	132.9531	133.0000	0.0469	2.741
8/15/2041	3.750	120.0313	120.1094	0.0938	2.757

## TREASURY BILLS

Tuesday, October 04, 2011

Treasury bill bid and ask data are representative over-the-counter quotations as of 3pm Eastern time quoted as a discount to face value. Treasury bill yields are to maturity and based on the asked quote.

Maturity	Bid	Asked	Chg	Asked yield
10/6/2011	0.015	-0.005	0.0000	0.0000
10/13/2011	0.015	-0.005	0.0000	0.0000
10/20/2011	0.030	0.010	0.0050	0.0100
10/27/2011	0.015	-0.015	-0.0100	0.0000
11/3/2011	0.015	-0.005	0.0050	0.0000
11/10/2011	0.025	0.005	0.0150	0.0050
11/17/2011	0.015	-0.005	0.0050	0.0000
11/25/2011	0.025	0.005	0.0100	0.0050

12/1/2011	0.035	0.010	0.0200	0.0100
12/8/2011	0.035	0.015	0.0250	0.0150
12/15/2011	0.055	0.035	0.0450	0.0350
12/22/2011	0.070	0.050	0.0600	0.0510
12/29/2011	0.080	0.060	0.0650	0.0610
1/5/2012	0.015	0.005	0.0050	0.0050
1/12/2012	0.010	-0.010	-0.0200	0.0000
1/19/2012	0.015	-0.005	0.0000	0.0000
1/26/2012	0.040	0.020	0.0150	0.0200
2/2/2012	0.035	0.010	0.0100	0.0100
2/9/2012	0.025	0.005	-0.0050	0.0050
2/16/2012	0.025	0.005	-0.0050	0.0050
2/23/2012	0.025	0.005	-0.0050	0.0050
3/1/2012	0.025	0.020	-0.0150	0.0200
3/8/2012	0.025	0.020	-0.0150	0.0200
3/15/2012	0.035	0.010	-0.0050	0.0100
3/22/2012	0.030	0.020	-0.0100	0.0200
3/29/2012	0.035	0.025	-0.0150	0.0250
4/5/2012	0.040	0.035	-0.0100	0.0350
5/3/2012	0.050	0.040	-0.0150	0.0410
5/31/2012	0.065	0.045	-0.0050	0.0460
6/28/2012	0.070	0.060	-0.0050	0.0610
7/26/2012	0.085	0.070	0.0000	0.0710
8/23/2012	0.090	0.085	-0.0150	0.0860
9/20/2012	0.105	0.080	0.0050	0.0810

## FEDERAL AGENCY SECURITIES

As we have studied debt (bonds) issued by corporations, and the U.S. [Federal] Government, there are agencies of the Federal Government that are for-profit, stock-held corporations, given charters by the Government to operate.

These agencies provide a valuable service to the financial industry called **Securitization**. This is the act of making an investment security out of something that isn't; and in doing so, *they bring liquidity to financial firms*.

This is how it works: Banks and other financial institutions loan money as one of their primary sources of income. The central problem with lending is that banks would prefer to lend in the short term, but much of their business is comprised of mortgage loans with 30-year maturities. The bank funds these long-term loans with short term deposits (people do not commit themselves to 30-year deposits). This *mismatch* between assets and liabilities is one of the largest mistakes that a financial institution can make. The bank is concerned about *interest rate risk*. The risk that interest rates will rise, moving the rate on short-term deposits up beyond the rate the mortgage loan is earning.

Imagine that the savings rate is 3% and the mortgage rate is 6%; so far, so good, the bank makes the difference (the *spread*) between the two rates. Now imagine that interest rates rise to 7%, now the bank is paying 7% on deposits and the mortgage loans (signed for 30 years) continue to pay 6%. The bank is losing 1% on every dollar of deposit.....we called this the *Savings & Loan crises* in the 1980's.

The bank uses federal agencies to minimize the interest rate risk that is inherent in mortgage lending.

Let's say that a bank makes \$1,000,000 of mortgage loans today. Because the loans are made at a similar period of time, the interest rate on the loans are usually similar, say 6.5% in today's market.

The bank will immediately sell the loans to federal agency The Federal National Mortgage Association (FNMA, called "Fannie Mae") to minimize the interest rate risk and to bring the million dollars back to the bank to make more loans. Fannie Mae will form a "pool" with these loans and slice the "pool" into slices, \$25,000 per slice. In our example, imagine a million dollar pool cut into 40, \$25,000 slices. The slices are sold to the investing public as **bonds**.

Investors that are interested in bonds are many times attracted to these **Mortgage Backed Securities**. They pay a higher rate of interest than many other debt securities, have 30-year terms and are backed by a Federal Agency (FNMA).

Fannie Mae, is called a pass-through agency. The loans pass from the banks through FNMA to the investor. As people make their mortgage payments, the money passes to the bondholder (principal and interest).

Other federal agencies are:

The Government National Mortgage Association (GNMA, Ginnie Mae) who securitizes mortgages, just like Fannie Mae.

The Student Loan Marketing Association (SLMA, Sallie Mae) who securitizes government guaranteed student loans.

If there is a particular problem with these types of investments is that the investor is now taking the interest rate risk. You "get paid when you least want to." Financial institutions are protecting themselves from interest rate risk (the largest single risk in investing in fixed income securities) by selling the bonds.

Let's say that you own a mortgage bond at a current rate of 6.5%. If interest rates rise to 7.5%, you want to invest at the new, higher rate but your payments will come in slowly; your payments are dependent on the person that holds the mortgages. When interest rates increase, they do not pre-pay their mortgages but hold them for as long as they can.

If interest rates fall to 5.5%, people refinance their homes for the lower interest rate and PAY OFF the 6.5% loan. That means that the bond holder of the 6.5% mortgage is paid off long prior to maturity.

12/29/16

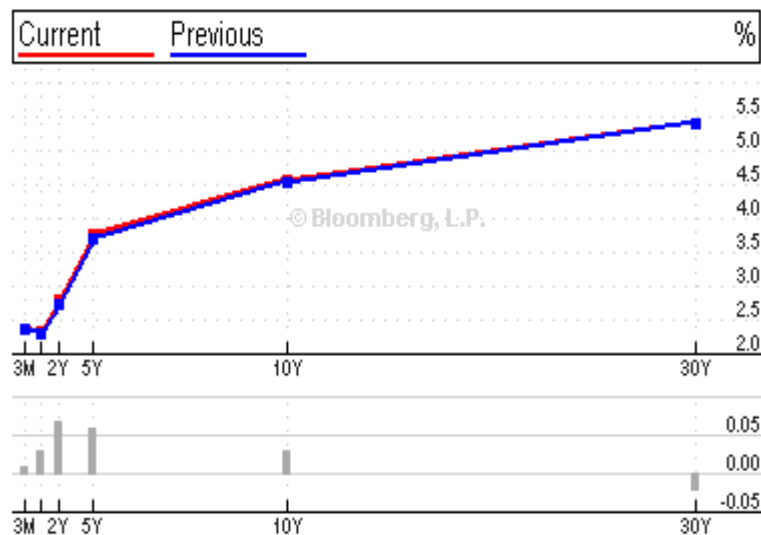
## THE TERM STRUCTURE OF INTEREST RATES (YIELD CURVE)

The hypothetical yield curve is a "line-of-best-fit" drawn through different interest-maturity combinations.

The curve forms a graphical picture of market interest rates at any given time.

The Yield Curve (or the "Term Structure of Interest Rates") is a graphical relationship of interest rates and terms of maturity for fixed income products.

A "typical, normal" yield curve is a graph that is *upward sloping, to the right*.



If there is a picture "worth a thousand words" it would be a yield curve. So much is said about the condition of the economy and the market by the shape of the Curve.

Some particulars about the Yield Curve:

- The **Treasury Yield Curve** is pictured in the Wall Street Journal daily.
- The United States Treasury 'sets the curve.' Whenever the US Government borrows money, the bonds, notes and bills are auctioned usually to large banks and brokerage firms. The price and yield that wins the auction sets the rate.
- Corporations that need funding through a bond issue look to the Treasury Yield Curve to determine what they have to pay for money. They can't pay lower than Treasury, their bonds would not sell (investors would not consciously buy a General Electric bond that paid 5% if the comparable Treasury paid 5 1/4%).
- The interest rates that a company pays for money is largely determined by their credit rating. The lower the credit rating, the higher interest rates that they have to pay. We

measure risk in the curve vertically; as credit ratings get lower (worse), the yield curve is higher above the Treasury curve.

- We also measure risk horizontally; the **spread** between the rate on the left side of the curve versus the rate on the right side of the curve, signals what the **market thinks of inflation and future rates**. In the curve above, the near-term rate is right about 2.25%; the long-end of the curve is at a rate of about 5.4%. There is a 3.15% spread between the two. The larger the spread, the steeper the curve. A steep curve tells us that the Market believes that higher interest rates are in our future, that interest rates in the future will increase. A relatively flat yield curve has a small spread and indicates that the Market believes that interest rates will remain relatively unchanged, that inflation is under control and will not soon increase.
- There are examples of INVERTED yield curves below. These point to a recession, short-term rates are higher than long-term rates. In these instances financial institutions curtail their lending or refuse to lend increasing the change for recession.
- *Every recession was preceded by an inverted yield curve.*

### Three Theories on the shape of the YIELD CURVE

**Rational Expectations Theory:** (The easiest, most strait forward of the theories) This theory states that investors expect to be paid a higher interest rate when investing for a longer term. This is the most plausible, most referenced theory of the yield curve's shape. To "go out on the curve" means purchasing longer termed securities and to do so invites more risk.

**Liquidity Preference Theory:** [A little tougher to understand] An investor will sacrifice a higher yield for a lower yield by lending short term instead of long term. An investor will pay a higher price (and accept a lower yield) to have a shorter term, more liquid security. Thus a 'liquidity preference.'

**Market Segmentation Theory:** {The toughest one} This theory asserts that the yield curve is not smooth and continuous but exists as broken segments, each with their own set of terms and rates. Businesses operate in certain areas of the curve. Banks, for example, tend to prefer to lend money short term, and borrow short term. Insurance companies have products (like life insurance) that are primarily long-term in nature, other companies tend to buy and sell securities in the "middle" of the curve. Market Segmentation states that the "segments" are independent of each other.

### Some YIELD CURVE comparisons

This is a picture of a yield curve from June of 2000; the *inverted* shape is NOT a normal curve. EVERY recession began with an inverted yield curve and this situation was no exception, this curve was right before the recession of 2001.

<HELP> for explanation.

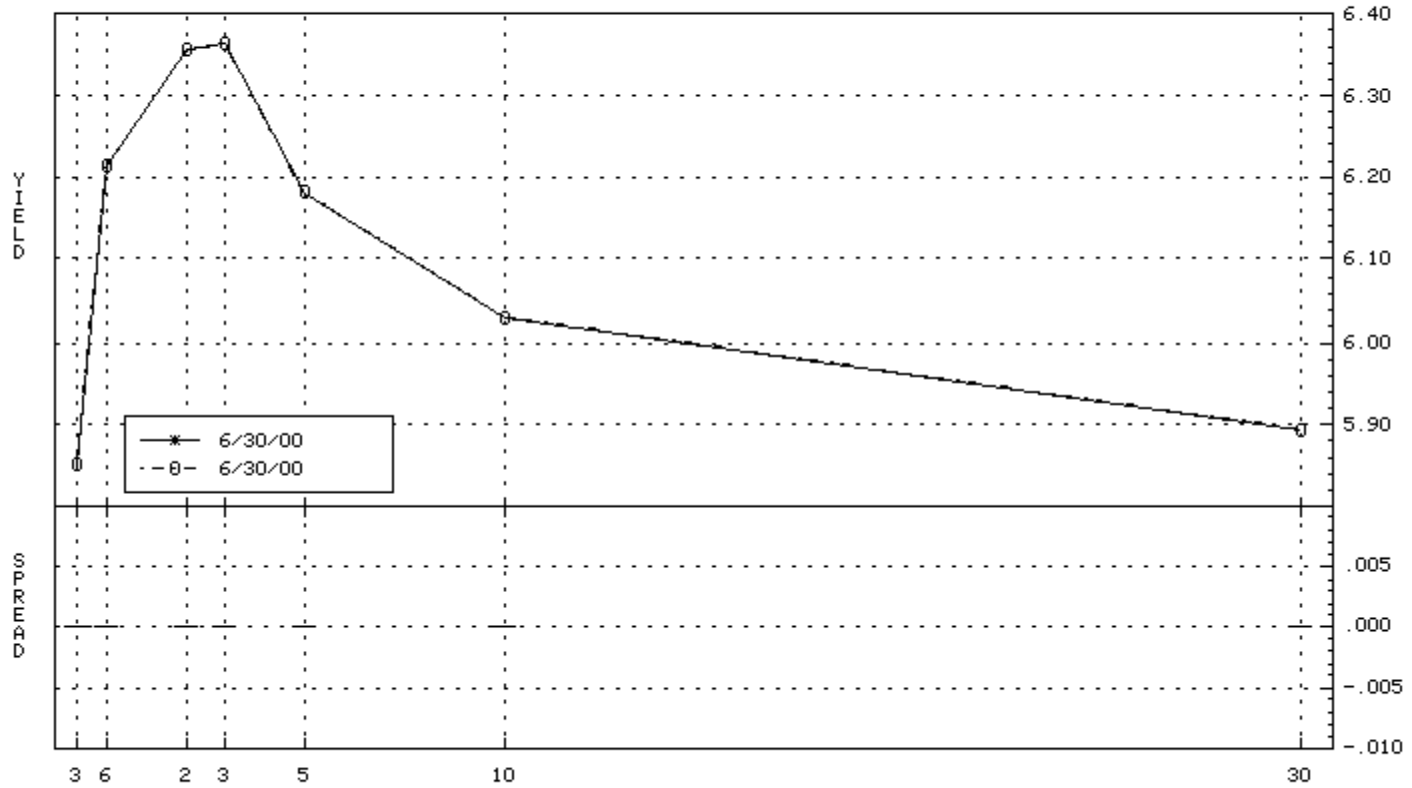
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### HISTORICAL YIELD CURVE

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DATE RANGE 6/30/00 6/30/00

MTY RANGE 3M 30Y



Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2005 Bloomberg L.P.  
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Same curve as above, but one month later...July, 2000.



<HELP> for explanation.

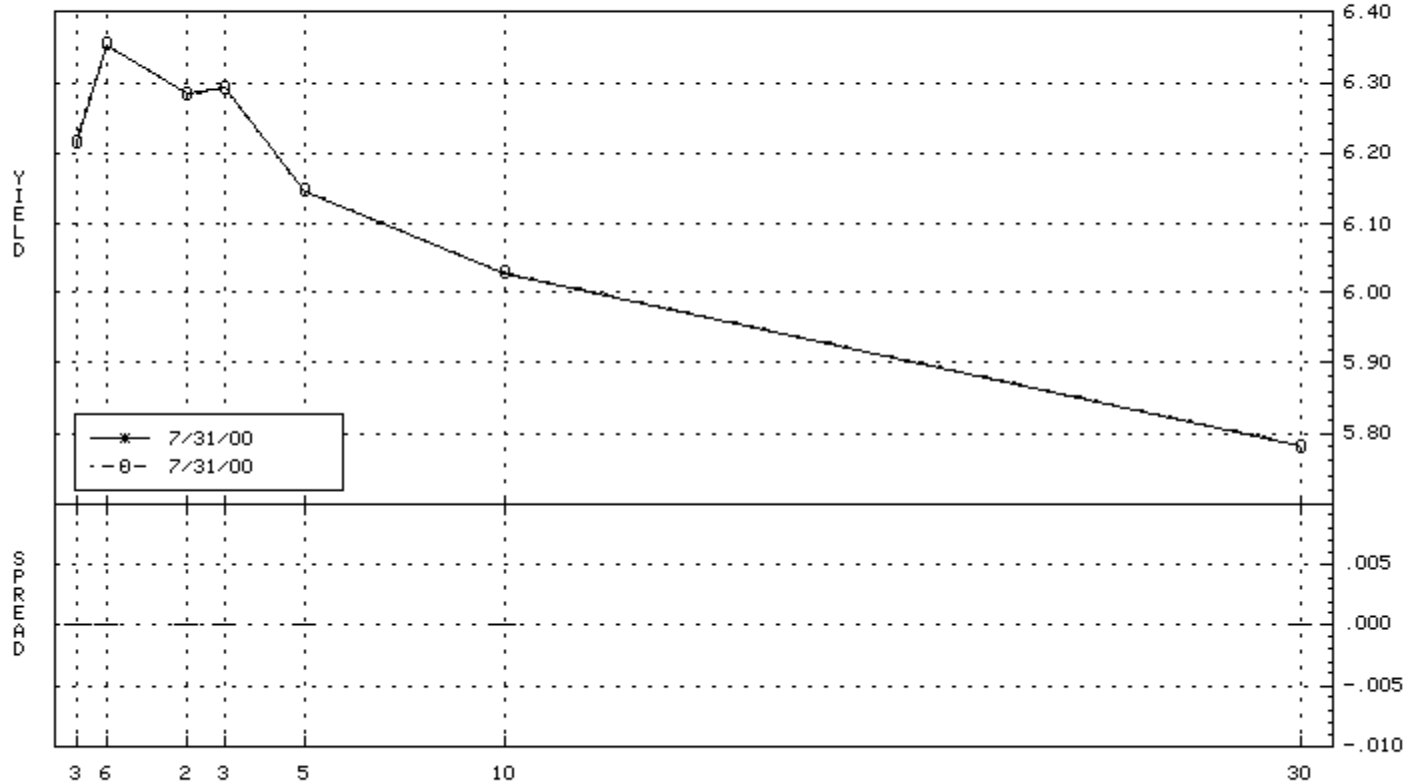
N166 Govt C15

### HISTORICAL YIELD CURVE

PAGE 1 OF 2

DATE RANGE

MTY RANGE



Australia 61 2 9777 8600      Brazil 5511 3048 4500      Europe 44 20 7330 7500      Germany 49 69 920410  
Hong Kong 852 2977 6000      Japan 81 3 3201 8900      Singapore 65 6212 1000      U.S. 1 212 318 2000      Copyright 2005 Bloomberg L.P.  
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<HELP> for explanation.

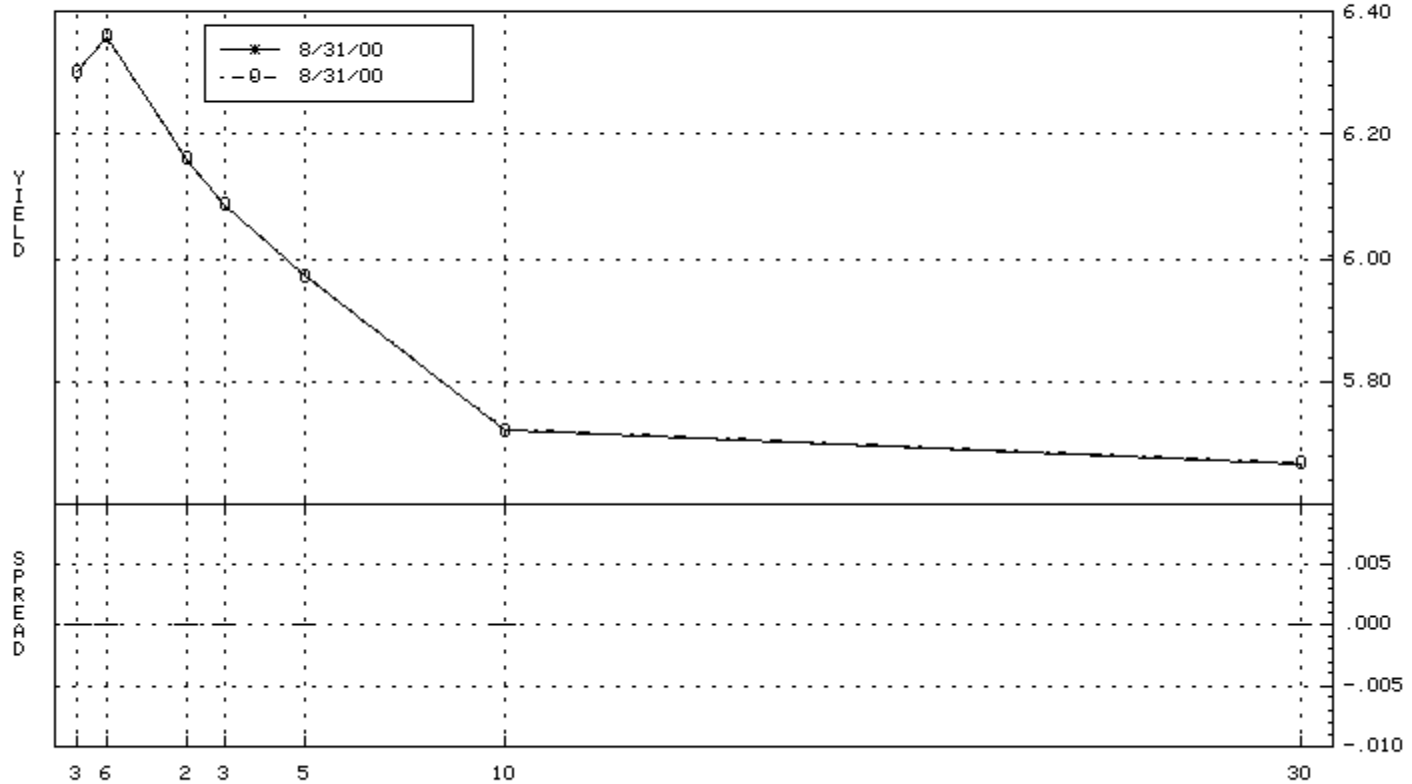
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# HISTORICAL YIELD CURVE

PAGE 1 OF 2

DATE RANGE

MTY RANGE



Australia 61 2 9777 8600      Brazil 5511 3048 4500      Europe 44 20 7330 7500      Germany 49 69 920410  
Hong Kong 852 2977 6000      Japan 81 3 3201 8900      Singapore 65 6212 1000      U.S. 1 212 318 2000      Copyright 2005 Bloomberg L.P.  
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<HELP> for explanation.

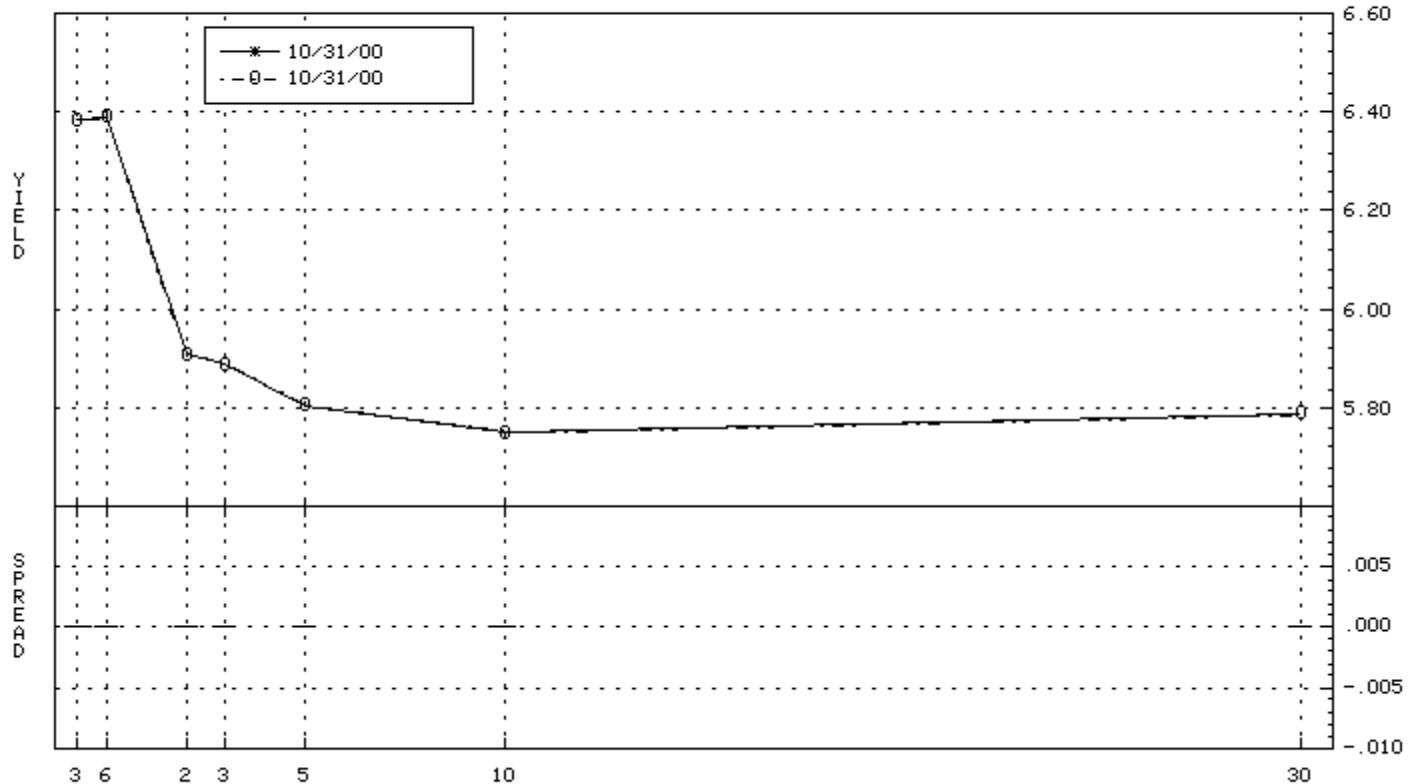
N166 Govt C15

### HISTORICAL YIELD CURVE

PAGE 1 OF 2

DATE RANGE 10/31/00 10/31/00

MTY RANGE 3M 30Y



Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 920410  
Hong Kong 852 2977 6000 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2005 Bloomberg L.P.  
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<HELP> for explanation.

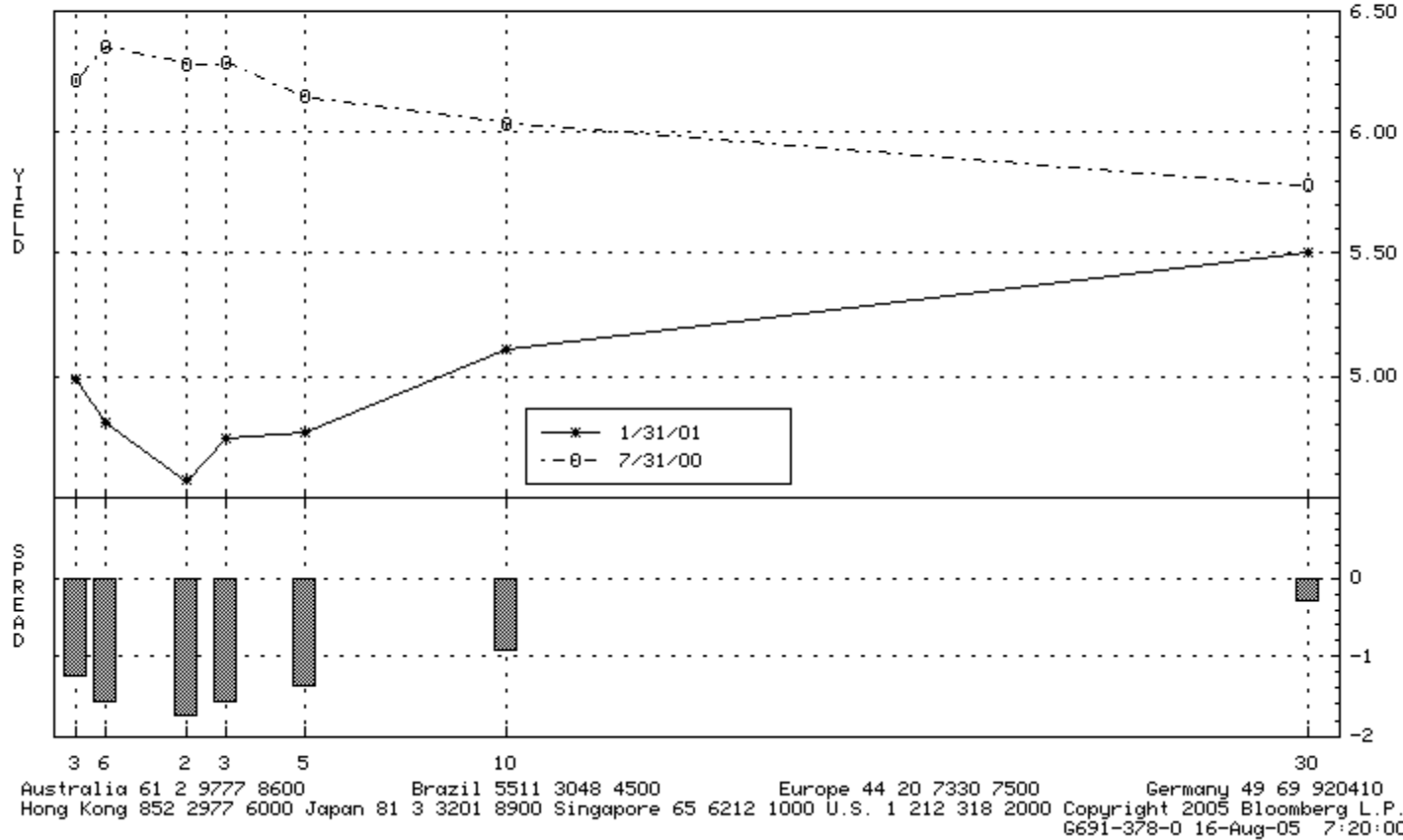
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# HISTORICAL YIELD CURVE

PAGE 1 OF 2

DATE RANGE **7/31/00** **1/31/01**

MTY RANGE **3M** **30Y**



12/29/16

## BOND PROBLEMS

What is the dollar price of a corporate bond with a quotation of:

Quotation	Answer
86	\$860
103 1/8	\$1031.25
91 5/8	\$916.25
111 15/16	\$1119.38
106	\$1060
100	\$1000
55 5/8	\$556.25
27 13/16	\$278.13
99	\$990
152 3/8	\$1523.75

Given the following bond listings, find the requested information:

<b>ATT 6 1/8</b>	
A) Find the coupon yield	6.125%
B) Find the Current Yield if the bond price quote is 106.	5.778%
C) Find the Yield-to-Maturity if the price quote is 106, with 6 years to maturity.	4.9757%
D) Find the Yield-to-Call if the price quote is 106, it can be called at 103.5 in 2 years.	4.6539%
<b>Stone Container 10 1/2</b>	
A) Find the coupon yield.	10.5%
B) Find the current yield if the price quote is 104.5	10.047%
C) Find the Yield-to-Maturity if the the price quote is 104.5 with 22 years to maturity.	10.0689%
D) Find the Yield-to-Call if the price quote is 110, it can be called for 101 in 7 years.	8.7339%
<b>Exxon 8 3/4</b>	
A) Find the coupon yield.	8.75%
B) Find the current yield if the price quote is 99.	8.838%
C) Find the Yield-to-Maturity if the price quote is 99 with 15 years to maturity.	8.8609%
D) Find the Yield-to-Call if the price is 101, it can be called at 103 in 2 years.	9.5588%
<b>Qualcomm 7 7/8</b>	

A) Find the coupon yield.	7.875%
B) Find the current yield if the price quote is 97 3/4.	8.056%
C) Find the Yield-to-Maturity if the price quote is 96 5/8 with 20 years to maturity.	8.1818%
D) Find the Yield-to-Call if the price quote is 98, it can be called at 101 in 6 years.	8.41708%

### BOND VALUATION PROBLEMS

Find the price of a 10% coupon bond with 10 years to maturity if interest rates:

A) increase by 1%	\$940.25
B) decrease by 1%	\$1065.04
C) increase by 1.5%	\$912.20
D) decrease by 1.5%	\$1099.71

Find the price of an 8% coupon bond with 30 years to maturity if interest rates:

A) increase by 3/4%	\$920.85
B) decrease by 3/4%	\$1091.24
C) increase by 1 1/4%	\$873.83
D) decrease by 1 1/4%	\$1159.91

Find the price of a \$1000, 8% zero coupon bond with 10 years to maturity. (Use semi-annual compounding) [\$456.3869]

Find the price of A \$1000, 7 1/2% zero coupon bond with 30 years to maturity. (Use continuous compounding)[\$105.399]

Find the value of a \$10,000, 6 1/8% Treasury Bill with one year to maturity. (Use continuous compounding)[\$9405.88]

Finance 2302 - Sample Exam for Bonds & Fixed Income Investments

- T F 1. A call provision allows the corporation to retire a bond before maturity by paying a small discount below par value.
- T F 2. The IRS taxes zero coupon bonds as if interest were paid semiannually even though no cash flow is received until maturity.
- T F 3. An important feature of the GNMA pass-through certificate is that there is no principal balance at maturity.
- T F 5. Like the stock market, there is a strong secondary market for bond issues, particularly corporate bonds.
- T F 6. The major provisions in the bond agreement are spelled out in the bond indenture.
- T F 7. A secured corporate bond is referred to as a debenture.
- T F 8. A Treasury bill is a long-term obligation of the federal government.
- T F 9. The Federal Reserve Board of Governors controls money supply and interest rates through its monetary policy.
- T F 10. The higher the bond rating of a corporation, the higher the interest rate that is likely to be paid.
- T F 11. Money market funds represent a vehicle to buy short-term fixed-income securities through a mutual fund arrangement.
12. Which of the following types of bond issues are the most price sensitive?
- A) Fixed rate long-term bonds
  - B) Floating rate bonds
  - C) Zero coupon bonds
  - D) Fixed rate short-term bonds
14. Junk bonds normally provide
- A) a higher yield than treasury bonds
  - B) a lower yield than treasury bonds
  - C) a lower yield than AA corporate bonds
  - D) more than one of the above is true
15. A call feature may be valuable to:

- A) Investors
- B) the issuing company
- C) corporate employers
- D) the IRS

16. Corporate bonds generally trade in units of

- A) \$100
- B) \$1,000
- C) \$5,000
- D) \$10,000

### **Answer Key – Bond Fundamentals**

- 1. False
- 2. True
- 3. True
- 5. True
- 6. True
- 7. False
- 8. False
- 9. True
- 10. False
- 11. True
- 12. C
- 14. A
- 15. B
- 16. B