


Bond Analysis, Portfolio
Strategies, and Trade Executions
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Introduction to Bond Investing



The Place of Bonds in the Portfolio

- **Risk Management** – An allocation to government and investment-grade corporate bonds can reduce risk in the portfolio. Such an allocation will usually not have the long-term return prospects of equity investments, however.
- **Return** – Active management of the bond portfolio, and careful exposure to non-investment-grade bonds, can add additional return to the total portfolio.



Bonds versus Bond Funds

- Investments in individual bonds rather than bond funds is:
 - Cheaper (avoid fund expenses)
 - Offers more control
 - Provides more flexibility in meeting the investor's goals



Bond Analysis

Bond Characteristics

- **Face value, par value** - The payment to the bondholder at the maturity of the bond
- **Coupon rate** - A bond's annual interest payment per dollar of par value
- **Zero-coupon bond** - A bond paying no coupons that sells at a discount and provides only a payment of par value at maturity
- **Callable bonds** - Bonds that may be repurchased by the issuer at a specified call price during the call period
- **Convertible bond** - A bond with an option allowing the bondholder to exchange the bond for a specified number of shares of common stock in the firm
- **Puttable bond** - A bond that the holder may choose to exchange for par value at some date
- **Floating-rate bonds** - Bonds with coupon rates periodically reset according to a specified market rate
- **Reverse-floaters** - Bonds with coupon rates periodically reset inversely according to a specified market rate
- **International bonds** – foreign bonds (government and private) and Eurobonds

Treasury quotes (from WSJ 12/05/08)

Treasury note and bond data are representative over-the-counter quotations as of 3pm Eastern time. Figures after colons in bid and ask quotes represent 32nds; 101:26 means 101 26/32, or 101.8125% of face value; 99:01 means 99 1/32, or 99.03125% of face value. 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.

Maturity	Coupon	Bid	Asked	Chg	Asked yield
2008 Dec 15	3.375	100:00	100:02	unch.	1.6281
2008 Dec 31	4.750	100:04	100:04	-5	2.9176
2009 Jan 15	3.250	100:06	100:06	+1	1.6821
2009 Jan 31	4.875	100:00	100:00	-12	4.8967
2009 Feb 15	3.000	100:00	100:00	-18	3.0136
2009 Feb 15	4.500	100:27	100:28	+13	0.0672
2009 Feb 28	4.750	100:18	100:18	+1	2.3438
2009 Mar 15	2.625	100:22	100:23	+1	0.0219
2009 Mar 31	4.500	101:12	101:14	unch.	0.0370
2009 Apr 15	3.125	101:01	101:03	+1	0.1058

Corporate quotes (from WSJ 12/05/08)

Most Active Investment Grade Bonds

Issuer Name	Symbol	Coupon	Maturity	Rating Moody's/S&P/ Fitch	High	Low	Last	Change	Yield %
BANK OF AMERICA	BAC.HDV	5.650%	May 2018	Aa2/AA-/A+	97.141	93.812	96.423	0.308	6.156
MERRILL LYNCH & CO	MER.GVC	6.875%	Apr 2018	A2/A/A+	97.747	94.770	97.416	0.390	7.258
BANK OF AMERICA CORP	BAC.HBM	5.750%	Dec 2017	Aa2/AA-/A+	97.506	94.186	94.593	-1.785	6.556
ALTRIA GP	MO.HC	9.700%	Nov 2018	Baa1/BBB/BBB+	106.566	101.508	102.541	-0.419	9.300
ARIZONA PUBLIC SERVICE	PNW.GV	5.800%	Jun 2014	Baa2/BBB-/BBB	86.722	82.000	83.000	-2.789	9.842
GENERAL ELECTRIC CAPITAL CORP	GE.HCY	6.150%	Aug 2037	Aaa/AAA/--	91.882	86.875	86.875	1.235	7.242
PROCTER & GAMBLE CO	PG.HD	5.550%	Mar 2037	Aa3/AA-/--	104.500	101.140	103.871	2.371	5.284
MORGAN STANLEY	MS.GGO	6.625%	Apr 2018	A1/A+/A	85.252	82.500	83.750	-1.250	9.265
GENERAL ELECTRIC CAPITAL	GE.AAD	6.000%	Jun 2012	Aaa/AAA/AAA	102.996	99.100	100.980	1.730	5.688
VERIZON COMM	VZ.RW	8.750%	Nov 2018	A3/A/A	107.250	101.839	103.804	1.117	8.180



Bond Valuation

- Straight bonds are priced as the present value of the coupon payments plus the present value of par value
- Most bonds are straight, bullet bonds with no added features, meaning that the investor receives periodic coupon payments and the entire principal payment in a lump sum when the bond matures
- Bonds with embedded options, such as call provisions and convertibility features, are more difficult to value – the embedded options must be valued as well as the underlying straight bond

Bond Yields

- **Yield to maturity (YTM)** - The discount rate that makes the present value of a bond's payments equal to its price. Use a spreadsheet or calculator to solve for YTM.
- **Current yield** - Annual coupon payment divided by the bond's market price (not par value).
- **Yield to call** - Actual call is never known. The risk to the holder is that interest rates will drop and the bond will be called. Usually calculate "yield to first call," which assumes the bond will be called on the first possible date.
- **Yield to worst** – Worst possible yield given various call scenarios.

Calculating Bond Yield and Price in Excel

YIELD(settlement date, maturity date, annual coupon rate, bond price, redemption value, frequency)

PRICE(settlement date, maturity date, annual coupon rate, yield, redemption value, frequency)

- **Settlement Date** is the security's settlement date. The security settlement date is the date after the issue date when the security is traded to the buyer.
- **Maturity Date** is the security's maturity date. The maturity date is the date when the security expires.
- **Annual Coupon Rate** is the security's annual coupon rate.
- **Bond Price** is the security's price per \$100 face value.
- **Yield** is the security's annual yield.
- **Redemption Value** is the security's redemption value per \$100 face value.
- **Frequency** is the number of coupon payments per year. For annual payments, frequency = 1; for semiannual, frequency = 2; for quarterly, frequency = 4.



Invoice price

- Price the buyer actually pays, which equals the stated price plus accrued interest (days elapsed since last payment/ 182 times semiannual coupon)



Interest rate risk

- Risk of changes in the capital value of bonds because of fluctuations in interest rates
- Bonds held to maturity (assuming no default) have no interest rate risk to their capital value because they can be redeemed at par value
- All coupon bonds, even those held to maturity, are subject to reinvestment risk
- These two types of interest rate risk offset each other



Default (Credit Risk)

- Corporate bonds carry a risk of default that Treasuries do not
- They therefore must offer a default premium, which is the difference between the promised yield and the yield on a Treasury of comparable maturity
- This default premium compensates the investor for taking on the extra risk



Bond Ratings

- **Investment grade bond** - A bond rated BBB and above by S&P or Baa and above by Moody's
- **Speculative grade or junk bond** - A bond rated BB or lower by S&P, Ba or lower by Moody's, or an unrated bond



Bond Prices Over Time

- Bond prices vary inversely with market interest rates
- If the market rate equals the coupon rate the market value of the bond will be its par value
- If interest rates rise, the value of the bond falls and vice-versa
- Bond prices converge to par at maturity



Bond Duration

- Weighted average of the times until each payment (coupons and principal) is made
- Measures interest rate risk, or a bond's sensitivity to changes in interest rates
- Similar function (but calculated differently) to how beta measures a stock's sensitivity to market risk



Yield Curve

- The term structure of interest rates (graphed as the yield curve) is the relationship between yields to maturity and terms to maturity across bonds
 - Flat
 - Rising (Normal)
 - Inverted
 - Humped



Bond Portfolio Strategies

Passive Bond Portfolio Strategies

- Indexing** – similar to indexing stock portfolios but bond indexes contain many more securities than do most stock indexes, which makes replication much more difficult. Also, as bonds mature, they are dropped from index, and new bonds added (unlike stocks).
- Immunization** – Classical immunization is a strategy to shield fixed-income assets from interest rate risk. It is done by setting the duration of a bond portfolio equal to its time horizon. In an immunized bond portfolio the effects of rising rates reducing the capital value of the bonds, and increasing the return on reinvestment of coupon payments, exactly offset each other, and vice-versa.
- Rebalancing** - The problem with duration-based strategies is that the duration of assets changes as interest rates change and time progresses toward maturity of the fixed-income assets. Therefore, in theory, portfolios would need to be rebalanced constantly for the strategies to be effective.
- Cash flow matching** - Matching cash flows from a fixed-income portfolio with a future liability. Since fixed-income assets mature at par value this strategy does not depend on duration and is not subject to interest rate risk.
- Laddering** - Multiperiod cash flow matching, sometimes called, “laddering.”

Active Bond Portfolio Strategies

- **Substitution swap** - Exchange of one bond for a bond with similar attributes but more attractively priced. Based on the assumption that the yield relationship between the bonds is only temporarily out of alignment.
- **Intermarket spread swap** - Switching from one segment of the bond market to another. Based on the assumption that the yield relationship between the segments is only temporarily out of alignment.
- **Rate anticipation swap** - A switch made in response to forecasts of interest rate changes.
- **Pure yield pickup swap** - Moving to higher yield bonds, usually with longer maturities, "riding the yield curve."
- **Tax swap** - Swapping two similar bonds to receive a tax benefit.
- **Horizon analysis** - Forecast of bond returns based largely on a prediction of the yield curve at the end of the investment horizon.
- **Contingent immunization** - A strategy that immunizes a fixed-income portfolio if necessary to guarantee a minimum acceptable return but otherwise allows active management.



Bond Trade Executions

Example of Bond Trade – Yield Curve from Schwab Institutional 12/05/08

Instruments	1MO	3MO	6MO	9MO	1YR	2YR	3YR	5YR	10YR	20YR	30YR+
Commercial Paper	----	2.000	1.432	----	----	----	----	----	----	----	----
U.S. Treasuries	0.105	0.058	0.375	0.522	0.623	1.042	1.054	1.539	3.175	3.368	3.060
U.S. Treasury Zeros	----	----	0.188	0.845	0.590	0.763	1.690	1.897	3.530	3.534	2.845
Government Agencies	1.019	1.404	2.106	1.808	2.905	4.020	3.808	5.019	5.709	6.177	6.502
Corporates (AAA)	----	1.238	2.862	3.625	4.787	4.697	4.995	5.678	6.947	6.990	7.019
Corporates (AA)	----	1.554	2.862	3.665	7.035	11.250	4.995	5.756	8.295	6.990	7.019
Corporates (A)	2.800	5.544	6.767	7.483	9.173	13.230	11.414	10.176	12.386	10.145	12.080
Municipals (AAA)	----	1.818	3.913	2.003	2.787	4.975	3.546	4.903	5.973	6.700	6.942
Municipals (AA)	0.973	2.249	3.913	4.850	4.762	5.965	5.084	5.723	6.941	7.688	7.461
Municipals (A)	0.994	2.249	3.913	4.850	4.762	5.965	6.213	6.226	7.485	7.986	7.989
*Tax Equiv. Muni AAA	----	2.797	6.020	3.082	4.288	7.654	5.455	7.543	9.189	10.308	10.680

Example of Bond Trade - 5-Year AAA from Schwab Institutional 12/05/08

Ratings											
Trade	Moody's	S & P	Min	Max	Description	Coupon ⓘ	Maturity	Price	YTM ⓘ	YTC ⓘ	YTW ⓘ
BUY	Aaa	AAA	10	250	GENL ELEC CAP CP INTERNOTES 36966RW36 Semi-Annual	4.2	02/15/2014	93.44100	5.678	--	--
BUY	Aaa	AAA	1	20	GENL ELEC CAP CP INTERNOTES 36966RSA5 Monthly	4.55	09/15/2013	99.86900	4.581	--	--
BUY	Aaa	AAA	1	6	GENERAL ELEC CAP INTERNOTES 36966RKG0 Semi-Annual	4.85	10/15/2013	101.15367	4.581	--	--
BUY	Aaa	AAA	1	20	GENL ELEC CAP INTERNOTES 36966RFW1 Semi-Annual	4.0	12/15/2013	97.81500	4.491	--	--
BUY	Aaa	AAA	1	1100	BERK HATH FIN NOTES Make Whole Call 084664AD3 Semi-Annual	4.625	10/15/2013	101.10000	4.370	N/A	N/A

Example of Bond Trade – GE Cap 4.2% 02/15/14 from Schwab Institutional 12/05/08

GENL ELEC CAP CP 4.2%14INTERNOTES DUE 02/15/14

Price based on 50 bonds and a settlement date of 12/10/2008

CUSIP:	36966RW36	Security Type:	Corporates
Maturity Date:	02/15/2014	Issue Type:	Secondary Market
Coupon Rate:	4.2	Underlying Stock Symbol:	GE
Dated Date:	02/22/2008	Trading Flat:	No
1st Coupon Date:	08/15/2008	Monetary Default:	No
		Federal Tax:	N/A
Next Coupon Date	02/15/2009	Moody's:	Aaa
Insurance:	--	S & P:	AAA
Coupon Frequency:	Semi-Annual		
CALL/SINK/PUT FEATURES		OFFER	
Call Type:	Non-callable	Price:	93.44100
Call Method:	--	Current Yield:	4.495
Coupon Type:	Fixed	Yield To Maturity:	5.678
		Yield To Call:	--
		Yield To Worst:	--
		Available Quantity:	250,000
		Trade min/increment:	10,000 / 5,000
		Security min/increment:	1,000 / 1,000



Conclusion

- Thank you for your time and attention
- Please feel free to contact Bob
- Contact information at www.insightwealth.com