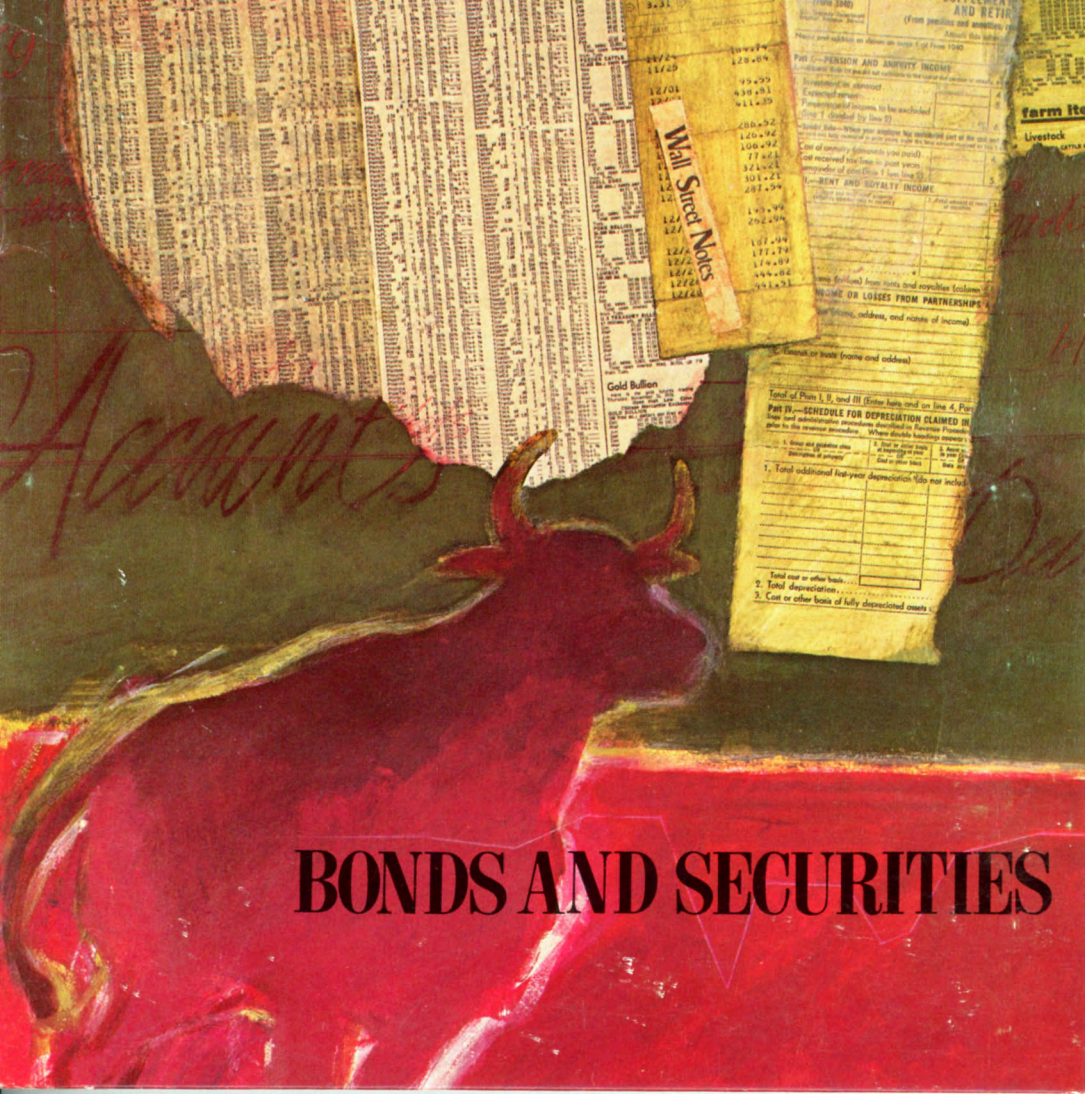

BONDS AND SECURITIES

BONDS AND SECURITIES

Compucolor II

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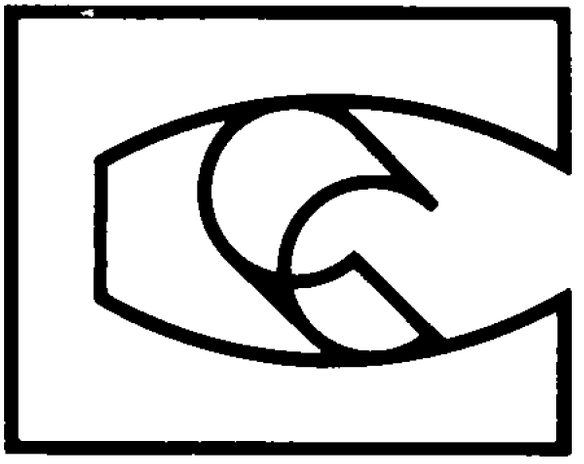

Designed for the serious investor, this program offers considerable flexibility by allowing you to change variables and see each effect on bond price or yield.

Library Album No. 990012

Requires 16K user RAM

BONDS

Bonds is a BASIC language program designed to assist the user in making decisions concerning the sale and purchase of bonds. The program can make the following calculations:

A. Compute a bond price
B. Compute the yield of a bond
C. Compute the best price of a callable bond
D. Compute a bond amortization schedule

Limitations

Compucolor Corporation assumes no responsibility for losses incurred from decisions based on the results of this program. Calculations are made to eight significant digits; however, small errors can occur in the seventh and eighth digits due to binary to decimal conversions. Values of $1,000,000 or greater will not be displayed properly. Large amounts can still be used by dropping the least significant digits when entering data and adding the appropriate number of zeros to the results. All time intervals are based on 360 days per year, 30 days per month. This is in line with generally acceptable practices for computing conversion periods.

Definitions

The following variables are used by BONDS:

1. Par Value (F) - The face value of the bond.
2. Redemption Value (C) - The amount paid at maturity to the holder of the bond. In many cases this will be the same as the par value.
3. Coupon Rate (R) - The nominal rate of interest per payment period.
4. Yield Rate (YR) - The nominal interest rate per interest conversion period actually earned by the investor.
5. Book Value (P) - The price which must be paid for a bond in order to get the desired yield rate.
6. Accrued Interest (AI) - The interest accumulated between interest conversion periods.
7. Flat Price (PF) - The actual price the buyer must pay the seller for the bond. It consists of the book value of the bond plus the interest earned by the seller up to that date (accrued interest).
8. Issue Date
9. Today's Date
10. Maturity Date - Date at which last coupon is paid and the face value of the bond becomes due.
11. Time to Maturity (N) -
12. Number of Periods per Year - Number of interest conversion periods per year.

How To Use BONDS

Inserting the BONDS disk in your Compucolor and hitting the AUTO key will automatically load the program and start execution. "BONDS" will appear at the top of the screen followed by 12 variables. The four options (A - D) will be listed in the lower left corner. The last line on the display will read:

"ENTER COMMAND OR LINE TO BE CHANGED"

and is referred to as the command line. The following commands are recognized by the program and can be entered anytime the cursor follows the command line.

COMMAND	PURPOSE
#	Moves cursor to item number (# ranges from 1-12)
ALL	Allows user to enter new data for all variables
A	Sets program to compute a bond price
B	Sets program to compute a bond yield
C	Sets program to compute price of a callable bond
D	Program calculates and displays bond amortization schedule
CALC	Initiates bond calculations
END	Exits bonds program

Entries must be followed by a RETURN.

If entries other than the above commands are entered, the phrase "ILLEGAL ENTRY" is displayed for two seconds. The desired option is selected by entering a letter from A to D, the default is A. The "X" next to the options indicates the option currently selected. Option A or B must have been calculated with the "CALC" command prior to selecting options D or E since they use previously calculated data.

Options A & B: Compute Bond Price/Compute Bond Yield

These two options share the same display format, the only difference being the variable calculated. Data is entered by typing the variables item number or "ALL" on the command line. "ALL" allows the user to enter data for each variable. In either event an asterisk ("*") will appear in the field of the variable to be entered. Data is entered by typing the desired value and hitting RETURN. If a RETURN is hit without entering data or a single "0" is entered, the value of the variable will remain unchanged. If a zero value is required, two zeros "00" must be entered. This is necessary since BASIC returns a "0" if only RETURN is hit in response to an input.

Items 3 & 4 are entered as percentages. Items 9 through 11 are used to calculate the time to maturity for the bond. It is not necessary to enter data for each of these variables. Enough information must be provided so that the computer can calculate time to maturity. Therefore, items 8, 9 and 10 can be left blank if a value is entered for item 11. Time to maturity is calculated according to the following priorities:

1. Item 10 less Item 9
2. Item 10 less Item 8
3. Item 11

If time to maturity cannot be calculated, an error message ("CANNOT CALCULATE TIME TO MATURITY") will be displayed.

Data entered for items 8, 9 or 10 must be of the form: month (first three letters), day and year and falling within the fields indicated above or below the variable.

Data entered for item 11 will only be used if time to maturity cannot be calculated. Item 11 may be entered as either a decimal number in years, or years, months and days to maturity. If a decimal number is entered, the field boundaries may be ignored, but the entry must contain no blanks. After entry a decimal number is converted to the years, months and days format for display. For example, 1.375 is converted to 1 year 4 months 15 days. Values entered as years, months and days must fall within the boundaries indicated below the field.

Once time to maturity is known the computer will attempt to calculate dates for items 8-10 if sufficient information is available. For example, if only the issue date and time to maturity are entered, the computer will calculate the maturity date.

Item 12 is the number of coupon periods per year. It is initially set to two (semi-annual coupons) but can be changed to any value.

No calculations will take place until the "CALC" command is issued. If the data is insufficient to make calculations, an error message will be displayed indicating the problem. Calculating the yield of a bond will take considerably longer than calculating a bond price.

Option C - Price of a Callable Bond

When this option is selected, the upper portion of the screen is replaced with a display which allows the user to enter call dates and redemption values for up to five dates. Data is entered in the same manner as for options A and B, except each item requires two variables to be entered. The call dates can be entered as either time to maturity or real dates. Time to maturity can be entered only if items 8-10 are blank on the option A/B display.

Issuing the "CALC" command will calculate the highest price which can be paid and still be certain of the yield which was previously entered or calculated by options A or B. The program makes the following assumptions:

1. If yield rate is less than coupon rate (i.e. bond sales at premium), then the redemption date will be the earliest possible date.

2. If yield rate is greater than coupon rate (i.e. bond sales at discount), then the redemption date will be the latest possible date.

If the first assumption applies, then the price of the bond is calculated for each call date and the maturity date. The price to pay for the bond is the lowest price of these calculations. If assumption two applies, the price will be based on the maturity value and date.

Option D - Amortization Schedule

Selection of this option will display an amortization schedule for the current bond. If the entire schedule cannot be displayed, then only the first 13 lines are shown. Hitting RETURN will display the next 13 lines (or less). It is possible to terminate the listing by entering "END". The dates on the schedule represent time to maturity, unless items 8-10 are known, in which case real dates are used.

Examples

The following examples are provided to further demonstrate how to use BONDS. The values in parenthesis represent the results of a calculation.

1. Find the price of a $1000 par value two-year 6% bond with semi-annual coupons bought to yield 9% converted semi-annually.

Solution: Enter the following data in the program.

1. Par Value Of Bond	$1000	8. Issue Date	
2. Redemption Value	$1000	9. Today's Date	
3. Coupon Rate	6%	10. Maturity Date	
4. Yield Rate	9%	11. Time To Maturity	02
5. Book Value	($946.19)	12. Number Of Periods	2
6. Accrued Interest	($0.00)		
7. Flat Price	(946.19)		

The price to pay for the bond in order to yield a 9% return is $946.19.

2. Find the book value and flat price for the above bond if it is bought 7 1/2 months after its issue date.

Solution: The only difference would be that the time to maturity would be 1 year 4 months 15 days (2 years - 7 1/2 months). The results are Book Value = $962.05, Accrued Interest = $7.50 and Flat Rate = $969.55.

3. A $100 par value bond is issued on July 15, 1975 with semiannual coupons of 4% matures in 10 years at $110. Find the yield rate if the bond is purchased on February 25, 1979 for $90. Also find the accrued interest and the price the buyer must actually pay the seller (flat price).

Solution: Section Option B and enter the following data:

1. Par Value Of Bond	$100	8. Issue Date	July 15, 1975
2. Redemption Value	$110	9. Today's Date	Feb.25, 1979
3. Coupon Rate	4%	10.Maturity Date	July 15, 1985
4. Yield Rate	(7.24%)		
5. Book Value	$90	11.Time To Maturity	(06-04-20)
6. Accrued Interest	($0.44)	12. # Of Periods/Year	2
7. Flat Price	($90.45)		

4. Consider a $100 par value 4% bond with semiannual coupons callable at $109 on any coupon date from the 5th through 9th years, at $104.50 from the 10th through the 14th years and maturing at $100 at the end of 15 years. What is the highest price which an investor can pay and still be certain of a yield of 3% convertible semiannually.

Solution: Select Option B and enter the following data for the bond at the maturity and issue the "CALC" command.

1. Par Value of Bond	$100	8. Issue Date	
2. Redemption Value	$100	9. Today's Date	
3. Coupon Rate	4%	10. Maturity Date	
4. Yield Rate	3%		
5. Book Value	($112.01)	11. Time To Maturity	15
6. Accrued Interest	($0.00)	12. # Of Periods/Year	2

Next select Option C and enter the call dates and redemption values.

	EARLIEST CALL DATES YY MM DD	REDEMPTION VALUE
1.	05	$109.00
2.	10	$104.50

Issuing the "CALC" command will then calculate the highest price which should be paid as $111.93 and the most unfavorable redemption date occuring in 10 years.

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A. For extended media life of your Sof-Disk™—take the following precautions.
1. Do not put fingers on the precision surface.
2. Insert the Sof-Disk carefully into the disk drive.
3. Keep the Sof-Disk far from magnetic field which will erase it.
4. Store the Sof-Disk in the jacket when not in use.
5. Handle the Sof-Disk with care. Bending and folding will damage it.
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7. Do not leave Sof-Disk in disk drive while turning your Compucolor II ON or OFF.

B. ALL COMPUTER PROGRAMS ARE DISTRIBUTED ON AN "AS IS" BASIS WITHOUT WARRANTY.