

CHAPTER 3: DATA DEFINITIONS

This section gives descriptions of the data items provided in the files. Each description is preceded with a line containing two items bolded:

- ⊗ The Variable Name
- ⊗ A Short Description of the Data Represented
- ⊗ Data Types

The data items in this section are grouped logically according to six data types:

1. CALENDAR - Trading Calendar and Government Rates
2. HEADER - Issue Identification, Characteristics, and Data Ranges
3. QUOTES - Raw Pricing Data
4. YIELDS - Derived Yields, Duration, Returns, and Accrued Interest
5. DEBT - Amounts Outstanding
6. PAYMENTS - Interest Payments

Certain data types are available organized by issue and by date (See the figures in Chapter 2). More complete information on accessing the data items using variables in CRSP FORTRAN and C programs is contained in Chapter 4.

Information on the Fixed Term Indices File is available in this chapter.

CALENDAR - Calendar and Government Rates

The BXCAL structure contains the trading calendar and summary information for each date in the CRSP US Treasury Database. The three types of information include:

1. Trading calendar quote dates and delivery dates.
2. Government rates for certificates of deposit, commercial paper, and federal funds.
3. Counts of trading US Government securities.

QDATE	Date of Quotation, in YYYYMMDD Format	integer
	QDATE contains the trading quote dates for the files. These dates are stored in form YYYYMMDD (year, month, and date).	
DELDAT	Delivery Date, in YYYYMMDD Format	integer
	DELDAT contains the delivery date for a corresponding quote date. These dates are stored in the form YYYYMMDD (year, month, date).	
	The Federal Reserve Bank of New York the source from January 1962 through October 15, 1996, assumed cash transactions on delivery date. The delivery date usually fell two business days after the quotation date. GovPX, the source from October 16, 1996, reports delivery data the next business day after the end quote date.	
CD1M	One-Month Certificate of Deposit Rate	real
	Certificate of deposit rate is the average of secondary market morning offering rates for time certificates of deposit of major money market banks. It is an unsecured note issued by companies for short-term borrowing purposes.	

CRSP DAILY US TREASURY DATABASE GUIDE

CD3M	Three-Month Certificate of Deposit Rate	real
CD6M	Six-Month Certificate of Deposit Rate	real
CP30D	30-Day Commercial Paper Rate	real
	Commercial paper rate is an average of posted 10 a.m. offering rates of five dealers. Rates are quoted on a discount basis. It is an unsecured note issued by companies for short-term borrowing purposes. Commercial paper is frequently sold by the issuer direct to the investor, the latter normally being institutions, money-market funds, insurance companies, corporations, bank trust departments and pension funds. Commercial paper is also placed by intermediary banks or securities dealers.	
CP60D	60-Day Commercial Paper Rate	real
CP90D	90-Day Commercial Paper Rate	real
FFEFRT	Federal Funds Effective Rate	real
	The effective rate is a weighted average of the rates on overnight Federal funds transactions arranged by federal funds brokers. It is the rate of interest charged on federal funds loaned by and to commercial banks. It is regarded by the Federal Reserve System regulator authorities as an important determinant of bank liquidity.	
FFMINR	Federal Funds Minimum Trading Range	real
FFMAXR	Federal Funds Maximum Trading Range	real
NUMACT	Number of Active Issues	integer
	The number of active US Treasury issues quoted on a quotation date.	

HEADER - Issue Identification, Characteristics, and Data Ranges

This structure contains header information for issues. There are three types of information included:

4. Identification assigned by CRSP or CUSIP to uniquely identify the issue.
5. Characteristics of the issue set by the treasury, such as interest dates and callable status.
6. Data ranges, including the date ranges of quotes, the number of amounts outstanding, and the number of interest payments.

CRSPID	CRSP Assigned Unique Issue Identification Number	character*15
	The CRSPID is in the format YYYYMMDD.TCCCCCE, where: YYYY = Maturity Year MM = Maturity Month DD = Maturity Day T = Type Of Issue (TYPE) CCCC = Integer Part of (COUPRT x 100) E = Uniqueness Number (UNIQ)	

For example, 19850515.504250 identifies a 4 1/4% callable bond which matures May 15, 1985. For callable notes and bonds, the YYYY portion of the CRSPID contains only the final maturity date of the issue and not the first eligible call date for that issue.

The variable CRSPID is a composite of other variables. Mathematical operations to retrieve parts of the CRSPID are unnecessary when using the Master File.

TYPE	Type of Issue 1 = Noncallable bond 2 = Noncallable note 3 = Certificate of indebtedness 4 = Treasury Bill 5 = Callable bond 6 = Callable note 7 = Tax Anticipation Certificate of Indebtedness 8 = Tax Anticipation Bill 9 = Other — this flags issues with unusual provisions. See Appendix A	integer
MATDT	Maturity Date at Time of Issue, in YYYYMMDD Format	integer
COUPRT	Coupon Rate (percent per annum)	real*8
UNIQ	Uniqueness Number Uniqueness number assigned to CRSPID if maturity date, coupon rate and type are not sufficient to distinguish between two securities; 0 otherwise.	integer
WHY	Reason for End of Data on File 0 = Still quoted on last update of file 1 = Matured 2 = Called for redemption 3 = All exchanged 4 = Sources no longer quote issue	integer
DATDT	Date Dated by Treasury, in YYYYMMDD Format Coupon issues accrue interest beginning on the dated date. This may result in a modified first coupon payment if the dated date is not a regular interest payment date. DATDT is 0 if it is not available or not applicable, as is the case with Treasury bills.	integer
BANKDT	Bank Eligibility Date at Time of Issue, in YYYYMMDD Format The earliest date at which a security is to become "bank eligible". A security is bank eligible if a bank may own it. Some 2 1/2%'s and 2 1/4%'s issued during and immediately after WWII limited negotiability because of prohibitions and restrictions on bank ownership. 0 = no restrictions apply YYYYMMDD = restrictions removed or scheduled to have been removed on this date All remaining restrictions were removed on January 1, 1955. The last bank eligible CRSPID in the file is dated November 15, 1945 and matured on December 15, 1972.	integer
FCALDT	First Eligible Call Date at Time of Issue, in YYYYMMDD Format FCALDT is 0 if the security is not callable. All interest payment dates beginning with the first eligible call date are possible future call dates.	integer
YMCNOT	Year and Month of First Call Notice, in YYYYMMDD Format YMCNOT is 0 if not called or not callable.	integer

CRSP DAILY US TREASURY DATABASE GUIDE

NOTICE	Notice Required on Callable Issues	integer
TAX	Taxability of Interest 1 = Fully taxable for federal income tax purpose 2 = Partially tax exempt, i.e. interest of first \$3000 of bonds of this class, at par value, exempt from tax subject to surtax but not to normal tax 3 = Wholly tax exempt	integer
FLOWER	Payment of Estate Tax Code. 1 = No special status 2 = Acceptable at par and accrued interest if owned by decedent at time of death; a flower bond 3 = Acceptable at par and accrued interest if owned by decedent during entire 6 month period preceding death; a flower bond	integer
NIPPY	Number of Interest Payments Per Year 0 = Treasury bill or certificate paying interest only at maturity 1 = Annual interest 2 = Semi-annual interest 3 = Quarterly interest All interest-bearing negotiable Treasury securities issued since the beginning of WWI have paid interest semi-annually. The last outstanding issue that paid interest quarterly was the Panama Canal Loan 3%'s due June 1, 1961.	integer
FCPDT	First Coupon Payment Date, in YYYYMMDD Format FCPDT is 0 if not applicable. FCPDTF indicates whether the first coupon date is an estimate or a verified date.	integer
FCPDTF	First Coupon Payment Date Flag 0 = Treasury bill or not applicable -1 = First coupon date is estimated from the normal coupon payment cycle 1 = First coupon date has been verified on the Treasury Offering Circular	integer
VALFC	Amount of First Coupon Per \$100 Face Value	real*8
CUSIP	CUSIP Number A CUSIP number (Committee on Uniform Securities Identification Procedures) is an identifying number assigned to a publicly-traded security. A nine-digit code is permanently assigned to each issue and is generally printed on the face of the security if it is in physical form. The first eight digits are included in the CRSP file. The ninth digit is a check digit derived from the first eight digits. Missing CUSIPs are assigned the value OXX. The earliest maturity on the file with a CUSIP is February 15, 1969.	character*8

NAME	Name of Government Security	character*8
	Name ITYPE Explanation	
	BILL 4	
	T_A_BILL 8 Tax Anticipation	
	T_A_CTF 7 Tax Anticipation	
	BOND 1,5,9	
	CNV_BOND 1 Convertible	
	CONSOL 9 Consol	
	CTF 3,7,9 Certificate of Deposit	
	NOTE 0,2,6,9	
	1LL_BOND 5 First Liberty Loan	
	1LL_CV 5 1LL First Conversion	
	1LL_2CNV 5 1LL Second Conversion	
	2LL_BOND 5 Second Liberty Loan	
	2LL_CNV 5 2LL First Loan Conversion	
	3LL_BOND 1 Third Liberty	
	4LL_BOND 9 Fourth Liberty Loan	
	4LL_CALL 9 Fourth Liberty Loan called	
	PCL_BOND 1,5 Panama Canal Loan	
FSTQUO	Day Number of Issue's First Quote on File	integer
	The QDATE array can be used to translate day numbers into YYYYMMDD format dates.	
LSTQUO	Day Number of Issue's Last Quote	integer
	The QDATE array can be used to translate day numbers into YYYYMMDD format dates. An issue that matures typically stops trading on the first quote date with a delivery date greater than or equal to the issue's maturity date.	
FSTYLD	Day Number of Issue's First Yield	integer
	The QDATE array can be used to translate day numbers into YYYYMMDD format dates.	
LSTYLD	Day Number of Issue's Last Yield	integer
	The QDATE array can be used to translate day numbers into YYYYMMDD format dates. An issue that matures typically stops trading on the first quote date with a delivery date greater than or equal to the issue's maturity date.	
NUMPAY	Number of Interest Payments	integer
	Count of observations in BMPAY structure.	
NUMDBT	Number of Amount Outstanding Observations	integer
	Count of valid observations in the BMDEBT structure.	

QUOTES - Raw Data

CRSP-generated data, such as yield and duration, are calculated from secondary market cash transaction prices. CRSP derives its data from the bid and ask prices. CRSP data are calculated based on cash transactions on the quotation date. CRSP's primary data sources assume cash transactions on delivery date. Quotes from the Federal Reserve Bank of New York usually have a delivery date two business days after the quotation date. Quotes from GovPX usually have a delivery date one business day after the quotation date. The delivery date usually falls two business days after the quotation date. CRSP takes this into account when verifying the internal consistency of the files.

CRSP DAILY US TREASURY DATABASE GUIDE

When-issued prices are included in the file when quoted. Any price with a quote date before an issues' dated date is classified when-issued.

Quotes are present in the Master and Cross-Sectional files. In the Master File, the quotes are sorted by issue, then date. For any issue, header variables `FSTQUO` and `LSTQUO` can be used to delimit the day numbers of the range. In the Cross-Sectional File, the quotes are sorted by date, then issue. For any quote date, calendar variable `NUMACT` contains the number of quotes available.

CRSPID CRSP Assigned Unique Issue Identification Number **character*15**
See `CRSPID` on page 26

QDATE Date of Quotation in YYYYMMDD Format **integer**
See `QDATE` on page 25.

BID & ASK **Prices** **real*8**
The bid price is the price at which a buyer is willing to purchase a security. The ask price is the price at which the seller is offering to sell the security.

Arrays `BID` and `ASK` contain day-end bid and ask information, when available for each quote date prior to maturity. If `BID` and `ASK` are not available, whatever quote information is available is used and coded using the following conventions:

Information in Data Source	BID	ASK
Bid and Ask	Bid	Ask
Mean of Bid and Ask	Mean	Mean
Bid only	Bid	-Bid
Ask only	-Ask	Ask
Sale (last trading price)	Sale	0
No price Sale	0	0

SOURCR **Primary Data Source** **character*1**
R = Federal Reserve Bank of New York
S = Salomon Brothers
W = Wall Street Journal (Associated Press: 6/14/61-8/20/87, Bloomberg: 8/28/87-7/2/90, Bear-Stearns: 12/4/90-present)
M = No quote was available
X = GovPX, Inc.

YIELDS - Derived Data

For bonds that have been called, or are likely to be called, the original maturity date is no longer valid for computing duration and yield. In these cases the anticipated call date is used as the working maturity date.

The following note applies to the variables promised daily yield (`YIELD`) and duration (`DURATN`).

Status	Yield and Duration Computed to
Called	Next call date
Callable and priced at a premium	Next call date
Callable and priced at a discount	Maturity date
Not callable	Maturity date

Users should be cautious in interpreting yields based on issues close to maturity. Quotes on these instruments are not always reliable due to infrequent trading.

Yields are present in the Master and Cross-Sectional files. In the Master File, the yields are sorted by issue, then date. For any issue, header variables `FSTYLD` and `LSTYLD` can be used to delimit the day numbers of the range. In the Cross-Sectional File, the yields are sorted by date, then issue. For any quote date, calendar variable `NUMACT` contains the number of yields available.

CRSPID	CRSP Assigned Unique Issue Identification Number See CRSPID on page 26.	character*15
QDATE	Date of Quotation in YYYYMMDD Format See QDATE on page 25.	integer
ACCINT	Total Accrued Interest at End of Day Accrued interest on U.S. Treasury marketable securities is calculated on the basis of the number of days between interest payment dates for a \$100 bond or note. Interest is accrued either from the last interest payment date or the dated date (when an interest payment has not yet occurred) to the quotation date.	real*8
YLD	Promised Daily Yield YLD is the promised yield daily rate, also called daily yield to maturity. At any date, the promised yield of a security is the single interest or discount rate which makes the sum of the present values of the principle at maturity and future interest payments be precisely equal to the flat price of the security. The flat price is the nominal price, e.g., mean of BID and ASK, plus the accrued interest on the date in question. If a price is missing, the YLD is set to -99.	real*8
RETNUA	Unadjusted Return RETNUA is price change plus interest, divided by last day's price. It is set to a large negative number for days in which a return cannot be calculated, i.e. if the price is missing for either this day or last day. Missing returns are set to -99. $RETNUA = \frac{XNUM}{XDEN}, \text{ where}$ When BID and ASK available: $XDEN = \frac{BID(I-1) + ASK(I-1)}{2} + ACCINT(I-1)$ $XNUM = \frac{BID(I) + ASK(I)}{2} - \frac{BID(I-1) + ASK(I-1)}{2} + YINT$ $YINT = PDINT(I) + ACCINT(I) - ACCINT(I-1)$ For all other cases: $XNUM = BID(I) - BID(I-1) + YINT$ $XDEN = BID(I-1) + ACCINT(I-1)$ $YINT = PDINT(I) + ACCINT(I) - ACCINT(I-1)$	real*8
DURATN	Duration (Macaulay's Duration) Duration is the weighted average number of days until the cash flows occur, where the present values, discounted by yield to maturity, of each payment are used as the weights ¹ . Also known as Macaulay's Duration.	real*8

¹ *Some Theoretical Problems of Interest Rates, Bond Yields and Stock Prices in the United States Since 1856.* Frederick R. MacAulay, National Bureau of Economic Research, 1938, 44-53.

If, P_{t_0}, \dots, P_{t_n} are the present values at time t_0 of payment promised at perhaps unequally spaced time intervals t_1, t_2, \dots, t_n then the duration of that promised stream measured at t_0 is:¹

$$D_{t_0} = \frac{\sum_{j=1}^{j=n} (t_j - t_0) P_{t_j}}{\sum_{j=1}^{j=n} P_{t_j}} = \frac{\sum_{j=1}^{j=n} t_j P_{t_j}}{\sum_{j=1}^{j=n} P_{t_j}} - t_0$$

DEBT - Amounts Outstanding

Amounts outstanding are present in the Master File, sorted by issue and date. The header variable NUMDBT contains the number of records available for an issue. These values are typically reported monthly. Total amounts outstanding are obtained from the *Monthly Statement of the Public Debt of the United States*. The amounts publicly held are obtained from the quarterly *Treasury Bulletin*. The *Treasury Bulletin* was reported monthly before 1983.

CRSPID	CRSP Assigned Unique Issue Identification Number	character*15
	See CRSPID on page 26.	
DQDATE	Effective Date of Amount Outstanding Values in YYYYMMDD Format	integer
TOTOUT	Face Value Outstanding	integer
	Amount (face value) issued and still outstanding in millions of dollars. Set to 0 for unknown values up to December 31, 1961 and set to -1 for unavailable values after December 31, 1961.	
PUBOUT	Publicly Held Face Value Outstanding	integer
	Amount (face value) held by the public in millions of dollars. This is the total amount outstanding (TOTOUT) minus the amount held in U.S. Government accounts and Federal Reserve Banks. This amount is not available for Treasury Bills and is always set to 0. For other issues, set to 0 for unknown values up to December 31, 1961 and set to -1 for unavailable values after December 31, 1961. After December 31, 1982, these numbers are reported quarterly instead of monthly and the reported values are carried forward for the next two months.	

PAYMENTS - Interest Payments

Payments are present in the Master File, sorted by issue and date. The values are derived from the frequency and amount of coupon payments, the first coupon date, value of first coupon, and maturity date. Payments are only stored for the time range of an issue's quotes. Bills have no payment records.

CRSPID	CRSP Assigned Unique Issue Identification Number	character*15
	See CRSPID on page 26.	
PQDATE	Interest Payment Dates, in YYYYMMDD Format	integer
PDINT	Interest Paid	real*8
	PDINT is the coupon payable on the interest payment date.	

¹ Coping with the Risk of Interest-Rate Fluctuations: Returns to Bondholders from Naive and Optimal Strategies, Lawrence Fisher and Roman L. Weil, *Journal of Business*, vol. 44, 415.

CRSP Fixed Term Indices Files

The Fixed Term Indices Files contain 1, 2, 5, 7, 10, 20 and 30 year Fixed Term Indices. These issues are sorted by termtype, which distinguishes the length of maturity. A valid issue that best represents each term is chosen at the end of each month for each of the above referenced fixed terms. A valid issue is one that is at least one half year prior to the target maturity date and is fully taxable. The selection process filters a representative bond from each of the fixed term groups. The first selection criteria are; a non-callable, non-flower bond that is closest to the target maturity of its group and fully taxable. If more than one issue remains, and/or none are available which fit the above criteria, they are then respectively filtered on the basis of flower bonds acceptable at par, and accrued interest if owned by descendent at time of death.

These values were designed to plot a sophisticated yield curve and the user may reference the yields with returns, prices and durations.

Data for the Fixed Term Indices Daily Files begins June 14, 1961. Maturities are as follows:

Termtype	Index
3012	30 year
2012	20 year
1012	10 year
712	7 year
512	5 year
212	2 year
112	1 year

Indices Variable Items

ACCINT **Total Accrued Interest at End of Day** **real*8**

Accrued interest on U.S. Treasury marketable securities is calculated on the basis of the number of days between interest payment dates for a \$100 bond or note. Interest is accrued either from the last interest payment date or the dated date (when an interest payment has not yet occurred) to the quotation date.

BID & ASK **Prices** **real*8**

The bid price is the price at which a buyer is willing to purchase a security. The ask price is the price at which the seller is offering to sell the security.

Arrays BID and ASK contain day-end bid and ask information when available for each quote date prior to maturity.

Information in Data Source	BID	ASK
No price	0	0
Sale	Sale	0
Bid only	Bid	-Bid
Ask only	-Ask	Ask
Bid and Ask	Bid	Ask
Mean of Bid and Ask	Mean	Mean

CRSPID **CRSP Assigned Unique Issue Identification Number** **character*15**

The CRSPID is in the format YYYYMMDD . TCCCCE, where:

- YYYY = Maturity Year
- MM = Maturity Month
- DD = Maturity Day
- T = Type Of Issue (TYPE)
- CCCC = Integer Part of (COUPRT x 100)
- E = Uniqueness Number (UNIQ)

For example, 19850515.504250 identifies a 41/4% callable bond which matures May 15, 1985. For callable notes and bonds, the YYYY portion of the CRSPID contains only the final maturity date of the issue and not the first eligible call date for that issue.

DURATN **Duration (Macaulay's Duration)** **real*8**

Duration is the weighted average number of days until the cash flows occur, where the present values, discounted by yield to maturity, of each payment are used as the weights¹. Also known as Macaulay's Duration.

If $P_{t_0}, P_{t_2}, \dots, P_{t_n}$ are the present values at time t_0 of payment promised at perhaps unequally spaced time intervals t_1, t_2, \dots, t_n then the duration of that promised stream measured at t_0 is:²

$$D_{t_0} = \frac{\sum_{j=1}^{j=n} (t_j - t_0) P_{t_j}}{\sum_{j=1}^{j=n} P_{t_j}} = \frac{\sum_{j=1}^{j=n} t_j P_{t_j}}{\sum_{j=1}^{j=n} P_{t_j}} - t_0$$

QDATE **Date of Quotation, in YYYYMMDD Format** **integer**

QDATE contains the Trading Quote Dates for the Bond Files. These dates are stored in the form YYYYMMDD (year, month, and date).

RETADJ **Daily Holding Period Return** **real*8**

RETADJ is the daily holding period return expressed as a percentage.

$$RETADJ(I) = 100 * RETNUA(I)$$

TERMTYPE **Index Identification Number** **integer**

Fixed term index identification number links all results in the Fixed-Term Indices File. The identification is typically in the form YYYYMM, where YYYY is the number of years to maturity of issues selected in the index and MM is the number of months an issue is held once selected before another is chosen.

YEARSTM **Years to Maturity** **integer**

Number of years left to maturity. In the fixed term index files, YEARSTM contains the time left to maturity of the selected issue as of the quote date, expressed annually as a decimal amount.

YTM **Annualized Yield** **real*8**

YTM is the annualized YIELD to maturity expressed as a percent per annum. See YIELDS : YIELD.

$$YTM(I) = 100 * [YLD(I) * 365]$$

¹ *Some Theoretical Problems of Interest Rates, Bond Yields and Stock Prices in the United States Since 1856*. Frederick R. Macaulay, National Bureau of Economic Research, 1938, 44-53.

² *Coping with the Risk of Interest-Rate Fluctuations: Returns to Bondholders from Naive and Optimal Strategies*, Lawrence Fisher and Roman L. Weil, *Journal of Business*, vol. 44, 415.