STOCK & INDEX RELEASE NOTES

JUNE 2017 QUARTERLY UPDATE

These release notes pertain to the June 2017 Quarterly release of the CRSP US Stock and Index databases, available in July 2017.

JUNE 2017 DATA EDITS

GROUP EDITS

| BEGDT | ENDDT | DESCRIPTION |
|----------|----------|--|
| 19721214 | 20010220 | Reviewed all cases where Bid/Ask average was not equal to -(AskHigh+Bidlow)/2. Edited Close, AskHigh, and BidLow |
| | | prices from 1972-2001 as needed. Approximately 221 records were changed. |

INDIVIDUAL EDITS

| PERMNO | COMPANY NAME | DESCRIPTION | BEGDT | ENDT |
|--------|------------------------------------|--|------------|-----------|
| 13286 | BANCO BRADESCO S A | Changed distribution to .00553 from .00552 on exdate 20170302. | 3/2/2017 | 3/2/2017 |
| 15524 | GLOBAL PARTNER ACQUISITION CORP | Removed all data from subscriber database due to share code change to 91 from 71 for entire history | | |
| 15929 | NORBORD INC | Changed distribution to .07493 from .07676 on exdate 20170227. | 2/27/2017 | 2/27/2017 |
| 64726 | PULSE COMMUNICATIONS INC | Changed shares outstanding to 525 from 0 for 19721214- 19730108 | 12/14/1972 | 1/8/1973 |
| 76622 | UNITED AMERICAN HEALTHCARE CORP | Name change to UNITED AMERICAN HEALTHCARE CORP from UNITED AMERICAL HEALTHCARE CORP for 19910423-19930113 | 4/23/1991 | 1/13/1993 |
| 83435 | YAHOO INC | Changed Nasdaq Issue Id to 99995054 from 19523 and Nasdaq Org Id to 99995039 from 60014366 for entire history | | |
| 88471 | PRECIPIO INC | Added zero namelines for 20170222-20170629 to reflect off exchange activity | 2/22/2017 | 6/29/2017 |

MAY 2017 DATA EDITS

GROUP EDITS

| BEGDT | ENDDT | DESCRIPTION |
|----------|----------|--|
| 20080701 | 20170428 | Added missing SIC codes to 32 securities for the period 20080701-20170428 |
| 19721214 | 19731231 | Reviewed and added missing shares outstanding values for 40 securities from 1972-1973. Project is 80% complete |

INDIVIDUAL EDITS

| PERMNO | COMPANY NAME | DESCRIPTION | BEGDT | ENDT |
|--------|--------------------------|---|-----------|-----------|
| 82762 | WESTELL TECHNOLOGIES INC | Added Class A designation for entire history. | 12/1/1995 | 5/31/2017 |
| 92893 | SILVERCORP METALS INC | Added zero namelines for 20150911-20170514 to reflect off exchange activity | | |

| PERMNO | COMPANY NAME | DESCRIPTION | BEGDT | ENDT |
|--------|-------------------------------|---|------------|------------|
| 66739 | SILVERBOW RESOURCES INC | Added zero namelines for 20151221-20160421 and 20160422 - 20170504 to reflect off exchange activity | | |
| 75734 | HARVEST NATURAL RESOURCES INC | Removed duplicate dividend of \$5.75 on exdate 20170424 | | |
| 84400 | ENERGY TRANSFER PARTNERS LP | Changed the end date to 20170427 from 20170428 | 4/27/2017 | 4/28/2017 |
| 79767 | ENEL AMERICAS S A | Changed pay date to 20100622 from 20220610 for distribution on ex-date 20091211 | 12/11/2009 | 12/11/2009 |
| 86067 | GUARANTY BANCSHARES INC | Added zero nameline for the period 20040614 - 20170508 to reflect off exchange trading. | 6/14/2004 | 5/8/2017 |
| 93263 | CELSIUS HOLDINGS INC | Added zero nameline for the period 20100211 - 20170523 to reflect off exchange trading. | 2/11/2010 | 5/23/2017 |

APRIL 2017 DATA EDITS

GROUP EDITS

| BEGDT | ENDDT | DESCRIPTION |
|----------|----------|---|
| 19750904 | 19890621 | Reviewed all cases where Bid/Ask average was not equal to -(AskHigh+BidLow)/2. Edited Close, AskHigh and BidLow |
| | | prices from 1975-1989 as needed. Approximately 2100 records were changed. |

INDIVIDUAL EDITS

| PERMNO | COMPANY NAME | DESCRIPTION | BEGDT | ENDT |
|--------|---------------------------------|--|-----------|-----------|
| 15089 | XENON PHARMACEUTICALS INC | Changed share code to 12 from 11 for entire history | | |
| 15181 | PRESBIA PLC | Added a rights distribution on ex-date 20170206. | 2/6/2017 | 2/6/2017 |
| 15425 | DAVIDSTEA INC | Changed company name to DAVIDSTEA INC from DAVIDS TEA INC and share code to 12 from 11 for entire history | | |
| 15887 | RIVERNORTH OPPORTUNITIES FD INC | "Changed company name to RIVERNORTH OPPORTUNITIES FD INC from RIVERNORTH OPPORTUNITIES FUND and share code to 14 from 11 for entire history" | | |
| 89199 | DEUTSCHE BANK A G | Changed dividend amount to 2.22 from 2.20 on ex-date 20170321 | 3/21/2017 | 3/21/2017 |
| 93337 | VEON LTD | Changed cusip to 91822M10 from 92719A10, name to VEON LTD from VIMPELCOM LTD, and ticker to VEON from VIP for 20170331 - present | 3/31/2017 | 3/31/2017 |

FILE VERSION SPECIFICS

This table contains version specific information for the CRSP Stock Files with data ending June 2017. It contains the number of securities and information about the maximums of the event arrays.

| FILE CODE | # OF Securities | MAX Names | MAX Dists | MAX Shares | MAX DELISTS | MAX Groups | MAX NASDIN | FIRST Permno | LAST Permno |
|--------------|--------------------|--------------|--------------|---------------|----------------|---------------|---------------|-----------------|----------------|
| DAZ | 31832 | 39 | 1538 | 2629 | 1 | 4 | 2629 | 10000 | 93436 |
| MAZ | 31803 | 39 | 1538 | 2629 | 1 | 4 | 2629 | 10000 | 93436 |

| CALENDAR | DATE RANGE | DATE INDEX RANGE |
|------------------------------|-------------------|------------------|
| Daily trading calendar | 19251231-20170630 | 1-24164 |
| Month-end trading calendar | 19251231-20170630 | 1-1099 |
| Year-end trading calendar | 19251231-20181229 | 1-94 |
| Quarter-end trading calendar | 19251231-20181229 | 1-373 |
| Weekly trading calendar | 19260102-20170630 | 1-4774 |

CRSPACCESS PRODUCT INFORMATION

To simplify installation for our subscribers, data are bundled into product groups. Information relevant to each product group is listed in the table below.

| PRODUCT NAME | DATABASE | SIZE | INDEXES | PORTFOLIOS | COMPONENTS & DESCRIPTION |
|--|---------------------------------------|----------|---|----------------|---|
| CRSP 1925 US Stock and Index Database | FIZyyyymm SIZyyyymm (SAS/ASCII) | 4.1 GB | All CRSP indexes and portfolio assignments | All portfolios | DI - 1925 Daily US Stock & Index Database MI - 1925 Monthly US Stock & Index Database IF - CRSP Supplemental US Indexes |
| CRSP 1925 US Stock | FAZyyyymm SAZyyyymm (SAS/ASCII) | 3.7 GB | CRSP NYSE/ AMEX/ NASDAQ Value- weighted Market, CRSP NYSE/ AMEX/ NASDAQ Equal-weighted Market, S&P 500 Composite, NASDAQ Composite | | DA - 1925 Daily US Stock MA - 1925 Monthly US Stock IN - CRSP Limited US Indexes |
| CRSP 1962 US Stock | A6Zyyyymm S6Zyyyymm (SAS/ASCII) | 3.3 GB | CRSP NYSE/ AMEX/ NASDAQ Value- weighted Market, CRSP NYSE/ AMEX/ NASDAQ Equal-weighted Market, S&P 500 Composite, NASDAQ Composite | | D6 - 1962 Daily US Stock M6 - 1962 Monthly US Stock IN - CRSP Limited US Indexes |
| CRSP 1962 US Stock and Index Database | AXZyyyymm SXZyyyymm (SAS/ASCII) | 3.6 GB | See FIZ | All portfolios | DX - 1962 Daily US Stock & Index Database MX - 1962 Monthly US Stock & Index Database IF - CRSP Supplemental US Indexes |
| CRSP 1925 US Indexes | IFZyyyymm SFZyyyymm | 122 MB | | | IF - CRSP Supplemental US Indexes |
| CRSP/Compustat Merged Database | CMZyyyymm | 10.37 GB | | | CM - Compustat Data formatted in CRSPAccess Database |
| Daily & Monthly Treasuries in CRSPSift | TRZyyyymm | 278 MB | | | TR - Database format for use with CRSPSift |
| Daily & Monthly Treasuries Files | TFZyyyymm | 1.75 GB | | | TF - Expanded daily and monthly files in EXCEL, SAS, and ASCII formats |
| Mutual Fund Database | MFZyyyymm | 10 GB | | | MF - Mutual Funds |
| CRSP/Ziman Daily & Monthly REIT | RAZyyyymm | 251 MB | | | RD - Daily REITs RM - Monthly REITs |

DELIVERY METHOD, INSTALLS, AND DATA FORMATS

DELIVERY

CRSP data delivery for all products is available only through the Cloud, utilizing IPSwitch's MOVEit Cloud product. (https:// crsp.moveitcloud.com)

If you have not yet accessed your account, or need assistance, contact support@crsp.chicagobooth.edu, or call 312-263-6400, Option 2.

While DVDs are no longer available from CRSP, you are welcome to create your own once you have downloaded the data, and use as long as you have an active license to do so.

ZIP INSTALLS

CRSP uses a zip process for data installation. ZIP utilities that are standard on all platforms should work to unzip the databases. On Windows computers, CRSP recommends using 7-ZIP, which can be downloaded from this site: http://www.7-zip.org/

Several important items to note follow:

- All directories are extracted to lower case letters. For example: C:\crspdata\miz201308
- All Windows Users: Extracting a zipped file does not create an installed program in Windows. It will not show in the Windows Control Panel. When uninstalling the data, just delete the directories that contain the detailed files
- Red Hat Linux Users: If your version of Red Hat is earlier than 6.0, you will need to install an updated version of the "File Roller" program in order to install the data

ZIP FILE STRUCTURE AND PROCESS

Windows 7/XP Products:

| PRODUCT LABEL | PRODUCT NAME | FILE NAME |
|-----------------|------------------------------|--------------------|
| A6Z1_yyyymm_SLD | CRSP 1962 US Stock | a6zyyyymm_cadb.zip |
| AXZ1_yyyymm_SLD | CRSP 1962 US Stock and Index | axzyyyymm_cadb.zip |
| FAZ1_yyyymm_SLD | CRSP 1925 US Stock | fazyyyymm_cadb.zip |
| FIZ1_yyyymm_SLD | CRSP 1925 US Stock and Index | fizyyyymm_cadb.zip |
| IFZ1_yyyymm_SGD | CRSP 1925 Indexes | ifzyyyymm_cadb.zip |

Red Hat Linux Products:

| PRODUCT LABEL | PRODUCT NAME | FILE NAME |
|-----------------|------------------------------|--------------------|
| A6Z1_yyyymm_SLD | CRSP 1962 US Stock | a6zyyyymm_cadb.zip |
| AXZ1_yyyymm_SLD | CRSP 1962 US Stock and Index | axzyyyymm_cadb.zip |
| FAZ1_yyyymm_SLD | CRSP 1925 US Stock | fazyyyymm_cadb.zip |
| FIZ1_yyyymm_SLD | CRSP 1925 US Stock and Index | fizyyyymm_cadb.zip |
| IFZ1_yyyymm_SGD | CRSP 1925 Indexes | ifzyyyymm_cadb.zip |

Flat File Products:

| PRODUCT NAME | FILE NAME |
|--------------|---------------------|
| SAS Zip | s*zyyyymm_sas.zip |
| ASCII Zip | s*zyyyymm_ascii.zip |

STEPS TO INSTALL:

- From the directory containing your downloaded zip file, right click (in Windows) or run File Roller (in Red Hat)
- Set the extract destination to the current higher level directory where data is normally stored and unzip will add the rest of the path (default is C:\ in Windows or /home in Red Hat)
- For example, in Windows, extracting to C:\ will install the data under C:\crspdata

Contact CRSP Client Services for assistance at: support@crsp.chicagobooth.edu or call 312-263-6400, Option 2.

SETTING ENVIRONMENT VARIABLES

The zip process will not automatically set environment variables for use with command line tools. The following steps will do so. NOTE: CRSPSift does not use and therefore does not require environment variables.

LINUX

NOTE: The new zip installs are now saving to directories with lower case letters – for example, ~/crspdata/diz201308

Check the current state of the environment variables by entering this command: env | grep crsp

- If you have admin privileges on your machine, open the .profile file, and make updates to the following lines to update the paths for the new data installed:
 - CRSP_DSTK=<full path name>/<daily stock directory> (example: CRSP_DSTK=~/crspdata/diz201308)
 - CRSP_MSTK==<full path name>/<monthly stock directory> (*example:* CRSP_DSTK=~/crspdata/miz201308)
 - CRSP_IND=<full path name>/<index directory> (example: CRSP IND=~/crspdata/ifz201308)
- If you are using the bash shell (or any Bourne-style shell), enter the same commands above and export each one. This will make changes for your current session only and does not save to the .profile file.
- A shell script is available to make changes that can be reused for each update done. Note that this will only make changes to your current session and does not save to the .profile file.
 - Navigate to where the CUPL tools are loaded and then enter: cd accbin
 - Start the script by entering: ./crsp_setup.sh
 - The script will prompt for the following:
 - File name (*will be appended with*.kshrc)
 - Top level directory (this should be where CUPL tools are located (*example:* ~/crsp)
 - Scratch directory for error messages name can be anything
 - Enter path for daily stock directory (*example:* ~/crspdata/diz201308)
 - Enter path for monthly stock directory (*example:* ~/crspdata/miz201308)
 - Enter path for index directory (*example:* ~/crspdata/ifz201308)
 - Enter path for CCM directory enter to leave blank
 - Enter path for CST directory enter to leave blank
 - Execute script by running: . ./<file name created above>.kshrc (note there is a space between the two dots)

WINDOWS:

The CRSP Client Environment utility provides users a way to check the location of the software and to set environment variables. The utility can be started by locating it under installed programs CRSPAccess/CRSP Client Environment, or by navigating to the /accbin folder where the CUPL tools are installed and running: Client_Environment.exe (screen shot is displayed below). After making any changes, be sure to log off and back into Windows for the settings to be saved.

Note: For subscribers of the CRSP Compustat Merged database, additional CCM database environments will be displayed for the location of the Compustat data.

| CRSP Root | |
|---|----------------|
| CRSP Root Directory This folder/directory contains the CRSP root subfolders that will allow the to function property. | CRSP utilities |
| C:\orsp\ | Browse |
| CRSP Work | |
| CRSP Work Directory This folder/directory is used for storage of temporary files, log files and cor subfolders that may hold user created files | ntains |
| C:\orsp\ | Browse |
| CRSP Daily Stock | |
| CRSP Daily Stock Database Directory | |
| C:\crspdata\diz201308 | Browse |
| CRSP Monthly Stock | |
| CRSP Monthly Stock Database Directory | |
| C:\crspdata\miz201308 | Browse |
| CRSP Compustat CCM | |
| CRSP Compustat CCM Database Directory | |
| C:\crspdata\CMZ201308\ | Browse |
| | |
| Administrator privileges are required to set system level Do | Remove Exit |