Dbank User's Guide

by

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Dbank Quick Start

Do you have a lot of data on your hard disk but have little or no idea which files have what data? Do you find it difficult to extract a subset of those data for use with various programs? Would you like to organize the data on your hard disk so that they are easy to locate?

Dbank is like a network-ready, tree-structured operating system for time series and cross-sectional data that runs under Microsoft Windows™. In addition to providing numerous commands for managing, manipulating, viewing and plotting such data, Dbank allows you to export the data to many statistical packages and spreadsheet programs. Dbank also has built-in multiple regression and ACE modules that provide p-values if you also have Microsoft Excel on your hard disk.

Dbank provides context-sensitive help. Also, if the mouse pointer remains over an icon for more than one second, a short help message will appear at the top of the form.

If you would like to experiment with Dbank, double-click on EXAMPLE.MDB (a data bank) in Dbank's file list box. This will allow you to play with Dbank's Group, Series, and Tagged Menus. For starters, click on the group called FIRST. Then, from the Group Menu, select Mosaic Time Plot (Alt+G+L). Dbank will plot all the series in FIRST (and its sub-groups) against time. To view the data in the series called BPASPV, double click on the FIRST group in the group list box, and then click on the sub-group BP. This will fill the series list box with all the series in the group called [FIRST.BP]. Then click on BPASPV in the series list box, and from the Series Menu select View (ALT+S+W).

If you have a rectangular data set saved in an ASCII file (i.e., the data is organized as a matrix, with each row in the file representing an observation and each column representing all the observations on a particular series), you can import the data set into Dbank using the "Add Data..." command in Dbank's File Menu. The "Add Data..." command will read the data and create a data bank with the same name as the ASCII input file.

Double-click on the new data bank to open it. You can then manipulate the series in the data bank using Dbank's Series and Group Menu. If you tag any of the series (right-click on any highlighted group(s) or series name(s) to do so), Dbank will enable the Tagged Menu (which affects the series in the tagged list box). The Tagged list box can collect series from any number of different data banks for processing together.

If you don't have a rectangular data set handy, use EXAMPLE.MAT. Dbank's SETUP program copied EXAMPLE.MAT to the same directory in which you installed Dbank. To manually input data, simply click on the input icon.

DISCLAIMER

Every attempt has been made to free Dbank of bugs and to ensure that the program operates as documented. However, the author disclaims all warranties as to this software, whether expressed or implied, including without limitation any implied warranties of merchantability, fitness for a particular purpose, functionality or data integrity or protection. In particular, in no event shall the author be liable for consequential, incidental or indirect damages of any kind arising out of the delivery, performance or use of Dbank.

In other (less legalistic) words, use this program as if you wrote it yourself, and be just as understanding if you run into a bug!

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DISTRIBUTION POLICY

Please feel free to (i) upload the Dbank distribution file **dbankwin.exe** to any electronic bulletin board, (ii) give copies of the distribution file to potential users, so that others can obtain a copy of Dbank for use in accordance with the license agreement below.

Single-User License:

Suggested contribution of US$25. A contribution of at least US$25 will give you a life-time, non-transferable license to use Dbank and future versions thereof.

Institutional/Government/Corporate:

Non-Network License: A one-time charge of US$25 per machine Dbank is installed on. This license is transferable to another machine.

Per-Cluster License: A one-time charge of US$250. This license is transferable to another cluster, and is equivalent to 10 **"Non-Network Licenses".** A "cluster" is a group of up to 256 computers with access to Dbank on a common network.

Wide-Area License: A one-time charge of US$2500. This license is transferable to another area, and is equivalent to 10 **"Per-Cluster Licenses"**. An "area" is a geographically connected region having up to 5000 computers with access to Dbank.

Reselling/Bundling:

If you wish to resell Dbank or bundle Dbank with your own product (e.g., data), the charge is US$15 per unit of original sales (excluding upgrades) of Dbank or your product incorporating Dbank. A purchaser then gains either a **"Single-User License"** or a **"Non-Network License"** mentioned above. If Dbank or your product is meant for a server or a site, the **"Per-Cluster License"** or the **"Wide-Area License"** applies respectively; however, the charge is US$150 or US$1500 per unit of original sales respectively, not counting upgrades.

A non-profit organization need only pay a maximum of US$1500 per calendar year for bundling Dbank with its own products.

A bug report from a reseller or bundler will receive prompt attention. All resellers and bundlers will automatically receive (if electronically possible) all new versions of Dbank incorporating any bug fixes or enhancement upgrades.

Refund Policy:

An individual who reports at least one **unknown** bug in Dbank, or suggests at least one **original** feature that is subsequently implemented in the program, gets his/her contribution (up to US$25) refunded, or a free **"Single-User License"** if his/her copy of Dbank is not licensed. These persons will be acknowledged explicitly in all future documentation of Dbank.

A new version of **dbankwin.exe** will be uploaded on (or about) January 1 and July 1 of each year to the Internet site **ftp.cica.indiana.edu** for anonymous ftp downloading from the **/pub/pc/win3/util** directory.

A personal check drawn on a US bank is acceptable. If you do not have easy access to US funds, please remit in equivalent local currency. Please provide an e-mail address if available.

Every licensee will receive a formal license (indicating fees paid) to use Dbank.

If you are reporting a bug, please provide an e-mail address (if available) and the time-stamp of your version of Dbank which can be read by invoking the "About Dbank..." sub-menu in Dbank's "Help" menu.

Any individual owning an account on **NUSNET** (National University of Singapore NET) has a free, non-transferable, individual license to use Dbank. The National University of Singapore has a free campus-wide NUSNET license to use Dbank.

Introduction

Dbank is like a network-ready, tree-structured operating system for time series and cross-sectional data that runs under Microsoft Windows™. The program is modeled after the Microsoft Windows™, File Manager; however, its fundamental object is a sequence of data rather than a file. In addition to providing commands that allow you to create data banks and manipulate the data stored inside them, Dbank allows you to export the data to a number of statistical packages and spreadsheet programs.

Dbank stores data efficiently and retrieves them very quickly. The program could be useful to people who need to organize a lot of data on their hard disk; it might be useful to people who keep the same data in different formats because they routinely use more than one statistical/spreadsheet package to analyze their data; and it is likely to be useful in corporations/institutions with large databases that need to be shared with many users across different programs.

Dbank files are typically organized into groups of series. A "series" is simply a collection of data. For example, data on the Gross National Product of the USA for 1949–1991 (a total of 43 observations) could be called a series. A "group" within Dbank is simply a collection of series. For example, all the series used in a research paper could be called a group. Dbank's filing system for groups of series is similar to the PC-DOS filing system. Every data bank has a main group (or "root" directory) which is the point of growth for all other groups in the data bank. Every group except the main group has a parent group, and any group can have one or more sub-groups (or "children").

Dbank also allows you to build a "temporary" group using its TAG facility. The TAG facility allows you to group together many series from any number of data banks and groups. The tagged group lasts for the duration of your Dbank session. The series in the tagged group can then be manipulated as if they were a permanent group in the data bank.

Dbank has many commands for managing your data. For example, you can ADD series to the data bank, EDIT the data stored in a series, MOVE a series from one group to another, and COPY a series to another series, group or data bank. Dbank has a command to DELETE a series, one to VIEW the data stored in a series, and commands to RENAME and PRINT series in the data bank. You can also create new series from existing series using the MAKE command.

Dbank also helps you manage the data banks you create. There are commands to delete, copy, move, rename and squeeze data banks. Dbank also allows you to create read-only data banks, which are particularly useful in network environments. In fact, Dbank and all of its data banks can be made to run directly from a CD-ROM with no prior setup except possibly for the pre-loading of the DOS utility SHARE.EXE. Thus Dbank provides an efficient method of distributing large amounts of data.

Dbank allows you to easily export your data to any one of the following statistical/spreadsheet packages:

1) AREMOS
2) TSP
3) Micro TSP
4) GAUSS
5) LIMDEP
6) LOTUS, QUATTRO, EXCEL

7) SAS
8) SST
9) MINITAB,
10) RATS
11) BMDP
12) SPSS

Dbank has its own “FREE”, “MATRIX”, and “SERIES” formats. They are ASCII file formats that can be read by most programming languages (e.g., FORTRAN).

If you have a copy of Microsoft EXCEL, Dbank can export data directly to an Excel spreadsheet using Windows’ Dynamic Data Exchange (DDE) facility.

Dbank can read Aptech GAUSS “.DHT” and “.FMT” binary files directly. Invoke the File Add/Series Add data commands to do so.

Dbank manages data with ANNUAL, HALF-YEARLY, QUARTERLY, MONTHLY, WEEKLY and DAILY periodicity. The DAILY frequency allows you to specify a 5, 6 or 7-day week. Dbank also has a NULL frequency that is particularly useful for cross-sectional or undated data. The program can handle missing values in the manipulation of series with different periodicities and start/end dates.

Dbank can also convert your data to a lower frequency during the export process (i.e., the process of copying your data to a file that can be read by another program). For example, it can convert daily data to monthly data, and monthly data to annual data. Furthermore, Dbank can MASK a series during the export process. Its masking function allows you to copy an observation in a series depending on the value taken by another series. Dbank’s masking feature is very useful for cross-sectional data.

Installation Instructions

System Requirements

(1) Microsoft Windows™ 3.1 (or higher) running in enhanced or standard mode with as little as two megabytes of system memory. The program has been tested on a 286 machine with two megabytes of memory and a Hercules monochrome monitor.

(2) A hard disk with at least 8 megabytes of free disk space (Dbank requires 4 megabytes of disk space).

Installation Steps

(1) Create a temporary sub-directory on your hard disk (say, C:\TEMP).

(2) Copy the file DBANKWIN.EXE [DBANKWIN.ZIP] to C:\TEMP (which MUST be empty).

(3) [For DBANKWIN.EXE] At the DOS prompt, set the default directory to C:\TEMP. Then type DBANKWIN. This will invoke the DBANKWIN.EXE file that was copied to C:\TEMP in step (2). DBANKWIN.EXE is a self extracting file that contains all the files necessary to install Dbank on your computer. ***Note: if the DBANKWIN.EXE file fails to explode into smaller files or the extraction process fails to complete, please slow down your computer and try again.***

[For DBANKWIN.ZIP] Set the default directory to C:\TEMP. Then type PKUNZIP DBANKWIN.ZIP. (You will need version 2.04g or later of PKUNZIP.EXE to decompress the file.). DBANKWIN.ZIP is a compressed file that contains all the files (except, possibly, VBRUN300.DLL) necessary to install Dbank on your computer.

(4) Run Windows. From the FILE menu of the Program Manager, execute the RUN command (i.e., press Alt+F+R), and type C:\TEMP\SETUP to execute Dbank's SETUP program. You will be prompted for the directory to which SETUP should install Dbank. This can be any location on your hard disk EXCEPT the directory to which you copied DBANKWIN.EXE [DBANKWIN.ZIP].

(5) After SETUP has run, you can delete all the files in C:\TEMP as well as the sub-directory C:\TEMP.

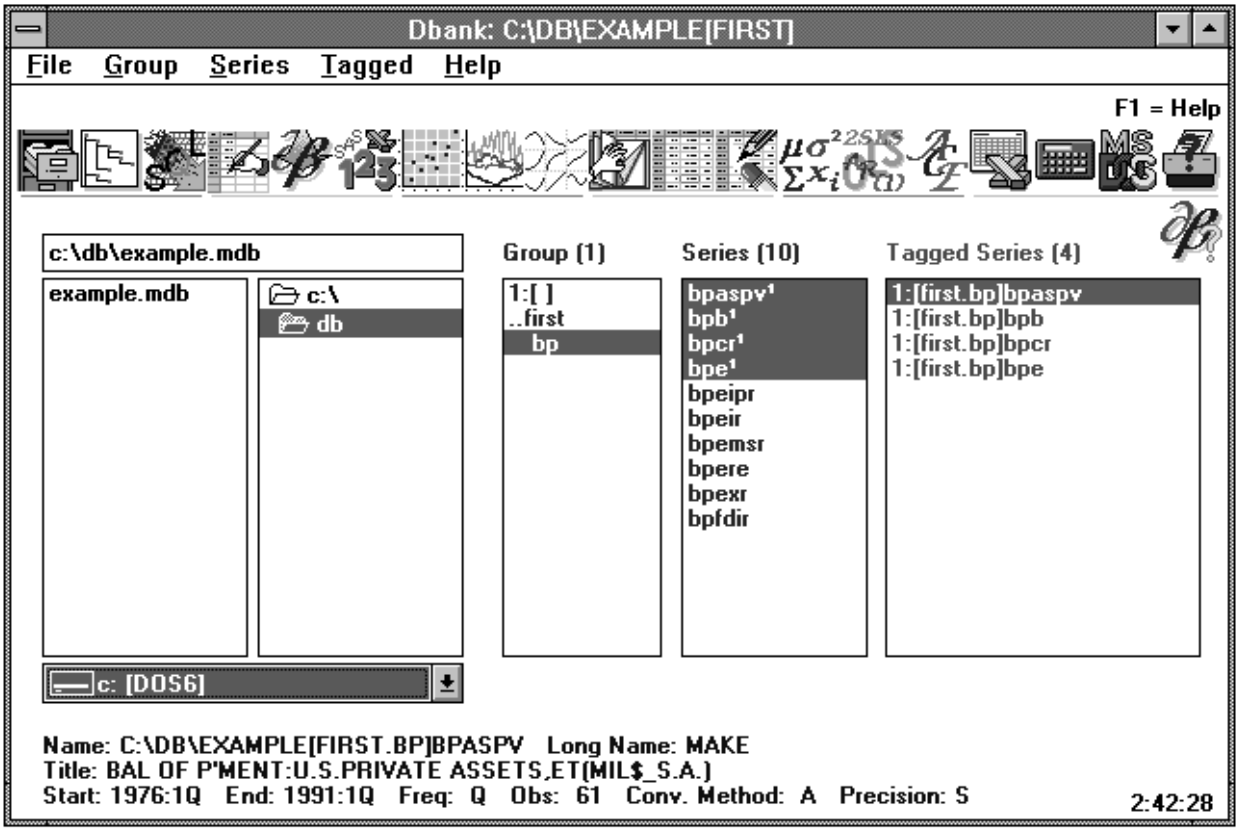
(6) If necessary, edit the DBANK.INI file in the Dbank directory, and change the "StartUpDir=" parameter to the directory you wish to start with whenever you start Dbank. By default, "StartUpDir=" is set to the install directory. Lastly, change "MyUserName=" to your preferred userid (no embedded blanks allowed). These two steps are normally not required.

The SETUP program copies EXAMPLE.MDB (a sample data bank) to the same directory that you install Dbank. It also copies EXAMPLE.FRE which is the ASCII input file that was used to create EXAMPLE.MDB. Two other files, EXAMPLE.SER and EXAMPLE.MAT, provide examples of Dbank's SERIES and MATRIX input formats (see '**Reading your data into Dbank**' near the end of this manual). You can use these files to learn how to create data banks and export data.

IMPORTANT: ***You must load the DOS utility SHARE.EXE before invoking Windows to run Dbank. Insert the following line in your*** **AUTOEXEC.BAT** ***file:***

<MS_DOS Directory>\SHARE.EXE /L:500

DBANK form



Dbank's startup form is shown above. The important areas of this form are:

1. **File List Box:** lists all the data banks (i.e., files with extension: .MDB) in the default or current directory. The data bank you are currently using is indicated by the in the title of Dbank's startup form (currently **C:\DB\EXAMPLE**).

2. **Directory List Box:** shows the default directory (currently **C:\DB**) and all of the sub-directories beneath the default directory. You can change the default directory using the keyboard or mouse. The contents of the file list box are updated whenever you do so.

3. **Disk List Box:** lists all the drives that your PC can access (including network drives). The current drive and its label are shown in the body of the drive list box. In the above form, the current drive is **C** with a label of **DOS6**

4. **Group List Box:** This list box appears only after you have opened a data bank. It contains all the groups in the active data bank. The active group is indicated by the black control bar (currently **BP**, which belongs to the group called **FIRST**) in the group list box. Data bank operations (such as COPY, MOVE, RENAME, DELETE, and XDELETE) on a group can be executed from the GROUP menu. Dbank data banks possess a hierarchical tree structure similar to the PC-DOS file system. Double-clicking on a group fills the group list box with the names of the groups that belong to that group (and so on to any number of levels). Double-clicking on the parent (**..FIRST** above) moves you up one level in the tree. Double-clicking on the main group (**1:[ ]** above) moves you to the main or root group in the data bank.

5. **Series List box:** this list box appears after you open a data bank. It contains all the series in the default group. The active series (i.e., the series that will be affected by the next series menu command) is indicated by the black control bar (currently **BPASPV**). Individual series are managed using the SERIES menu.

6. **Tag List Box:** this list box appears only after you tag a series. You can tag a group of series using the TAG command in the GROUP menu, or a single series using the TAG command in the SERIES menu. You can also tag series/groups using the mouse; simply double-click on the object you wish to tag. In the above form, some of the series in the "FIRST" group have been tagged. Note that tagged series have a superscript "1" appended to their name. The superscript flags their "tagged" status.

7. **File Menu:** contains all the commands Dbank provides to create and manipulate data bank files. Click on the File menu to invoke one of these commands, or type **Alt+F**.

8. **Group Menu:** contains all the commands Dbank provides to create and manipulate the groups (and the associated sub-groups) in a data bank. Click on the group menu to invoke one of these commands, or type **Alt+G**.

9. **Series Menu:** contains all the commands Dbank provides to create and manipulate the series in the series list box. Click on the series menu to invoke one of these commands, or type **ALT+S**.

10. **Tagged Menu:** contains all the commands Dbank provides to manipulate the series in the tagged list box. Click on the tagged menu to invoke one of theses commands, or type **Alt+T.**

11. **Filing Cabinet Icon:** when the cabinet is closed, clicking the icon opens the highlighted data bank. If the cabinet is open, clicking on the icon closes the active data bank.

12. **Tree Icon:** click on this icon to invoke Dbank's "File Tree" command which provides a visual representation of a data bank's structure.

13. **SQL Icon:** click on this icon to invoke Dbank's "File SQL Query" command which allows your to execute SQL queries on Dbank data banks.

14. **Series Input:** click on this icon to invoke Dbank's "Series Input" command which allows you to manually input data into a Dbank data bank.

15. **Add Data Icon:** click on this icon to invoke Dbank's "Add Data" command which allows you to add data to a new or existing data bank.

16. **Export Icon:** click on this icon to invoke Dbank's "Tagged Export" command which allows you to export the series in the tagged list box to other programs.

17. **Scatter Plot:** click on this icon to invoke Dbank's "Scatter Plot" command which provides a scatter plot of any two series in the active list box.

18. Time Plot Icon: click on this icon to invoke Dbank's "Multiple Time Plot" command which plots the series in the active list box against time (on a single axis).

19. Mosaic Plot Icon: click on this icon to invoke Dbank's "Mosaic Plot Command" which provides a mosaic plot of all/subset of the series in the active list box.

20. Browse Icon: click on this icon to invoke Dbank's "Browse" command which invokes Dbank's Browse module on all/subset of the series in the active list box.

21. View Icon: click on this icon to invoke Dbank's "View" command which invokes Dbank's View module on all/subset of the series in the active list box.

22. Edit Icon: click on this icon to invoke Dbank's "Edit" command which invokes Dbank's Series Editor on all/subset of the series in the active list box.

23. Statistics Icon: click on this icon to invoke Dbank's "Summary Statistics" command which invokes Dbank's Summary Statistics module on all/subset of the series in the active list box.

24. OLS/2SLS/AR(1) Icon: click on this icon to invoke Dbank's "Tagged OLS/2SLS/IV" command which invokes Dbank's regression module.

25. ACE Icon: click on this icon to invoke Dbank's "Tagged ACE" command which invokes Dbank's ACE module for all/subset of the series in the tagged list box.

26. Excel Icon: click on this icon to invoke Microsoft Excel (if available).

27. Calculator Icon: click on this icon to invoke CALC.EXE (if available).

28. MS-DOS Icon: click on this icon to shell to DOS.

29. Printer Icon: click on this icon to invoke Dbank's "Printer Setup" command which allows you to permanently or temporarily change printer settings.

30. Quick Intro Icon: click on this icon to get a short statement describing Dbank and its capabilities.

Dbank Quick Guide

1. ***How do I start Dbank?***

From the Program Manager, double-click on the Dbank icon.

If you have Windows 3.1 or greater, you can also start Dbank by typing "Dbank" at the DOS prompt, provided Windows is not already running and win.com is on the current path.

2. ***How do I start Dbank with a given data bank opened?***

Dbank accepts a single argument (a data bank name) on the command line. Thus, to automatically open the data bank EXAMPLE.MDB whenever Dbank is started, type

Dbank C:\DB\EXAMPLE.MDB

3. ***How do I create an empty data bank?***

From the File Menu, choose "Make" (Alt+F+K).

4. ***How do I open an existing data bank?***

From the file list box, double-click on the data bank you wish to open. For example, double-clicking on EXAMPLE.MDB opens the data bank. The distributed version of EXAMPLE.MDB has two groups: FIRST and SECOND. These groups will appear in the Group list box when you open the data bank for the first time. Note that FIRST has a sub-group called BP. If you double click on FIRST, Dbank will set the default group to FIRST and fill the group list box with all the groups that belong to FIRST (i.e., BP).

5. ***How do I delete a data bank?***

Select the data bank you wish to delete using the mouse; i.e., click on a data bank in the file list box. To actually delete the file, click on the File Menu and choose "Delete" (Alt+F+D)

6. Suppose I have data in a file called EXAMPLE.MAT; the data are organized as a matrix (i.e., in rows and columns). How do I read the data into Dbank?

From the File menu, select "Add Data..." (Alt+F+A). This invokes the File Open dialog box. Type EXAMPLE.MAT and then click on the OK button of the File Open dialog box.

Provided EXAMPLE.MAT exists, Dbank will create a data bank called EXAMPLE.MDB (assuming one does not exist already) with a group called EXAMPLE. The series in EXAMPLE.MAT will be saved in EXAMPLE and the series in EXAMPLE will be called C1, C2, C3, .., CN where N is the number of columns (i.e., series) in EXAMPLE.MAT.

7. ***How do I create a group called "THIRD" with a sub-group "GNP" in EXAMPLE.MDB?***

(a) If necessary, open the data bank by double-clicking on EXAMPLE.MDB in the file list box.

(b) From the Group Menu, select "Make" (Alt+G+M) and then type "THIRD.GNP".

8. ***How do I print all the series in the group called "SECOND" in EXAMPLE.MDB?***

(a) If necessary, open the data bank by double-clicking on EXAMPLE.MDB in the file list box.

(b) Click on the group called SECOND in the group list box.

(c) From the Group Menu, select "Print" (Alt+G+P).

9. ***How do I export ALL the series in the group called "FIRST" and its sub-groups to an EXCEL spreadsheet using Windows' Dynamic Data Exchange facility?***

(Follow these steps only if you have a copy of EXCEL on your hard disk, and the location of EXCEL.EXE is on the active DOS Path.)

(a) Open the data bank by double-clicking on EXAMPLE.MDB in the file list box.

(b) Click on the group called "FIRST" in the group list box.

(c) Tag all the series in FIRST by selecting "Tag" from the Group Menu (Alt+G+T).

(d) From the Tagged Menu, select "Export..." (Alt+T+X). This will invoke Dbank's EXPORT form.

(e) From the Format Menu of the EXPORT form, select "DDE to EXCEL" to indicate "Dynamic Data Exchange" to an Excel spreadsheet.

(f) Indicate the range of observations to export by clicking on the Bounds button of the EXPORT form.

(g) From the File Menu, declare an output file (i.e., spreadsheet) for the tagged series by selecting "Open..." (Alt+F+O)

(h) Click on the "Do it!" button of the EXPORT form. Dbank will start copying the tagged series to an Excel spreadsheet.

10. ***How do I run ACE on a set of series?***

(a) The first step is to tag all the series you wish to run ACE on. To tag all the series in a group, from the Group Menu, select "Tag" (Alt+G+T) or simply click on the group and then click on the RIGHT mouse button. To tag a particular series within a group, from the Series Menu, select "Tag" (ALT+S+T) or double-click on the series name.

(b) Invoke ACE. To do so, from the Tagged Menu, select "ACE".

11. ***How do I rename a series in EXAMPLE.MDB?***

Select the series you wish to rename using the mouse. Then invoke the Series Menu, and select "Rename" (ALT+S+R).

12. ***How do I rename a group in EXAMPLE.MDB?***

Indicate the group you wish to rename by clicking on a particular group in the group list box. Then invoke the Group Menu, and select "Rename" (Alt+G+R).

13. ***How do I delete ALL the series in a particular group and its sub-groups; for example, all the series in the group called "FIRST" and its sub-groups?***

Click on the group called FIRST in the group list box. From the file menu, select "XDELETE". (Alt+G+X).

14. ***How do I get a mosaic plot of ALL the series in a group and its sub-groups?***

The first step is to tag the group. The easiest way to do this is to use the mouse; RIGHT-click on the group name in the group list box. To plot the series, from the Tagged Menu, select "Mosaic Time Plot" (Alt+T+T).

15. ***How do I get a plot of a single series against time?***

Click on the series you wish to plot using the mouse. From the Series Menu, select "Time Plot" (ALT+S+L).

16. ***How do I inspect the data in a particular series?***

Click on the series you wish to inspect. From the Series Menu, select "View" (ALT+S+V).

17. ***How do I edit the data in a particular series?***

Click on the series you wish to edit. From the Edit Menu, select "Edit" (ALT+S+E).

18. ***How do I compute the growth rate of a series using Dbank's Series Make facility?***

Suppose you need to compute the growth rate of BPB, a series in the group called FIRST, and you want to store the result in a series called GBPB in a group called GROWTH.USA

(a) Double click on the group called FIRST and then click on the sub-group called BP.

(b) From the Series Menu, select "Make" and enter:

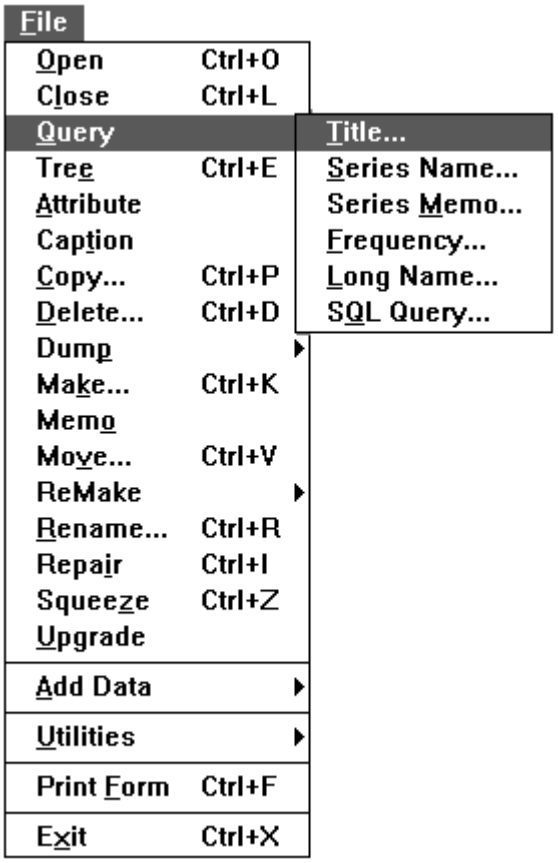
[growth.usa]gbpb = ((bpb-lag(bpb))/lag(bpb))*100.

Dbank will create a series called GBPB in the group "GROWTH.USA" containing the (quarterly) growth rate of BPB.

19. ***Is it possible to select more than one item in the group, series, and tagged list boxes?***

The group, series and tagged list boxes allow you to select multiple items. To do so using the mouse, hold the left mouse button down and drag the cursor over the items you wish to select. Shift+click or Shift+arrow key extends the selection from the previously selected item to the current item. Ctrl+click selects or de-selects an item in the list. Ctrl+drag can be used to select disjoint clusters of items.

File Menu



The File Menu (shown above) provides basic file management commands for Dbank data banks. You can invoke the File menu using the mouse (simply click on the File menu) or via the keyboard (press **Alt+F**).

The file list box allows you to select more than one data bank. To select a single data bank, click on the data bank using the mouse. Shift+click or Shift+arrow key extends the selection from the previously selected item to the current item. Ctrl+click selects or de-selects an item in the list.

File Open [CTRL+O, ENTER, SPACEBAR]

This command opens a data bank. All the Dbank data banks (*regardless of their MS-DOS file attribute*) in the current directory are shown in the file list box. Select the data bank you wish to open using the keyboard or the mouse. After the selected data bank is opened successfully, Dbank displays the group and series list boxes. The group list box contains all the groups in the data bank, and the series list box has all the series in the active group.

Mouse Shortcut: Double-click on the data bank you wish to open.

File Close [CTRL+L]

Closes the active data bank and removes the group, series and tagged list boxes.

Mouse Shortcut: Select the data bank you wish to close, and then click on the RIGHT mouse button.

File Query

Finds all the series in the selected data banks that satisfy your query. The matched series are displayed in Dbank's BROWSE form, which allows you to COPY, DELETE, TAG, UNTAG, RENAME, EDIT, PLOT, and VIEW the series. You can construct queries on the series titles ([Title]), the series names ([Name]), the series "memo" [Description], the frequency of the series ([Frequency]), and the "long-name" of the series ([Long Name]).

Any of these items can be combined into a single SQL query using the File Query SQL statement command. For example, the SQL statement

```
[Title] like "*BALANCE*" and [Frequency] = "Q"
```

finds all the quarterly series in the selected data banks with the string "BALANCE" in their title.

File Tree [CTRL+E]

Provides a visual outline of the a data bank's group/tree-structure, and provides the same commands as available in Dbank's start up form.

File Attribute

Enables you to set the "attribute" of a Dbank data bank. Two attributes are currently supported: (1) "Read-Write" (default); and (2) "Read-Only". A "Read-Only" attribute protects a data bank against writes *without* restricting read access. Dbank commands that can change the contents of the file are automatically disabled whenever you access a "read-only" data bank. This command is particularly useful for creating data banks that will ultimately be installed on a shared network drive.

File Caption

Allows you to attach a one-line (up to 255 character) description to the current data bank. This description is displayed whenever the user selects the data bank.

File Copy [CTRL+P]

Creates a copy of a data bank.

File Delete [CTRL+D]

Deletes a data bank. The file must not be write-protected.

File Dump

Dumps the contents of a data bank (i.e., all the series and data) to an ASCII file structured in Dbank's FREE format, or the AREMOS ".TSD" format, or the "CITIBASE TAPE" format, or in TSP format.

File Make [CTRL+K]

Creates a new data bank.

File Memo

Allows you to attach a lengthy (up to 32K) description to the current data bank.

File Move [CTRL+V]

Moves/renames a data bank. You can also use this command to rename or move a data bank to another hard disk.

File ReMake

This command updates (i.e., "ReMakes" or re-generates) all the series in the data bank which were previously created using the "Series Make" command (see below). Dbank allows you to regenerate series recursively, or non-recursively. Under recursive ReMake, Dbank performs a "spreadsheet style" recalculation of all the series in the data bank. For example, if x = log(y), and y = abs(bal_paym), Dbank re-computes y BEFORE re-computing x. With non-recursive ReMake, Dbank computes x = log(y) without updating y.

This command is often used immediately after the data bank is updated. It obviates the need for users to invoke "Series Make" to update their derived series to account for updated data.

File Rename [CTRL+R]

Renames/moves a data bank. You can also use this command to move a data bank to another location on the same hard disk or to another hard disk.

File Repair [CTRL+I]

Repairs a data bank. This command enables you to recover from accidents that may have corrupted the data bank file—e.g., a power-out, a UAE, etc.

File Squeeze [CTRL+Z]

Removes the unused or dead space in a data bank that is created whenever you delete a series from the data bank. The squeeze command creates a new data bank which is the same as the original data bank but without the unused space.

SUGGESTION: ***Though much care has gone into ensuring that the squeeze command is free of bugs, for added protection, you may wish to backup your data bank BEFORE invoking this command. You can make copies of data banks using the Copy command in the File Menu.***

File Upgrade [CTRL+U]

Upgrades an existing data bank to the latest Dbank format. This command does nothing if the data bank's structure is current.

File Add Data

Reads data stored in a file and adds the data to the data bank with the same filename as the input file. The input file can be organized in Dbank's FREE, SERIES, or MATRIX format; it can also be organized in the "CITIBASE TAPE" or AREMOS ".TSD" format. Data can be also be read directly from an EXCEL spreadsheet, or GAUSS ".FMT" and ".DHT" binary files. File Add Data can also be used to manually input data in a data bank.

NOTE: you can abort the "Add Data" function at any time by typing CTRL+BREAK or CTRL+C.

File Utilities

Provides utilities to (a) create a character-mode DOS session (b) call up Windows' CALCULATOR program, (c) Invoke Microsoft Excel, and (d) configure Dbank (e.g., disable automatic linking to Excel).

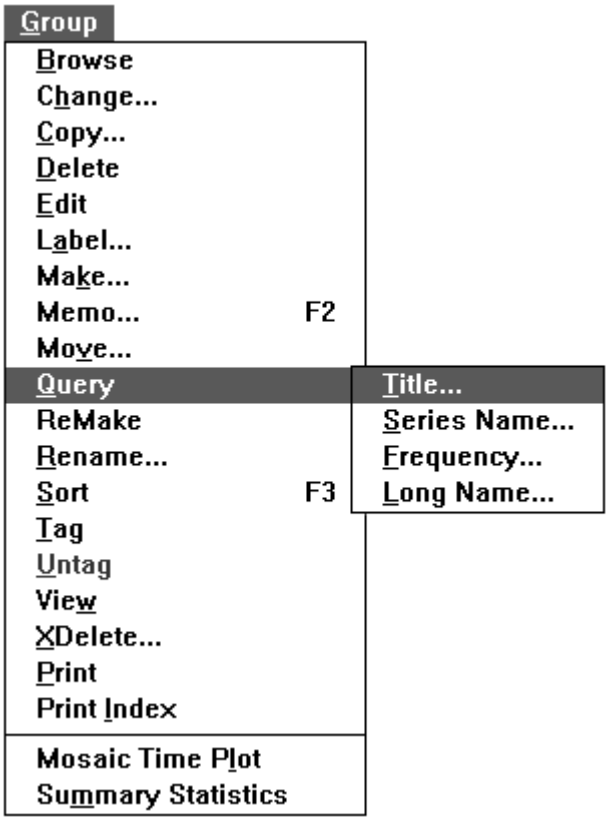
File Print Form [CTRL+F]

Dumps Dbank's startup form to the active printer.

File Exit [CTRL+X]

Closes all disk files and ends your Dbank session.

Group Menu



The group menu (shown above) allows you to manipulate entire groups of series (and the series in the sub-groups). You can activate the group menu by typing **Alt+G** or by clicking on the **GROUP** menu using the mouse.

Dbank data banks possess a hierarchical tree structure similar to the PC-DOS file system. Double-clicking on a group fills the group list box with the names of the groups that belong to that group (and so on to any number of levels). Double-clicking on the parent group moves you up one level in the tree. Double-clicking on the main group moves you to the main or root group in the data bank.

Note that the group list box allows you to select more than one group. To select a single group, click on the group using the mouse. Shift+click or Shift+arrow key extends the selection from the previously selected item to the current item. Ctrl+click selects or de-selects an item in the list.

There are short-cut keys for each command in the Group Menu. These keys are active whenever the group list box has the focus. You can give the group list box the focus by clicking on the group list box with the mouse.

Group Browse [B,b]

Loads Dbank's BROWSE form, which provides a tabular representation of series' index records. The BROWSE form allows you to COPY, DELETE, TAG, UNTAG, RENAME, EDIT, PLOT, and VIEW series.

Group Change [H,h]

Allows you to set/change to another group in the current data bank.

Group Copy [C,c]

Copies all the series in the selected groups (and their associated sub-groups) to a different group or data bank. The destination group or data bank need not exist. If you wish to copy the series to another data bank, use the syntax FileName[GroupName] when you are prompted for the destination of the series. Thus to copy all the series in the group [FIRST] to another data bank, say EXTRACT, in a group called [PAPER.WHITE], you type EXTRACT[PAPER.WHITE] when you are prompted for the destination of the series. To copy to another group within the same data bank, specify just the destination group—e.g., [PAPER.WHITE]

Group Delete [D,d]

Deletes the selected groups. The groups must be empty (i.e., not have any series nor any sub-groups).

Group Edit [E,e]

Invokes Dbank's EDIT form for all the series in the selected groups (and associated sub-groups). Dbank's EDIT form allows you to edit series' index record.

Group Label [A,a]

Allows you to attach a label/description (up to 255 characters) to a group. You can edit existing group labels using this command.

Group Make [K,k]

Creates a new group in the current data bank that belongs to the current group.

Group Memo [F2]

Allows you to attach a lengthy description (< 32K) to a group. You can edit existing group memos using this command.

Group Move [V,v]

Moves the series in the selected groups (and their associated sub-groups) to another group. The destination group/data bank need not exist.

Group Query

Finds all the series in the selected groups (and their sub-groups) that satisfy your query. The matched series are displayed in Dbank's BROWSE form, which allows you to COPY, DELETE, TAG, UNTAG, RENAME, EDIT, PLOT, and VIEW the series. You can construct queries on the series titles ([Title]), the series names ([Name]), the frequency of the series ([Frequency]), and the "long-name" of the series ([Long Name]).

Group ReMake

This command updates (i.e., "ReMakes" or re-generates) all the series in the selected groups (and their sub-groups) which were previously created using the "Series Make" command (see below). Dbank allows you to regenerate series recursively, or non-recursively. Under recursive ReMake, Dbank performs a "spreadsheet style" recalculation of all the series in the selected groups. For example, if x = log(y), and y = abs(bal_paym), Dbank re-computes y BEFORE re-computing x. With non-recursive ReMake, Dbank computes x = log(y) without updating y.

This command is often used immediately after the data bank is updated. It obviates the need for users to invoke "Series Make" to update their derived series to account for updated data.

Group Rename [R,r]

Renames the selected groups (one at a time).

Group Sort [F3]

Sorts the entries in the group list box by name. Equivalent to "Series Sort By Name" (see below).

Group Tag [T,t]

Tags all the series in the selected groups (and their sub groups). The tagged series are displayed in the tagged list box. They can then be manipulated as a unit using the commands in the Tagged Menu.

Mouse short-cut: select the groups you wish to tag and then click on the RIGHT mouse button.

Group View [W,w]

Loads Dbank's VIEW form with all the series in the selected groups (and their sub-groups). The VIEW form shows you the data saved in a series.

Group UnTag [U,u]

Untags all the series in the selected groups (and their sub-groups).

Group Xdelete [X,x]

Deletes all the series in the selected groups and their sub-groups, and (optionally) the empty groups themselves.

Group Print [P,p]

Prints all the series in the selected groups and their sub-groups (including the data).

Group Print Index [I,i]

Prints the index record of all the series in the selected groups and their sub-groups.

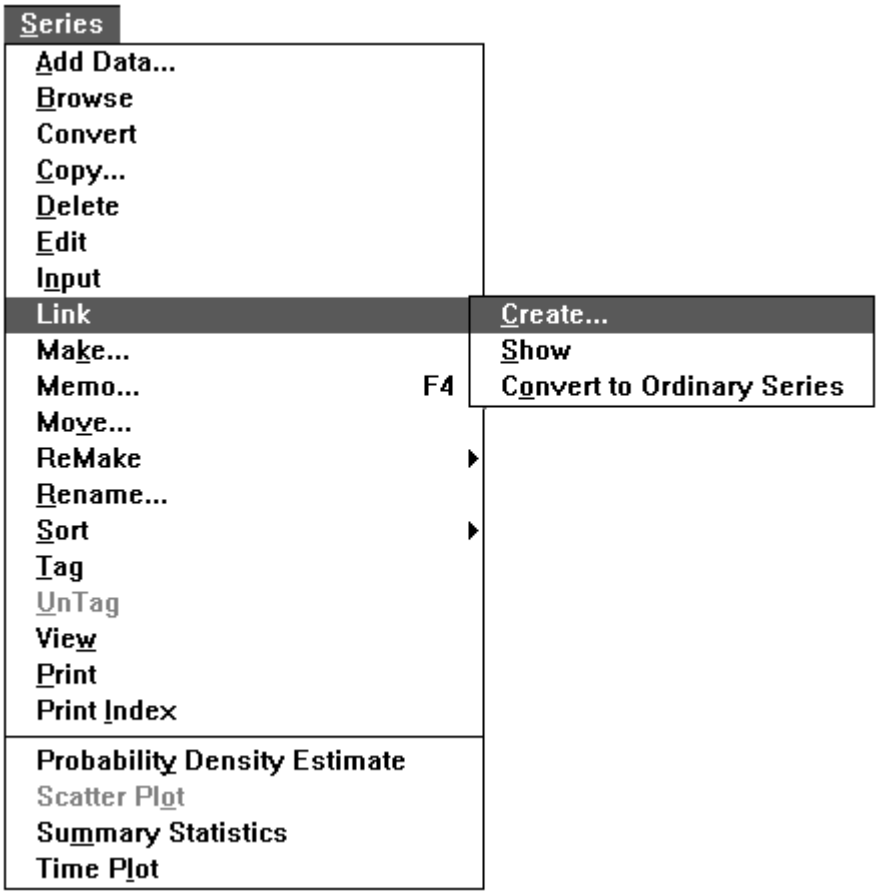
Group Mosaic Time Plot [L,l]

Provides a mosaic time plot of the all the series in the selected groups and their sub groups.

Group Summary Statistics [M,m]

Computes various summary statistics (e.g., mean, variance) for all the series in the selected groups and their sub-groups.

Series Menu



The Series Menu (shown above) allows you to add series to the current data bank and execute various commands on objects in the series list box. You can access these commands by clicking on the series menu with the mouse or by typing **ALT+S**.

All the series in the current group are shown in the series list box. The series list box allows you to make single or multiple selections. To select a single item in the series list box, click on the item using the mouse. Shift+click or Shift+arrow key extends the selection from the previously selected item to the current item. Ctrl+click selects or de-selects an item in the list.

Each command in the Series Menu has a short-cut key that is active whenever the series list box has the focus. You can give the series list box the focus by clicking on the series list box with the mouse.

Series Add [A,a]

Reads data into Dbank. The data can be organized in any one of Dbank's FREE, SERIES or MATRIX format; or it can be read directly from an EXCEL spreadsheet. The input file can also be organized in AREMOS and CITIBASE TAPE file format. The data will be added to the current data bank. See "Reading your data into Dbank" for further details. NOTE: you can abort this operation at any time by typing CTRL+BREAK or CTRL+C.

Series Browse [B,b]

Loads Dbank's BROWSE form, which provides a tabular representation of the index records of the selected series. The BROWSE form also allows you to COPY, DELETE, TAG, UNTAG, RENAME, EDIT, PLOT, and VIEW series.

Series Copy [C,c]

Copies the selected series to another series, group or data bank. To copy a series to another data bank, use the syntax Drive:\Path\FileName[GroupName]SeriesName. For example, to copy the series BPASPV in the group [FIRST] to another data bank, say EXTRACT, in a group called [PAPER.WHITE.A4], you type EXTRACT[PAPER.WHITE.A4]BPASPV when the Series Copy command prompts for the destination of the series. To copy to another group within the same data bank, you specify just the destination group—e.g., [PAPER.WHITE.A4].

Series Convert

Converts a series to a lower frequency (e.g., from quarterly to annual, or from null frequency to quarterly). Five conversion methods are supported in Dbank: SUM, FIRST, AVERAGE, LAST and MID-POINT.

Series Delete [D,d]

Deletes the selected series.

Series Edit [E,e]

Invokes the EDIT form, which allows you to edit the selected series' index record(s) and data.

Series Input [N,n]

Invokes the INPUT form, which allows you to manually input data into Dbank.

Series Link

A "link variable" is a pointer to an existing set of observations in a data bank. It is essentially another name for the same observations in the data bank. *However, it is best understood as a pointer to the data of the series, not to the name of an existing series.* This feature of Dbank enables you to maintain a single copy of the data in the data bank, but with many pointers to the same data. Thus, changing the data (via an edit operation, for example) changes the data for all the series that point to that data. Note that a link variable may span across groups, but it cannot refer to a series in a different data bank. Dbank automatically alters the pointers if you rename/move the data being pointed to.

Deleting a link variable does NOT delete the original series, and deleting a regular variable will NOT delete the attached data if a link variable pointing to the same exists in the current data bank. However, if you

squeeze the data bank, any link variables that point to a deleted series will NOT appear in the squeezed version of the data bank.

"Link Create" creates a link variable; "Link Show" shows all the link variables that exist for a particular variable; and "Link Convert to Ordinary Series" converts a link variable to a normal variable.

Series Make [K,k]

Creates a new series from existing series in the data bank. Series Make accepts an algebraic expression involving series or numbers and computes the result. Make recognizes the following operators:

^ (power), - (unary negation), * (multiplication), / (division), \ (integer division), % (Modulo arithmetic), %# (Modulo arithmetic without integer truncation), + (addition), - (subtraction), = (equal to), <> (inequality), < (less than), > (greater than), <= (less than or equal to), >= (greater than or equal to), ! (Bitwise unary NOT), & (Bitwise AND), | (Bitwise OR), ^| (Bitwise XOR), == (Bitwise EQV), => (Bitwise IMP)

and the following functions:

Abs (Absolute) Log (log to base e), Log10 (log to base 10), Sqr, Fix (towards 0), Int (towards left), Ceil (ceiling), Sgn, Rnd (stochastic random number), Rndfix (deterministic random number), Deg (Degree), Rad (Radian), Exp (exponential), ExpSmooth (exponential smoother), Smooth (Friedman's super-smoother), Mean, Median, Sd (standard deviation), Demean (removes the mean), Var (Variance), Acf (correlogram), Pdf (probability density function), Lead (lead a series one period), Lag (lag a series one period), Ma (centered moving average), Diff (difference), MDiff (multiple difference), SigDigits (significant digits of a number), Round, Reverse (reverse the vector), Csum (cumulative sum), Cprod (cumulative product), Sort, Permute (shuffle the vector), Index, Rank, Period (periodicity indicator), Ismiss (flags missing values), Pack (remove missing values), Trim (trim a vector), Select (randomly select a subset of the vector), SelectIndex (generates a vector of selection indices), Sin, Cos, Tan, Sec, CoSec, CoTan, Asin, Acos, Atan, Asec, Acosec, Acotan, Sinh, Cosh, Tanh, Sech, Cosech, Cotanh, Asinh, Acosh, Atanh, Asech, Acosech, *and* Acotanh.

With the exception of ACF, LEAD, LAG, ROUND, DIFF, MDIFF, MA, SIGDIGITS, SELECT, SELECTINDEX, TRIM, and the EXPSMOOTH functions, all of the listed functions accept a single argument. The argument may be a single series or the result of any algebraic operation(s) on any series.

The syntax for the ACF, LEAD, LAG, ROUND, DIFF, MDIFF, MA, SIGDIGITS, SELECT, SELECTINDEX, TRIM, and EXPSMOOTH functions is

fn(arg1, arg2, arg3, arg4...);

that is, they accept more than one argument.

In the case of LEAD/LAG, arg2 is the number of periods to LEAD/LAG the series (i.e., arg1). DIFF(x,k) = x(t)-x(t-k), and MDIFF(x,k) applies DIFF(x,1) to x(t) k-1 times. MA(x,k) computes a k^{th} period (centered) moving average of x. In ROUND, arg2 is the number of decimals to round arg1 to. If k is

negative, ROUND rounds arg1 to the $(-k+1)^{st}$ digit to the left of the decimal point. For the EXPSMOOTH function, arg2 can be any real number between 0 and 1 (inclusive). For ACF, arg2 is the maximum auto-correlation lag. SIGDIGITS(x,k) returns the number of required (k) significant digits of x. If k is negative, SIGDIGITS(x,k) preserves any integer part of x. For TRIM, arg2 is the number of data points to remove from the *beginning* of the vector, and arg3 is the number of data points to delete from the *end* of the vector. For SELECT(x, arg2), arg2 is the number of elements of x to randomly select. And for SELECTINDEX(x, arg2), arg2 is the number of indices (pointing to elements of x) to select.

In the case of LEAD/LAG, you may use the syntax x = lag(y, -n TO m) to easily create multiple leads and lags of a particular variable. The previous syntax will create (m+n+1) variables: n leads (i.e., -n, -(n-1), -(n-2), -1), y itself (i.e. lag(y,0)), and m lags of y (i.e., 1, 2, 3, 4, ..., m). If the lag index is negative, the name of the new variable will be constructed by appending "nj" to the variable name, where j is the amount of the lead. Thus, lag(y,-1) will be saved as "yn1". If the lag index is positive, the name of the resulting variable will be constructed by appending "pj" to the variable name, where j is the amount of the lag.

Arg2 can be omitted when using some of these functions. Arg2 defaults to one (1) in the ACF/LEAD/LAG/DIFF/MDIFF functions and to zero (0) in ROUND.

Functions can be nested to any depth (memory permitting). For example, if x and y are series in the current data bank, then the following algebraic expression is allowed:

```
lead(exp(lag(abs(log(x+y)^4),5)),10)
```

Note that the result of the operation will be a series of the same frequency as series x and y. The length (or sample period) of the new series will be the maximum sample period over which both x and y exist. Also, the symbol PI# has been defined to π (the mathematical constant) in Series Make.

Make accepts fully qualified series names (i.e., data_bank[group]ser_name). However, if fully qualified names appear on the right-hand side of the equation, they MUST be enclosed in double quotes (" "). Note that the data bank on the left-hand side of the equation need not exist.

Lastly, Make accepts more than one algebraic expression at a time. Separate each expression using your default "list separator". Thus, if your current list separator is "," (i.e., comma), typing

```
a1 = ln(bpaspv), a2 = exp(bpaspv)
```

in Make's input box creates two series, a1 and a2.

Operator precedence: arithmetic operators are evaluated first, comparison operators are evaluated next, and logical operators are evaluated last. Within individual categories, operators are evaluated in the following order of precedence:

Arithmetic	**Comparison**	**Logical**
Power (^)	Equality (=)	Not (!)
Negation (-)	Inequality (<>)	And (&)
Multiplication and division (*, /)	Less than (<)	Or (|)
Integer division (\)	Greater than (>)	Xor (^|)
Modulo arithmetic (%, %#)	Less than or Equal to (<=)	Eqv (==)
Addition and subtraction (+, -)	Greater than or Equal to (>=)	Imp (=>)

All comparison operators have equal precedence; thus they are evaluated in the left-to-right order in which they appear in the expression.

When multiplication and division occur together in an expression, each operation is evaluated as it occurs from left to right. Likewise, when addition and subtraction occur together in an expression, each operation is evaluated in order of appearance from left to right.

You can override the operator precedence table by using parentheses.

Note: -1 is true in Dbank; 0 represents false

Series Memo [F4]

Allows you to attach a lengthy description (< 32K characters) to a series. You can edit existing series memos using this command.

Series Move [V,v]

Moves the selected series to another group. The destination group need not exist. You cannot move series to another data bank.

Series ReMake

This command updates (i.e., "ReMakes" or re-generates) all the selected series in the current group which were previously created using the "Series Make" command (see above). Dbank allows you to regenerate series recursively, or non-recursively. Under recursive ReMake, Dbank performs a "spreadsheet style" recalculation of all the series in the selected groups. For example, if x = log(y), and y = abs(bal_paym), Dbank re-computes y BEFORE re-computing x. With non-recursive ReMake, Dbank computes x = log(y) without updating y.

Series Rename [R,r]

Renames the selected series in the series list box (one at a time).

Series Sort

Sorts the series in the series list box by any one of the following criteria: (a) creation date; (b) frequency; (c) series name [F5]; and the (d) revision date.

Series Tag [T,t]

Tags the selected series, and places their fully-qualified name in the Tagged list box. To flag their tagged status, Dbank appends a superscript "1" to the tagged series in the series list box. You may tag a series more than once. When you do so, the tagged series is moved to the end of the tagged list box. This feature is provided because a number of Dbank commands attach special significance to the last series in the tagged list box, e.g., take it as the Y (dependent) variable.

Mouse Shortcut (Series Tag): double-click on series you wish to tag or select the series you wish to tag and then click on the RIGHT mouse button.

Series UnTag [U,u]

Untags the selected series, removing their entry from the tagged list box.

Series View [W,w]

Invokes the View form, which displays the data in the selected series.

Series Print [P,p]

Prints the selected series (and its data).

Series Print Index [I,i]

Prints the index record of the selected series.

Series Probability Density Estimate [Y,y]

Estimates the probability density of a single series and plots the result.

Series Summary Statistics [M,m]

Computes various summary statistics (e.g., mean, variance) for the selected series.

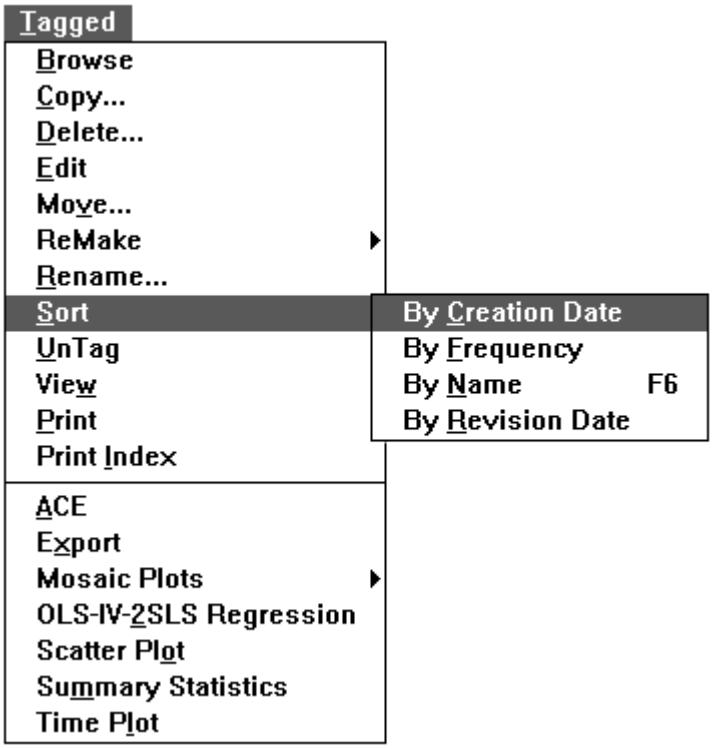
Series Scatter Plot [O,o]

Provides an XY plot of the LAST two selected series in the series list box. Y is the last series you select.

Series Time Plot [L,l]

Plots the selected series against time.

Tagged Menu



The Tagged Menu (shown above) allows you to execute commands on the series in the tagged list box. You can access the menu by clicking on the tagged menu with the mouse or by typing **Alt+T**. Most of the tag commands have a short-cut key. The short-cut key is operational whenever the tagged list box has the focus. You can give the tagged list box the focus by clicking on the tagged list box with the mouse.

The tagged list box allows you to make single or multiple selection. To select a single series in the tagged list box, click on the series name using the mouse. Shift+click or Shift+arrow key extends the selection from the previously selected item to the current item. Ctrl+click selects or de-selects an item in the list.

By default, the Tagged Menu commands operate only on the series you have selected in the tagged list box. However, if you do not select (i.e., highlight) any series, the Tagged Menu commands will operate on ALL of the series in the tagged list box.

Tagged Browse [B,b]

This command displays Dbank's BROWSE form using the series in the tagged list box. Dbank's BROWSE form allows you to perform various data bank operations on the series, including COPY, DELETE, TAG, UNTAG, RENAME, EDIT, PLOT, and VIEW.

Tagged Copy [C,c]

This command copies the tagged series to another data bank/group. To copy to another data bank, use the syntax Drive:\Path\FileName[GroupName]. Thus to copy all the series in the tagged list box to another data bank, say EXTRACT, in a group called [PAPER], you type EXTRACT[PAPER] when you are prompted for the destination of the series. To copy to another group within the same data bank, specify just the destination group—e.g., [PAPER].

Tagged Delete [D,d]

Deletes the series in the tagged list box.

Tagged Edit [E,e]

Invokes the EDIT form, which allows you to edit series in the tagged list box.

Tagged Move [V,v]

Moves the tagged series to another group. The destination group need not exist.

Tagged ReMake

This command updates (i.e., "ReMakes" or regenerates) all the series in the tagged list box which were previously created using the "Series Make" command (see above). Dbank allows you to update series recursively, or non-recursively. Under recursive ReMake, Dbank performs a "spreadsheet style" recalculation of all the series in the selected groups. For example, if x = log(y), and y = abs(bal_paym), Dbank re-computes y BEFORE re-computing x. With non-recursive ReMake, Dbank computes x = log(y) without updating y.

Tagged Rename [R,r]

Renames (one at a time) the series in the tagged list box.

Tagged Sort

Sorts the series in the series tagged list box by any one of the following criteria: (a) creation date; (b) frequency; (c) series name [F6]; and the (d) revision date.

Tagged UnTag [U,u]

Untags the series in the tagged list box. **Mouse Short Cut**: click the RIGHT mouse button.

Tagged View [W,w]

Invokes the View form, which displays the data in the tagged series.

Tagged Print [P,p]

Prints all the series (and their data) in the tagged list box.

Tagged Print Index [I,i]

Prints the index record of all the series in the tagged list box.

Tagged ACE [A,a]

ACE was published by Leo Breiman and Jerome Friedman on pp. 580-619 of the September, 1985 issue (Volume 80) of the Journal of the American Statistical Association: *Estimating Optimal Transformations for Multiple Regression and Correlation (with discussion)*. Tagged ACE implements this procedure for all the series in the tagged list box. Invoke ACE and select the Help menu for further information on ACE.

Tagged Export [X,x]

Invokes the EXPORT form, which allows you to copy the tagged series to an ASCII file. The file can be structured in any one of the supported output formats (i.e., AREMOS, BMDP, FREE, TSP, MICRO TSP, GAUSS, LIMDEP, MATRIX, MINITAB, SAS, SERIES, SPSS, SST, RATS, LOTUS, EXCEL and QUATTRO).

You indicate the output format using the Format menu of the EXPORT form; the sample period using the BOUNDS button of the EXPORT form, and the name of the output file using the File OPEN menu of the EXPORT form.

Tagged Mosaic Plots

Provides various mosaic plots of the selected series in the tagged list box. Mosaic Time Plot plots the tagged series against time; Mosaic (X,Y) Pairs Plot produces a scatter plot of all the (X,Y) pairs in the tagged list box (i.e., 1 vs. 2, 3 vs. 4, 5 vs. 6, etc.); and the Mosaic Single Y vs. Xs Plot produces a scatter plot of the last series in the tagged list box against each of the remaining series in the tagged list box.

Tagged OLS-IV-2SLS Regression [2]

Invokes Dbank's regression module using the selected variables in the tagged list box. Dbank supports Ordinary Least Squares (OLS) and Instrumental Variable Estimation (2SLS).

Tagged Scatter Plot [O,o]

Provides an XY plot of the LAST two selected series in the tagged list box. Y is the last series that you have selected.

Tagged Summary Statistics [M,m]

Computes various summary statistics (e.g., mean, variance) for the selected series in the tagged list box.

Tagged Time Plot [L,l]

Produces a time plot of all the series in the tagged list box.

Exporting your Data to Other Programs

An important feature of Dbank is its ability to transfer your data to files that can be processed immediately by other programs. Dbank's EXPORT command implements this feature.

You must select (i.e., tag) the series you wish to copy before invoking the EXPORT form. You can tag series using the TAG command in the GROUP and SERIES menus. You can also tag series using the mouse; simply double-click on a group or a series name.

The Tagged EXPORT command loads Dbank's EXPORT form which allows you to specify:

(a) the sample period for the copy. The sample period determines which part of the tagged series to copy;

(b) the output format (i.e., the structure of the output file);

(c) the conversion method Dbank should use when it needs to convert a series to a lower frequency (e.g., from quarterly to annual); and,

(d) the name of the output file (i.e., the destination of the copied series).

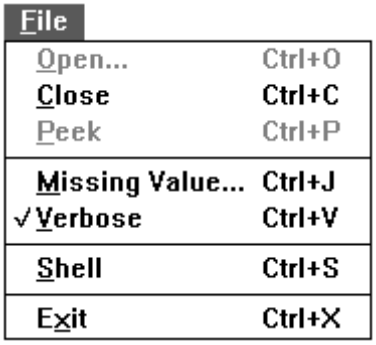
Dbank will not allow you to export any series until all of the following parameters have been set:

(a) the sample period;
(b) the output format; and
(c) the name of the output file.

If you find the above confusing (many do), try tagging a few series and then calling up the EXPORT form. It is programmed to step you through the EXPORT process.

The following pages provide a detailed explanation of the EXPORT form.

Export File Menu



The FILE menu of the EXPORT form is shown above. You invoke this menu by clicking on the File Menu with your mouse, or by typing **Alt+F**.

Use the OPEN command to specify the name of the output file for the tagged series. You need not specify a file extension. Dbank will append an extension to the filename that depends on the current output format you have selected. Note that the OPEN command is disabled until you chose an output format.

The PEEK command allows you to view the first 15 kilobytes of the output file (after it has been created).

The CLOSE command closes the output file.

The MISSING VALUE command is used to override the "missing value" code on output. This is the value that Dbank will place in the output file to indicate that an observation is missing.

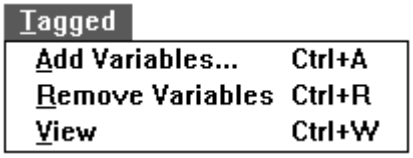
If you do not use the MISSING VALUE command, the default value depends on the current output format. By default, Dbank uses a period (i.e., ".") provided the statistical package supports it. Otherwise, Dbank's missing value code is 'NaN' (short for 'Not a Number'). You can easily override this default using the MISSING VALUE command.

The VERBOSE command allows you to monitor the progress of the copy command. When VERBOSE is enabled, Dbank will display the name of the series it is currently processing.

The SHELL command creates a character mode DOS session. Type EXIT to return to Dbank.

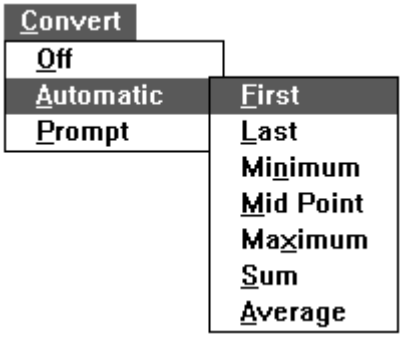
The EXIT command closes the EXPORT form.

Export Tagged Menu



The "Tagged" menu allows you to add and delete series from the tagged list box of the Export form. Use the "Add Variables" menu item to add series to the list box and the "Remove Variables" menu item to remove series from the tagged list box. The View menu item loads Dbank's View form which allows you to inspect the data.

Export Convert Menu



The CONVERT menu controls the manner in which Dbank converts a time series to a lower frequency. By default, Dbank converts time series to a lower frequency using the conversion method indicated on the series' index record.

The OFF command suppresses automatic conversion (automatic conversion is the default setting). In this mode, Dbank will attempt to copy the series to the output file without conversion. Of course, sometimes this is not possible—for example, when you have selected an output format (e.g., GAUSS, LOTUS, QUATTRO, or EXCEL) which produces a rectangular data set (i.e., one in which all the series have the same number of observations).

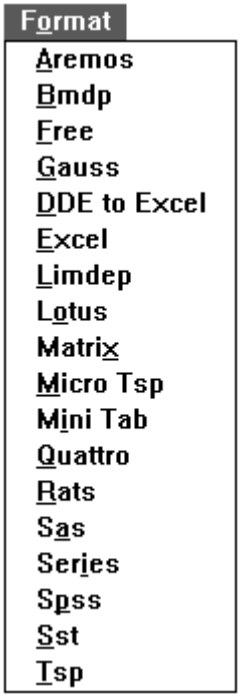
The AUTOMATIC command allows you to override the default conversion method specified on the series' index record. You may choose any one of the seven (7) conversion methods supported in Dbank: (a) FIRST (i.e., use the first data point of the period); (b) LAST (i.e., use the last data point of the period); (c) SUM (i.e., use the sum of the data points in the period); (d) AVERAGE (i.e., use the average of the data points in the period); (e) MID-POINT (i.e., use the middle observation); (f) MINIMUM (i.e., use the minimum data point in the period); (g) MAXIMUM (i.e., use the maximum data point in the period).

The PROMPT command instructs Dbank to prompt for a conversion method before copying the series to the output file. The PROMPT command supports two modes:

(a) FOR ALL SERIES: Dbank will prompt for a conversion method for each series to be copied—even if an internal conversion method has been specified on the index record; and,

(b) ONLY IF NECESSARY: In this case, Dbank prompts for a conversion method only when an internal conversion method is not available for the series being processed.

Export Format Menu

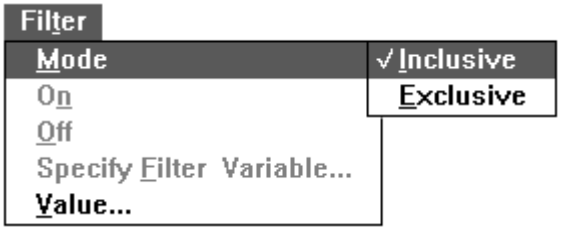


The FORMAT menu controls the output format for the tagged series. Select the format you want your data to be copied in.

If the output format is set to "DDE" to Excel, Dbank attempts a "dynamic data exchange" to an Excel spreadsheet. You need a copy of Microsoft Excel for this feature to work.

Suggestions for additional formats are MOST welcome (fbaso@nus.sg). However, please provide complete documentation for the required file format.

Export Filter Menu



Dbank can filter (or mask) a series according to the value of another series (called the FILTER). This feature is very useful for cross-sectional data, where it is often necessary to extract a portion of a series depending on the value of another series. Please note that you need to set the global frequency before you can use the Filter command. Click on the BOUNDS button of the EXPORT form to set the global frequency.

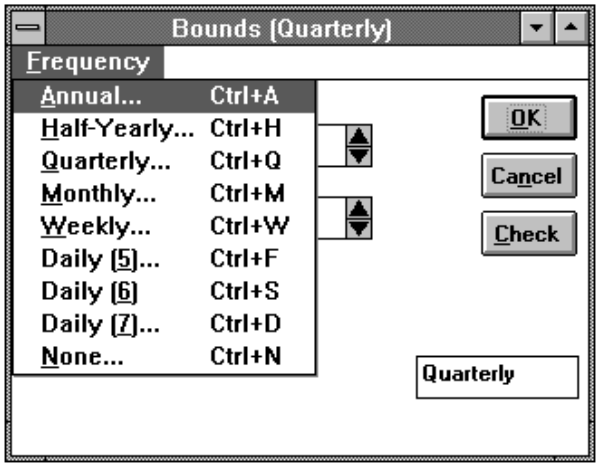
The Filter command operates in exclusive or inclusive mode. When the filter mode is inclusive, Dbank copies an observation of a series only if the corresponding observation in the filter variable is equal to a particular value (e.g. '1'). However, when the filter mode is exclusive, Dbank copies an observation of a series only if the corresponding observation in the filter variable is NOT equal to the filter value.

The "Specify Filter Variable..." command is used to specify the name of the filter variable. Though the filter variable need not reside in the same data bank, it must have the same frequency as the current global frequency.

The "On/Off" command allows you to switch off the masking function after you have selected a filter.

The "Value..." command allows you to specify the filter value. For example, if the filter value is 5, and the filter mode is inclusive, Dbank will copy an observation in the tagged series only if the corresponding observation in the filter variable is 5. Note that the same variable can store more than one filter value. Thus the same filter variable can extract different observations depending on the filter value.

BOUNDS Form



Dbank's "BOUNDS" form is shown above. You use it to set the global frequency and the sample period for the EXPORT form.

Unless Dbank's export conversion switch is turned off, you must choose a global frequency and set the sample period (or bounds) before you can export data to another program. The sample period defines the starting and ending date for the series to be exported; the global frequency is the target frequency. For example, if you select 'quarterly' for the global frequency but some of the series in the tagged list box have monthly frequency, Dbank will attempt to convert the monthly series to quarterly before they are exported to the output file.

The FREQUENCY menu of the BOUNDS form is used to set the global frequency [i.e., ANNUAL, HALF-YEARLY, QUARTERLY, MONTHLY, WEEKLY, DAILY(5), DAILY(6), DAILY(7), or NONE]. Once you select a global frequency, Dbank will display the maximum sample period that exists in the tagged series. Press OK to accept the maximum sample period and return to the EXPORT form. Otherwise, adjust the sample period to your own needs and then press OK. Please note that Dbank is unable to determine the maximum sample period when none of the tagged series has a frequency equal to the current global frequency.

Dbank date formats depend on the global frequency. For weekly and daily data, you need to specify the first day, month and year of the sample, and the last day, month and year of the sample. For half-yearly, quarterly, and monthly data you need to specify the first year and first period, and the last year and period (format: yyyy:pp, e.g. 1981:1). For annual data, specify the first and last year.

For data stored with no frequency (such as cross-sectional data), the first observation would have a start date of '1'. The last observation would have an end date of 'N', where N is the number of observations in the series.

Press CHECK button to check your bounds entry is valid; use the CHECK button before pressing the OK button.

The OK button instructs Dbank to process the BOUNDS command.

The CANCEL button removes the BOUNDS form without affecting the current bounds.

IMPORTANT: When all tagged series in the tagged list box have the same frequency, Dbank will automatically set the global frequency to the frequency of the tagged series before it brings up the BOUNDS form. Therefore, in this case, when you invoke the BOUNDS form it will display the maximum sample period that exists in the tagged series. Press OK to select the maximum sample period; otherwise adjust the sample period to you own requirements and then press OK.

Reading your data into DBANK

Dbank can process three types of ASCII data files: FREE format, SERIES format, MATRIX format, CITIBASE TAPE file format, and AREMOS ".TSD" file format. The default input format is FREE. If you have a copy of Microsoft's EXCEL spreadsheet, Dbank can also read the data stored in an EXCEL spreadsheet using Window's Dynamic Data Exchange facility, and it can import GAUSS ".FMT" and ".DHT" binary files directly.

The SETUP program installs examples of each of the ASCII files on your hard disk (they are stored in the same directory that you installed Dbank). The file called EXAMPLE.FRE is organized in Dbank's FREE format. Two other files, EXAMPLE.SER and EXAMPLE.MAT, are examples of Dbank's SERIES and MATRIX input formats (respectively). You can use these files to learn how to create data banks and manage data.

Input files are processed by the "Add Data..." command which appears in both the File and Series menus of Dbank's startup (or main) form. If you invoke the "Add Data..." command from the Series menu, Dbank will add the data stored in the ASCII file to the data bank you have opened. However, if you invoke the command from the File menu, Dbank adds the data to a data bank with the same filename as the ASCII input file (Dbank will create the data bank if necessary).

NOTE: you can interrupt the reading of ASCII input files at any time by pressing CTRL+BREAK or CTRL+C

1. FREE format (default extension: .FRE)

To read your data into Dbank using Dbank's FREE format you need to create an ASCII file that contains, for each series, the following information:

1. [group name{.sub_group{.sub_group...{,Group Label}}}]Name Obs Freq F_year F_period F_day Con_Code Precision Long_Name
2. Series Title—this is where you put the title of the series
3. Data Values

where:

1. **'[group_name{.sub_group{.sub_group...{,Group Label}}}]Name'** is the identifier of the series. For example, [CITY.NY]BPB is a legal Dbank name. BPB is the name of the series and it belongs to the sub-group NY in the group called CITY. Note that group, sub-group, and series names cannot be longer than eight (8) characters. Also, fully qualified group names must be delimited by left and right brackets (i.e., [ ]) Lastly, **'{,Group Label}'** refers to an optional (< 256 character) descriptor for the group. The label is updated even if the group exists.

A group (or sub-group) does not need to exist to add data; Dbank will automatically create the group during the reading process.

2. **'Obs'** is the number of observations in the series

3. **'Freq'** is a one-character code representing the frequency or periodicity of the series. Data with ANNUAL(A), HALF-YEARLY(H), QUARTERLY(Q), MONTHLY(M), WEEKLY(W), DAILY - 7-day week (D), DAILY - 6-day week (S), DAILY - 5-day week (F), or a NULL (N) frequency can be saved in a Dbank data bank. The NULL frequency is most appropriate for cross-sectional data.

4. **'F_year'** is the first year of the data. Use 1 for data with a NULL frequency.

'F_period' is the first period of the data. For HALF-YEARLY data, F-period can be set to 1 or 2; for QUARTERLY use 1, 2, 3 or 4; for MONTHLY, WEEKLY, and DAILY data use any integer in the range from 1 and 12 (inclusive), and for data with NULL frequency, use 0.

'F_day' is the first day of the data (use the appropriate day of the month for WEEKLY and DAILY data; 0 for other frequencies).

5. **'Con-code'** is the conversion method Dbank should apply to the series when converting the data to a lower frequency (e.g., from WEEKLY to ANNUAL). Dbank currently supports seven (7) conversion methods: (a) AVERAGE("A"); (b) SUM("S"); (c) FIRST("F"); (d) LAST("L"), (e) MAXIMUM("X"), (f) MINIMUM ("I"), and (g) MID-POINT("M"). You may also specify NONE("N") to prevent conversion. Only the "code letter" of the conversion method should be specified in the input file.

6 **'Precision'** is the precision with which Dbank will save the data in the data bank. Dbank can save data in SINGLE or DOUBLE precision. Single precision requires four (4) bytes per number; double precision requires eight (8). Use single precision to minimize the size of your data bank; however, you may loose precision by doing so. Only the first letter of the precision need be specified.

7. **'Data'** is the actual data of the series. The amount of data Dbank expects to read is determined by the number of observations specified in step 2 above. Use as many records (or lines) as you need to list all the data. The input format is free.

8. **'Long_Name'** (optional) is the long-name of the series (up to 30 characters). Use this argument to provide a descriptive name for a series. Note that Dbank does not allow you to access a series according to its long-name.

Note that the input file can contain any number of series (of any frequency and precision).

Dbank supports missing values on input. The missing value code is a period (i.e., '.'). You can change the missing-value code to a numeric value by including the following command in the input file:

MVAL 'your own missing value (e.g., -999).'

For example,

MVAL -999

sets the missing value to -999.

Dbank will not use -999 when it actually saves the data in the file. Dbank stores missing values using a special missing value code (+Infinity). On output, missing values are indicated by 'NaN' (i.e., Not a Number) or a period ('.'), provided the destination program supports it.

The following lines show the correct input format for a cross-sectional (Freq = N) series with 10 observations:

```
[DEBT,Stock Data]DEBTLXL   10    N    1    0    0 N  S  DEBT_STOCK_RATIO
debt-stock to exports ratio
      0.871850014       .              1.08260000     1.32647002     0.68683999
      0.91070997    1.06666005     1.31024003     1.91513002     1.51312006
```

Dbank will store the series DEBTLXL in the group DEBT (with a label of 'Stock Data') using SINGLE precision. The series title will be 'debt-stock to exports ratio'. The series long-name is DEBT_STOCK_RATIO. As DEBTLXL is cross-sectional data, its frequency is set to N (for 'NULL'), the first period is '1', and the conversion method is set to NONE. Note that the second observation is missing in the above example.

This is the correct format for a quarterly series with 58 observations:

```
[FIRST.US.Q,Balance of Payments Data, USA]BPASPV     58  Q    1976   1  0  A  D
BAL OF P'MENT:U.S.PRIVATE ASSETS_ NET(MIL$_S.A.)
 -10838.00    -9207.00    -8782.00   -15671.00
    284.00   -11273.00    -5408.00   -14320.00
 -14397.00    -4597.00    -8424.00   -29784.00
  -3535.00   -15129.00   -28069.00   -12718.00
  -8240.00   -24236.00   -17031.00   -23295.00
 -17429.00   -19886.00   -15953.00   -47410.00
 -31658.00   -38825.00   -22784.00   -20129.00
 -23765.00     -297.00    -9278.00   -16562.00
  -1037.00   -20168.00    15974.00   -17221.00
  -3119.00      838.00    -3357.00   -15408.00
 -13137.00   -22608.00   -22851.00   -31724.00
  11459.00   -25815.00   -25581.00   -33156.00
   4661.00   -19048.00   -36960.00   -31885.00
 -29821.00    11017.00   -38654.00   -45496.00
  36713.00   -26190.00
```

Dbank will save BPASPV in the sub-group called Q (with label 'Balance of Payments Data, USA') which belongs to the sub-group US with parent FIRST. The series will be saved in double precision. The

series starts in the first quarter of 1976. Dbank will convert the series to a lower frequency using the average of the appropriate quarters. The series does not have a long-name.

If the input file contains series that already exist in the destination data bank, Dbank will, by default, overwrite the contents of the series with the data in your input file. In effect, the old series is deleted before the new series is copied to the data bank. If you wish to simply update the existing data in a series without destroying the non-overlapping parts of the data (all the new data will be accepted, but all non-intersecting parts of the old data will be retained), you must switch to Dbank's update mode by inserting the command

UPDATE ON

in the input file. You can switch off update mode with the command

UPDATE OFF

The UPDATE command is allowed only in FREE format input files.

2. SERIES format (default extension: .SER)

Series format is similar to FREE format but much simpler. You do not need to specify anything except the name of the series. The name of the series may optionally be preceded by a group specification.

The following lines show the correct format for the BPASPV series using the SERIES format:

```
[FIRST]BPASPV
 -10838.00     -9207.00     -8782.00    -15671.00
    284.00    -11273.00     -5408.00    -14320.00
 -14397.00     -4597.00     -8424.00    -29784.00
  -3535.00    -15129.00    -28069.00    -12718.00
  -8240.00    -24236.00    -17031.00    -23295.00
 -17429.00    -19886.00    -15953.00    -47410.00
 -31658.00    -38825.00    -22784.00    -20129.00
 -23765.00      -297.00     -9278.00    -16562.00
  -1037.00    -20168.00     15974.00    -17221.00
  -3119.00       838.00     -3357.00    -15408.00
 -13137.00    -22608.00    -22851.00    -31724.00
  11459.00    -25815.00    -25581.00    -33156.00
   4661.00    -19048.00    -36960.00    -31885.00
 -29821.00     11017.00    -38654.00    -45496.00
  36713.00    -26190.00
```

Dbank will determine the number of observations in BPASPV. It will save BPASPV in a group called [FIRST] (which need not exist in the current data bank) using double precision storage and the NULL frequency.

You may include as many series as you wish in a single .SER file.

3. Matrix format (default extension: .MAT)

Matrix format is the simplest format supported by Dbank. To use this format, your data must be organized as a matrix in the input file. Each column of the matrix is treated as a separate series, while each row is regarded as a separate observation on each of the series. If there are no labels on the first line of the input file, the first column will be named C1. The second column will be named C2, and so on. You can override this naming convention by providing names for each column on the FIRST line of the input file.

Dbank will save the data in a group with the same name as the input file. Thus, if EXAMPLE.MAT contains four columns of data, Dbank will automatically create (assuming it does not exist already) a group called [EXAMPLE] with four series named C1, C2, C3, and C4. By default, the series are saved in the current data bank using double precision storage and the NULL frequency.

The following is an example of a MATRIX input file, say FIRST.MAT. Dbank will create four series (each with six observations):

```
-9345.00   -9207.00   -8782.00  -15671.00
  284.00  -11273.00   -5408.00  -14320.00
-14397.00   -4597.00   -8424.00   29784.00
 -3535.00  -15129.00  -28069.00  -12718.00
-45256.00  -82949.00  -47575.00  -24242.00
-87484.00  -53245.00  -23455.00  -23423.00
```

As there are no labels in the input file, Dbank will name the first column 'C1'. The second column will be called 'C2', and so on. Each column will be saved in the current data bank using the NULL frequency and double precision storage. The columns will be saved in the group called [FIRST] (i.e., the name of the input file).

4. AREMOS/CITIBASE ASCII file formats: CITIBASE ASCII file format is the structure of the ASCII file distributed by FAME Software Corporation, which distributes the CITIBASE time series data base on the USA economy. Please refer to their documentation for detailed information on the structure on the ASCII file. AREMOS ASCII file format is the ".TSD" format recognized by AREMOS.

5. APTECH "GAUSS" Binary Files: ".DHT" and ".FMT"

A ".DHT" file is the file format created by GAUSS's "ATOG" command. A ".FMT" is the matrix file format created using GAUSS's "Save" command. Dbank can read GAUSS binary files (16 and 32 bit versions) directly.

4. ROUNDING

Dbank is able to round the input numbers to a given number of decimal places. Insert the following line in your input file:

ROUND n

where n is the number of decimal places to round the input number. If n is negative, ROUND rounds the input number to the $(-n+1)^{st}$ digit to the left of the decimal point. You can insert more than one ROUND statement in the input file. Once activated, rounding can be switched off by the command ROUND OFF

5. INTERNATIONALIZATION ISSUES

Dbank is now "internationally" aware. That is, it recognizes and adapts to your preferred settings for the Windows list, thousands, and decimal separator. Hence, if you set the decimal separator "," Dbank will declare "123.678" to be a ***non-numeric*** number. However, "123,678" will be numeric.

Please ensure that your input format conforms to the settings you are using for these separators. Alternatively, you can change your default settings for the above separators to be consistent with your desired input format. Double-click on "Control Panel" and then "International" to do so. Dbank will adapt to the new separators immediately.

Installing Dbank Files on a Network

A Dbank data bank can be installed on a shared network drive (i.e., a drive that can be accessed by more than one user at the same time); however, it must be converted to "read-only" before it is copied to the network drive.

IMPORTANT: This version of Dbank does not support write-enabled data banks in a multi-user network environment. Please do not install write-enabled data banks to a shared network drive. (Future versions of Dbank will support multi-user write if there is interest)

Read-only data banks are created using Dbank's "Attribute Read-Only" command. Every read-only data bank has two (2) files associated with it:

<databank_name>.MDB, and
<databank_name>.FDB

where "<databank_name>" should be replaced with the actual name of the data bank. The ".MDB" file (a Microsoft Access database) contains the index records of the series, while the ".FDB" file contains the data saved in IEEE binary format.

Copy the two (2) files to the network drive. After you have done so, make sure you set the file attribute of <databank_name>.mdb and <databank_name>.fdb to "+r" (i.e., read-only) using the DOS ATTRIB command. This will permit multi-user access to the data bank.

You can also set the attribute to +h +s to hide the data bank on the network drive. Dbank will be able to locate it.

The four *.bat files distributed with Dbank give an example of the installation of Dbank on a network.

Dbank can also create "network-only" data banks -- i.e., data banks which can be read by Dbank only if they reside on a network drive. Please contact the author for further information on how to create "network-only" data banks.

Dbank and all of its data banks can be made to run directly from a CD-ROM with no prior setup except possibly for the pre-loading of the DOS utility SHARE.EXE. Thus Dbank provides an efficient method of distributing large amounts of data.

Dbank file formats are relatively straight forward to understand and can be easily read by standard programming languages (e.g., Microsoft Visual Basic, Microsoft Visual C++, MS Powerstation Fortran, etc). Documentation on the file structure can be obtained by sending a request to **fbaso@nus.sg**.