BIRR® Portfolio Analysis, Inc.

Version of October 23, 2001

BIRRXL User's Guide

What is BIRRXL?

BIRRXL is software that lets you analyze a portfolio's risk exposure profile and predicted tracking error in comparison with a benchmark. In order to use BIRRXL, you must have Microsoft Excel (version 7.0 or later) and an up-to-date copy of the BIRR Performance Analyzer installed on your computer.

Getting Started

Before you can make use of BIRRXL, you must first:

- Install the program itself (including the accompanying Excel template)
- Create input text files describing the portfolios you wish to analyze

An explanation of how to install the program and create the necessary input file can be found below. If you run into a problem, call (919) 687-7053 for help.

Installing the Program

To install the program, insert the CD-ROM into your CD-ROM drive. If it doesn't start automatically, choose "Run" from the Windows Start menu and run the Setup program found on the CD-ROM.

Creating the Input Files

BIRRXL requires two kinds of input files:

- A Portfolio List File listing the names of the portfolios you want to analyze along with their associated benchmarks.
- One or more Portfolio Holdings Files, one for each portfolio and holding date of interest.

Both types of files are plain text files with the extension .TXT. They can be created with a text editor such as Notepad or a spreadsheet program such as Excel. The only requirement is that they be save as a .TXT type file. (Note that Excel lets you specify the type of file to use whenever you save a worksheet.)

The Portfolio List File

The portfolio list file identifies all the portfolios you plan to analyze and associates each portfolio name with the appropriate benchmark. Optionally, it can also include a list of substitutions you want to make for stock ticker symbols and CUSIPs.

Usually, it's sufficient to create one such file no matter how many portfolios you work with. The program lets you select which portfolios you actually want to analyze during a given run.

Ticker and CUSIP Substitutions
An optional list of CUSIP/ticker substitutions can appear at the start of the file. This section, if present, begins and ends with lines starting with an asterisk (*), as in the example below.

Any number of lines can appear in the substitution list between the two asterisk lines. Each contains a ticker symbol or CUSIP followed by a replacement, with one or more spaces or tabs in between. If a portfolio holdings file contains the first symbol in any pair and that symbol doesn't match a CUSIP or ticker in the database, then the program will substitute the indicated replacement and look again.

You can use a given replacement more than once. (For example, you could substitute "TBILL" for more than one ticker or CUSIP.) If you specify more than one replacement for a given CUSIP or ticker, however, you'll get an error message and only the first one listed will be used. Or in other words, the same ticker or CUSIP can occur more than once in the second position of a line but not the first.

Here's an example with just two substitutions:

```
*SUBSTITUTIONS
XYZZY       RUS1000
00000002    TBILL
MONEYMKT    TBILL
RUSSELL1K   RUS1000
*END SUBSTITUTIONS
```

If a portfolio holdings file contains a holding with the ticker symbol XYZZY, and XYZZY doesn't correspond to any ticker in the database, then the program will substitute RUS1000 and try again. Since RUS1000 is a part of the database, the holding will be found.

Note that substitutions are performed only when the first symbol doesn't match a ticker or CUSIP in the database. If you want to make sure the substitution takes place, use symbols that are unlikely to accidentally correspond to a real ticker or CUSIP.

(Incidentally, the exact wording on the asterisk lines isn't important; what counts is only that they start with an asterisk.)

Portfolios and benchmarks
The format for listing portfolios and benchmarks is simple: one line per portfolio, with each line giving a portfolio name and an associated benchmark name separated by one or more spaces or tabs. If a name contains a space, enclose it in quotation marks ("). If a name contains a space or if any part of the path to that name contains a space, the entire pathname must be enclosed in quotation marks.

Note that you need only one line per portfolio, even if you have created multiple portfolio holdings files for different dates. If you want to analyze a portfolio against more than one benchmark, include one line for each portfolio/benchmark combination.

If the holding files for a given portfolio reside in the same folder as the portfolio list file, then you need to give only the portfolio name. If the holding files for the portfolio reside in a different folder, then the full file path to that folder must precede the portfolio name.

Here is an example of a portfolio list file (without the optional substitution section):

```
f:\myports\holdings\broadmarket     rus3000
f:\myports\holdings\midcap          s&p400
largecap                            s&p500
largecap                            rust200
```

The program will look for the "Broadmarket" and "Midcap" portfolios in the folder F:\Myports\Holdings. It will look for the "Largecap" portfolio in the same folder as this portfolio list file. (Note that "Largecap" is listed twice so that it can be analyzed using either the S&P500 or the Russell Top 200 as benchmark.

A benchmark can be any asset (most usually a stock index) in the BIRR Performance Analyzer database. Alternatively, it can also be any return series that you have from another source, provided the available returns history goes back at least 72 months.

To use a stock index (or other asset) from the BIRR Performance Analyzer database as a benchmark, look up its code below and use it as the benchmark name in the portfolio list file (as shown in the example above).

Code	Index
RUS1000	Russell 1000 Index
RUSGRWTH	Russell 1000 Growth Index
RUSVALUE	Russell 1000 Value Index
RUS2000	Russell 2000 Index
RUS2GRTH	Russell 2000 Growth Index
RUS2VALU	Russell 2000 Value Index
RUS2500	Russell 2500 Index
RUS2500G	Russell 2500 Growth Index
RUS2500V	Russell 2500 Value Index
RUS3000	Russell 3000 Index
RUS3GRTH	Russell 3000 Growth Index
RUS3VALU	Russell 3000 Value Index
RUSMCAP	Russell Midcap Index
RUSMGRTH	Russell Midcap Growth Index
RUSMVALU	Russell Midcap Value Index
RUST200	Russell Top 200 Index
RUST200G	Russell Top 200 Growth Index
RUST200V	Russell Top 200 Value Index
S&P500	S&P 500 Index
S&P400	S&P MidCap 400

If you would like to make use of a different benchmark return series, you must supply a returns history file formatted as specified for importable return series files in the BIRR Performance Analyzer and the BIRR Risks and Returns Analyzer. The file name extension should be .DB if returns are in decimal monthly units or .RET if the returns are in percent monthly units. If you want to use a .DB or .RET file as a benchmark, give the full path to the file (no matter where it resides) in the space for the benchmark name.

Portfolio Holdings Files

A portfolio holdings file describes the contents of a portfolio at a particular point in time. The format of the file is simple: one holding per line, each holding specified by either a ticker symbol or a CUSIP number, followed by one or more spaces or tabs, followed by a number representing the dollar (market) value of the holding. (You can also use asset weights in percent or decimal form, in which case the only problem is that the resulting analysis will always show the total portfolio value as $100 or $1.)

If your portfolio includes cash, you can use the symbol TBILL or 0000001 to represent a money market investment with returns comparable to 30-day Treasury bills.

The file must be given a 6-digit extension representing the date of the holding in YYMMDD format. For example, if a file has holdings for a portfolio named MYPORT as of June 30, 2001, the file name should be named MYPORT.010630.

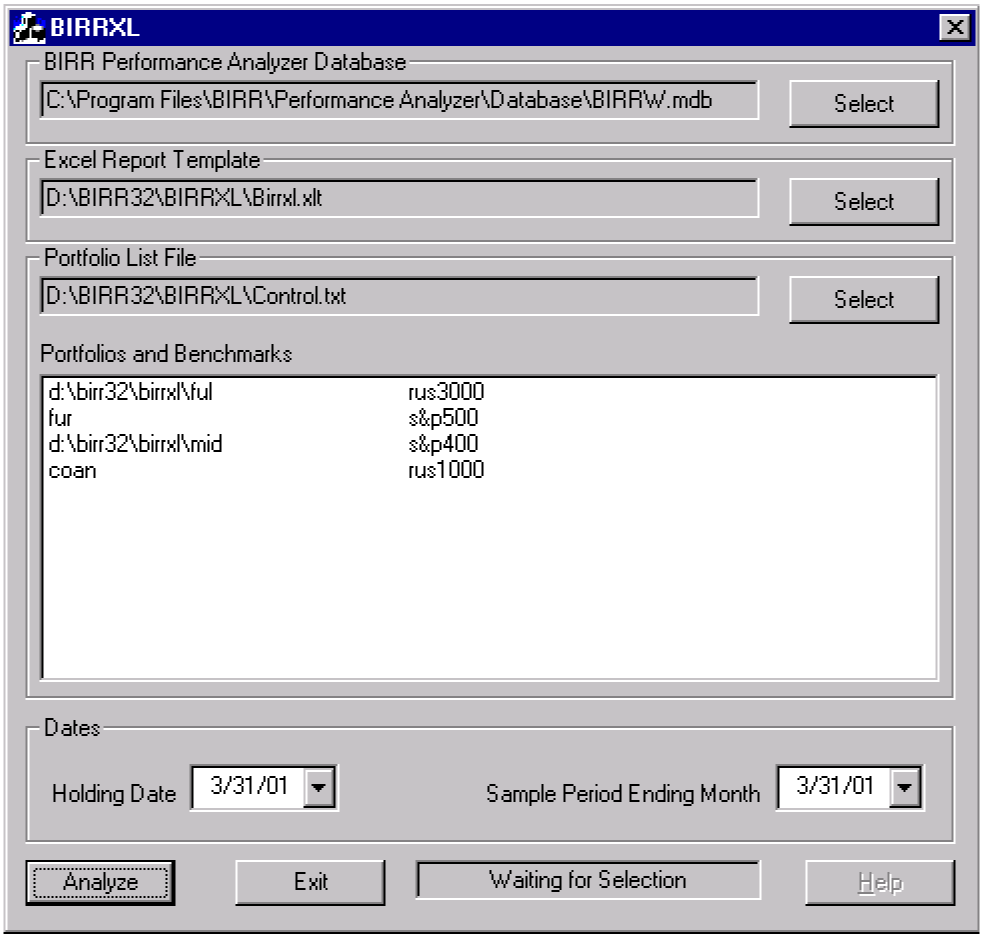
All holding files for a given portfolio should reside in the same folder. Files for different portfolios don’t have to be put into separate folders from one another unless you want to.

Here is an example of a portfolio holding file:

```
IBM          2400712.15
GE           4131127.06
0000001         100.00
```

Running the Program

When you start BIRRXL, you'll see something like the following, except that several entries will initially be blank.



Here is an explanation of each item:

BIRR Performance Analyzer Database

This identifies the BIRR Performance Analyzer database file to use. Usually this will be C:\Program Files\BIRR\Performance Analyzer\Database\BIRRW.MDB, but it depends upon where you installed the BIRR Performance Analyzer. The first time you run the program you'll have to use the Select button to select the file location. Thereafter it will be remembered. (Locating the BIRR Performance Analyzer database will be automated in a future release.)

Excel Report Template

This identifies the Excel template used by the program. Usually this will be C:\Program Files\BIRR\BIRRXL\BIRRXL.xlt, or wherever you installed BIRRXL. The first time you run the program you'll have to use the Select button to locate the file. Thereafter it will be remembered. You can use the original BIRRXL.xlt or the new BIRRXL2, which adds an additional analysis tab. BIRRXL2.xlt is considered to be in Beta, but there are no known bugs at this writing.

Portfolio List File

This identifies the portfolio list file you created. The file's name and location will be remembered for future executions of the program.

Portfolios and Benchmarks

This lists the contents of the Portfolio List File. To select a portfolio for analysis, you highlight its name here and either click the Analyze button or just double-click the portfolio name.

Holding Date

This lets you specify the portfolio holding date you're interested in. You can type in a date or click on the down arrow and select the date from a calendar. The program will look for a portfolio having the name you selected in the "Portfolios and Benchmarks" box and with a six-digit extension corresponding to the date you specified. For example, if you set the Holding Date to 7/31/2001, the extension would be .010731.

If you try to analyze a portfolio for a holding date that doesn't respond to any holdings file, the program will inform you and will cancel execution. It can also happen that a holdings file can't be opened because another program (such as Excel) already has the file open.

Sample Period Ending Month

This lets you specify the last month of the 72-month sample period used for the analysis.
(Only the year and month are of interest; the day of the month will be ignored.) If you import your own benchmark series returns, the date range of the series must include the 72-month sample period selected here.

Analyze Button

Click this button to run the analysis for the highlighted portfolio with the selected holding and sample period dates. (Alternatively, you can run the analysis by double-clicking on the portfolio name.)

Exit Button

Click this button to exit the program.

Status Bar

This box indicates whether the program is waiting for input from you or is performing a requested analysis.

Phantom Help Button

The grayed-out Help button is here to facilitate adding a Help capability in the future.

Analyzing a Portfolio

To analyze a portfolio of interest, select it, specify the holding and sample period dates, and click the Analyze button. (Alternatively, double-click on the portfolio name.) The Status Bar will indicate that the analysis is in progress, and after a few seconds the program will launch Excel and prepare a spreadsheet.

Working with the Excel Output

The Excel workbook created for each analysis will have four report worksheets, the contents of which are described in detail in the separate document "BIRRXL Report Description." Once the Excel workbook has been created, you can look at the contents of the reports, sort the contents of the Components report, print reports (individually or all at once), etc. You can also save the workbook for later reference. If you use "Save" rather than "Save As," the workbook will be given the file name BIRRXL.xls, but the original template will not be affected (unless, of course, you take other steps to delete or revise it).

Sorting Columns on the Components Report

The Components report can be sorted on any of the columns it contains. Simply click on any cell in the column you want to sort by and then click the Sort button located on the left side of the spreadsheet. (Text columns are automatically sorted in ascending order and numeric columns in descending order.)

Revised Percent Contribution Formula on Variance Report

The columns labeled "% Total" in the Risk Decomposition section of the Variance report are now computed using a formula slightly different from that employed in preliminary versions of the report. The previous formula computed aggregate percent contributions in such a way that the aggregate categories would sometimes not be exactly the sum of their component percentages, a result that is technically defensible but potentially confusing. The current computation method computes the aggregate contribution percentages as the sum of the percentages for the individual risk factors.

Legal Notices

This software product is under continuing development and is made available for your use on an "as-is" basis. It may be used only under written license from BIRR Portfolio Analysis, Inc. If you are a licensed user of the BIRR Risks and Returns Analyzer, your use of this product is subject to the terms of your existing BIRR license agreement.

This product contains confidential proprietary information, and any use of the programs, documentation, and supplied data, except as expressly authorized in writing by BIRR® Portfolio Analysis, Inc. either in a signed License Agreement or other written agreement, is strictly prohibited.

Your right to use the software automatically terminates if you fail to comply with any part of these usage restrictions. Violators are subject to prosecution.

Neither BIRR® nor any third-party suppliers of data, software or equipment to BIRR make any warranty, express or implied, as to results to be obtained by licensee or others from the use of the databases or any software provided by BIRR, including any software provided under the BIRR License Agreement, and there are no express or implied warranties of merchantability or fitness for a particular purpose or use.

The information contained in the databases are obtained from sources considered by BIRR to be reliable, but the accuracy and completeness thereof are not guaranteed and BIRR and its third-party suppliers shall have no liability for errors or omissions with respect to the databases or their delivery, regardless of cause or source of such error or omission. The BIRR® Performance Analyzer computer software, the BIRR Risks and Returns Analyzer®, computer software, any other BIRR-supplied software, all accompanying documentation, and all supplied data are all Copyright © 1990-2001 by BIRR® Portfolio Analysis, Inc.

Ibbotson Associates, Inc. is the owner of the copyright to the licensed data supplied by them.

The Morgan Stanley Capital International (MSCI) indices are proprietary, unpublished, and Copyright © 1996-2001 by Morgan Stanley Capital International Inc., with all rights reserved.

"BIRR" and "Risks and Returns Analyzer" are registered trademarks of BIRR Portfolio Analysis, Inc. "EAFE" is a service mark of Morgan Stanley Capital International Inc.

"Russell 1000," "Russell 2000," and "Russell 3000" are registered trademarks and "Russell 2500" and "Russell Midcap" are trademarks of The Frank Russell Company.

Other brand and product names mentioned are trademarks or registered trademarks of their respective holders.