Automating Chart Production Reduces Time Required to Produce Quarterly Portfolio Reports

Ausgangssituation
Zur quartalsweisen Berichterstattung über die Entwicklung der eigenen Fonds müssen verschiedene Daten - Indexwerte, Kennzahlen, Kurse usw. zusammengefaßt, visualisiert und in einer ansprechenden, publikationsfähigen Form dargestellt werden. Templeton Global Investors Inc. suchte nach einem Software-Werkzeug, mit dem sich diese Aufgabe möglichst effienzient erledigen ließ.
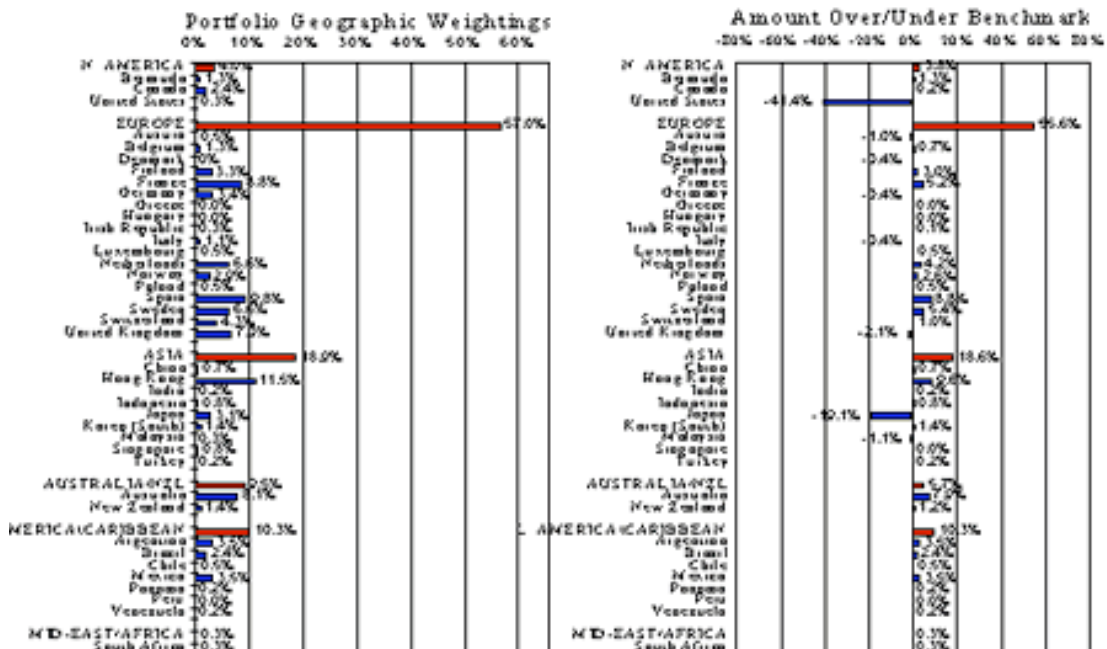
Fragestellung
Für die grafische Darstellung der Portfolio-Zusammensetzung und -Perfomance im Vergleich zur Leistung wichtiger Indizes soll ein Balkendiagramm eingesetzt werden. Diese Darstellung soll automatisiert erstellt werden, präsentationsfähig sein und als PDF- Datei vorliegen.

Lösung
Erstellung eines eigenen Dialogfensters zur Eingabe der entsprechenden Datei, Erstellung eines Skripts zum automatischen Auslesen der benötigten Informationen, Erstellung eines Report-Templates.

Templeton Global Investors, Inc. dramatically reduced the amount of time required to produce quarterly portfolio reports by automating chart production. The "Over/Under" chart is one of the most popular charts used by Templeton to keep clients informed of portfolio structure. This graph was created in an effort to compare portfolio investments to major investment indexes. The format utilized by Templeton features two horizontal bar charts placed in parallel on a single piece of paper arranged in landscape orientation. The firm previously produced their "over/under" charts using another software package, however the large number of countries required a reduction of label size. This situation resulted in a graph that was illegible and unattractive.

After examining a range of graphics packages, Templeton performance analysts discovered that ORIGIN software offered the optimal solution. ORIGIN provides the required level of control over every graphing element. This feature is absolutely required in the production of professional quality charts. ORIGIN additionally utilizes a complete programming language, therefore, Templeton enlisted the software manufacturer, OriginLab, Corp., to produce a batch processing routine that automatically completes every chart needed by the company each quarter.

Templeton Global Investors, Inc. is a subsidiary of Franklin Resources, Inc., a diversified financial services holding company which, through its various operating subsidiaries, has $180.9 billion under management as of December 1996 in the Franklin Templeton Group. In 1954, Templeton introduced the Templeton Growth Fund, one of the first global

equity funds, which maintains $10.0 billion assets under management as of December 1996. In 1992, Templeton combined with Franklin, which focused primarily on fixed-income and domestic equity investments. The resulting combination provides a comprehensive selection of investment opportunities rarely duplicated by mutual fund

organizations. In addition to mutual funds, Templeton provides private accounts for institutional investors. These dual services require massive reporting with an emphasis on conveying complex data in a simple manner. The over/under chart is one means by which Templeton keeps its clients informed of its investment strategy. Templeton created the over/under chart in an effort to compare its investments to major investment indexes in a clear, straightforward manner. The two types of over/under charts report on industry weights and geographic weights of a portfolio as compared to a major index.

The format used by Templeton has two horizontal bar charts placed side by side on a single legal sized paper arranged in landscape orientation. For a geographic weighting over/under chart (figure 1), the left-hand chart represents all of the countries in the portfolio and the benchmark on the y axis. The countries are organized according to geographical regions. The bars corresponding to each country display the percentage of the fund invested in each country. The chart on the right-hand side of the page has an identical listing of countries on the y-axis. The x-axis indicates the difference between the fund's investment in each country and the index to which the fund is being compared.

An industry weighting over/under chart (figure 2) is similar to the geographic weighting chart, however, the chart displays different industries organized into sectors of the economy on the y-axis. Before this development, multiple charts were produced every quarter with a commonly-used spreadsheet, and this software package automatically sets the label size based on the number of rows in the chart. As Templeton funds expanded into new geographic areas and industries, the number of rows increased to the point that the labels became illegible, so the graphs became ineffective.

Templeton analysts examined a considerable number of other programs but experienced difficulty finding software that would solve this problem while still allowing the production of the charts to be fully automated. For example, one package provided the necessary flexibility in adjusting label size but did not permit an automatic production of the charts.This program had no macro facility. It could be controlled through another application's macro by accepting keystrokes via DDE. However, the only way to switch from one chart to the other was with a mouse.There is no way to switch between the charts using keystrokes. Consequently, an acceptable chart could be created manually but the process could not be automated.

The analysts finally discovered ORIGIN Version 4.0 which is a Windows-based technical graphics and data analysis software package from OriginLab, Corp., located in Northampton, Massachusetts. This software package provides two crucial advantages that makes it ideally suited for this application. ORIGIN contains a wide range of graphing flexibility, thus allowing the user to adjust virtually any parameter of the graph simply by clicking on it with a mouse and adjusting the necessary parameters by either clicking and dragging with the mouse or filling in a dialog box. Second, ORIGIN utilizes an extremely powerful programming language, called "LabTalk"TM that provides access to virtually every function in the program.

Templeton performance analysts quickly verified that the software package made it possible to adjust label size and provide a legible, attractive chart. They then considered the task of automating the preparation of the charts.The analysts believed they could eventually produce a macro that would automate chart production. However, when considering time constraints, they decided to contract with the software developer to develop a macro that would produce the entire quarter's supply of over/under charts in a single run.

Prior to executing this macro, the user enters some basic information into a spreadsheet-like input form. This information includes the portfolio type that determines which of two different formats of tab delimited ASCII data files the portfolio information will be stored in. The user also enters the file name where the portfolio data is stored, the name of the index to be used and the number of copies to be printed. The user has the option of checking a box which will direct the macro to print to a PDF file for viewing with Adobe Acrobat on a wide range of platforms. Then the macro is executed.

It imports the portfolio file, checks its date and imports the proper index file with the same date. If an index file with the right date cannot be found, an error message is automatically generated.The macro reads each investment from the portfolio and index files and calculates the total amount invested in each country and geographic region. The region for each country and the sector for each industry is obtained from a table. The amount invested in each region and sector is calculated by summing the percentages for each country and industry. If the country or industry is not contained in the lookup table, the program halts and asks the user to add the country to that table. The sector of each industry is retrieved in a similar manner.
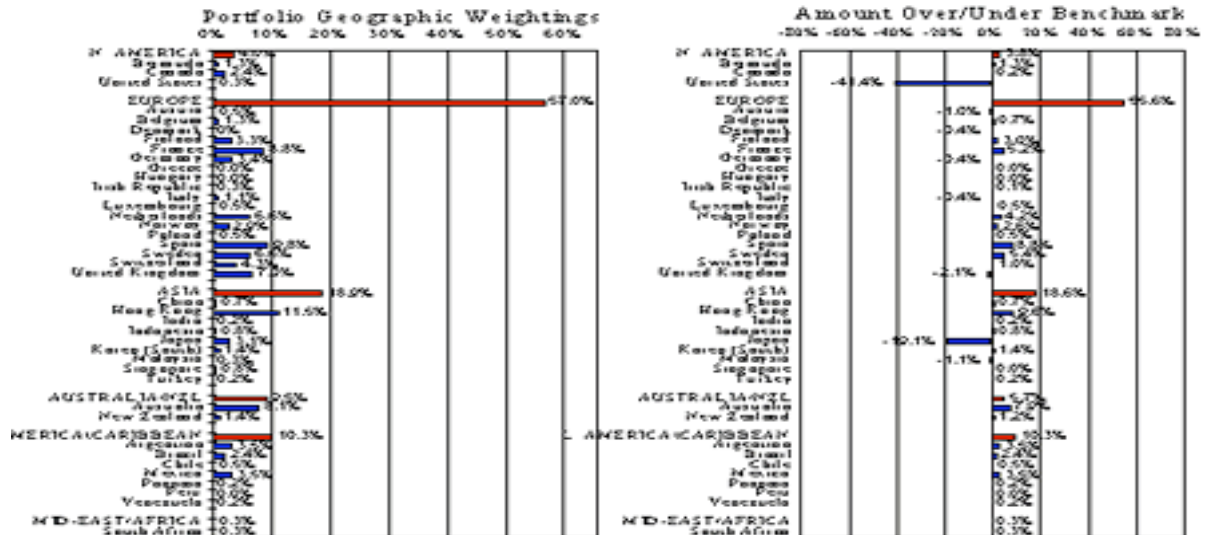
Figure 1. Geographic Over/Under Chart. The above chart displays a hypothetical portfolio for demonstration purposes and does not represent a real Templeton portfolio. The chart on the left shows the portfolio's weight in each region and, beneath each region, the countries comprising that region. The chart on the right shows the portfolio's weight minus the benchmark weighting (relative weighting) in each region and country. A client examining the charts above could quickly determine that Europe had the largest weighting of all of the regions in the portfolio at 39.2% by looking at the left hand chart. The right hand chart shows that the largest difference in regional weightings versus the index is Asia. The portfolio has 14.5% less of its assets in Asia than does the index.

The program then creates a worksheet file that contains the final data to be graphed. For the geographic over/under chart, this worksheet file contains the region and country names in the first column, the country percentages in the second column, and the region percentages in the third column. The fourth column is the portfolio weighting in each country minus the index weighting in each country. The fifth column contains each region's portfolio weighting minus the index's weighting. The graph is assembled using the portfolio name, index name and data,

and the data is presented as a clustered bar chart with 100% overlap. The bars for each series are a distinctive color.

The aspect of the program that creates an Adobe Acrobat PDF file is unique. The PDF file is generated by selecting a printer driver and entering a file name. This task could easily be done using ORIGIN's macro language, however, complications can arise when utilizing the printer driver. The macro script provided by OriginLab overcomes complications by calling a Visual Basic subroutine that preloads the keyboard buffer with keystrokes that may be required. Templeton performance analysts were surprised that the resulting macro worked the very first time and required only a small amount of debugging. The macro produces very precise charts and has dramatically reduced the time required each quarter in producing the required documentation. As a direct result of this success, Templeton performance analysts plan to use an identical approach in automating the other charts needed by the firm. The next chart to be automated is a project that displays the six countries with the largest weighting differences between the portfolio and the index. This chart also displays fundamental characteristics under each country, such as price to earnings ratio and price to book value ratio.

Using this automated chart approach, Templeton expects to improve the timeliness and quality of client communication and reduce its documentation workload.
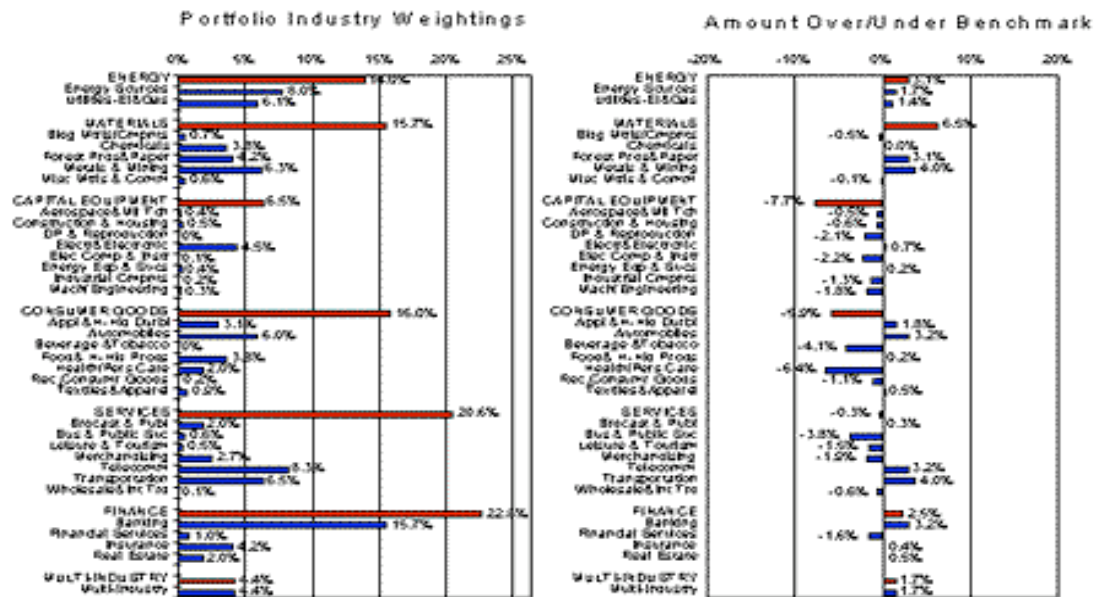

Figure 2. Industry Over/Under Chart. The above chart displays a hypothetical portfolio for demonstration purposes and does not represent a real Templeton portfolio. The chart on the left shows the portfolio's weight in each sector of the economy and, beneath each sector, the industries comprising the sector.The chart on the right shows the portfolio's weight minus the benchmark weighting (relative weighting) in each sector and industry. A client examining the charts above could quickly determine that Finance had the largest weighting of all of the sectors at 26.4% by looking at the left hand chart. The right hand chart shows that the largest difference in sector weightings versus the index is Consumer Goods. The portfolio has 7.9% less of its assets in Consumer Goods than does the index.

Autor: Neil Riddles, Senior Vice President, Director of Performance Analysis, Templeton Global Investors, Inc., Fort Lauderdale, Florida
Neil Riddles oversees and directs the calculation and reporting of investment statistics to clients, consultants and reporting agencies. Mr. Riddles is responsible for setting performance and portfolio reporting policies. He serves on the advisory board of Journal of Performance Measurement and is a frequent speaker on performance measurement related topics. Mr. Riddles is a member of the AIMR Performance Presentation Standards Implementation Committee.