

Chapter 2

Plots and Tables

Plots and tables can be made quickly and easily with DataView. You can often obtain a good preliminary result with a single command, relying on defaults for layout and labeling. Whenever you wish to go further and produce presentation results, there are a host of display enhancement facilities, including those that provide titles, footnotes, and other annotations.

This chapter provides sufficient information to allow you to produce a wide variety of graphs and tables, ranging from plain to presentation, but the treatment is non-specialist. For a more advanced discussion of the plot and table-making options, including macro commands, see the relevant sections of DataView's online help facility.

Simple Screen Plots

The first step in plot production is to specify the data source: before it can plot a series, DataView must be given access to a Data Bank or Memory File. It is generally also a good idea to select

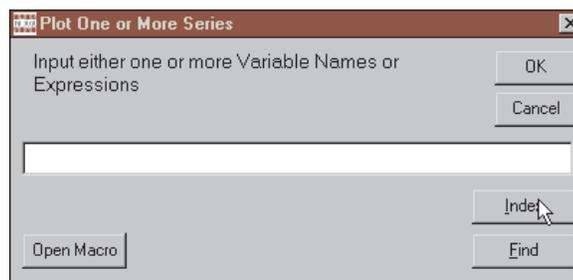


Figure 2-1. Plot Dialogue Box

an observation frequency and a date range. Once these choices have been made, from the Central Control screen, click on the **View** category of the main menu and then **Plot**, which causes the display of the dialogue box shown in Figure 2-1. Simply fill in the name of a series and press OK. Should you have any question which series are available to plot, note the **Index** and **Find** buttons on this form. As described in the previous chapter, these buttons potentially provide a wealth of detail on the data available in the currently open data sources, and can also be used to visually select the one or more series to be plotted.

Alternatively, starting from the same screen, a series can be plotted against time simply by typing the word “PLOT” in the command space followed by the series’ name; for instance:

PLOT GNP

after which you must press the <Enter> key.

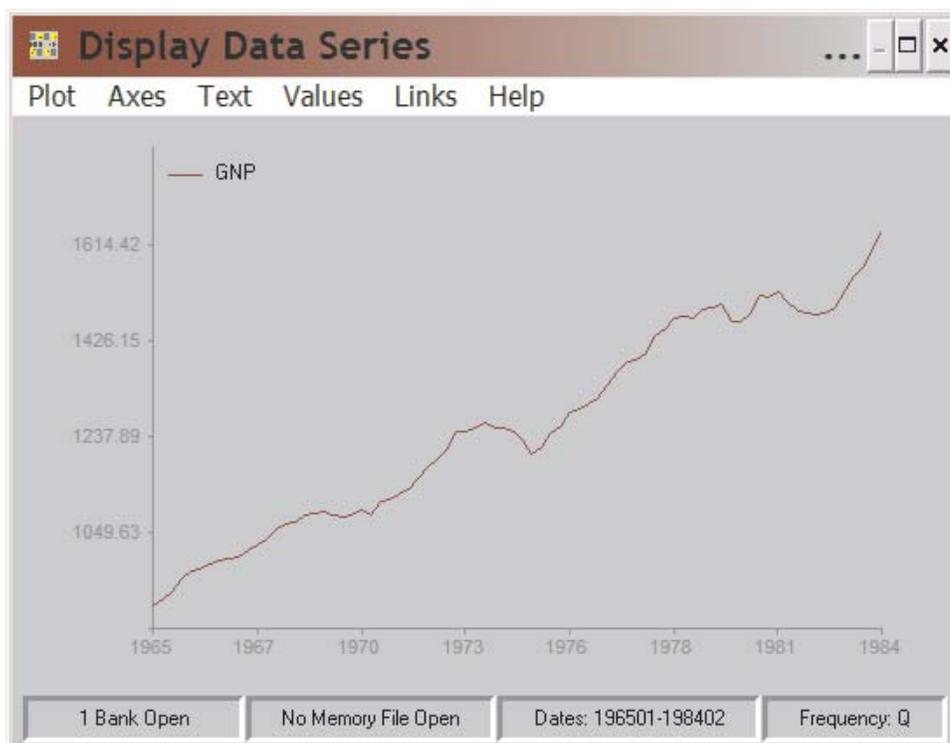


Figure 2-2. A Simple Time Plot

Whichever method you use, the effect is to produce a plot, since DataView automatically searches the open data bank(s) and any Memoryfile, finds the series and immediately displays the plot on the screen. The plot is actually produced in the context of its own specialized screen (or window), as shown in Figure 2-2. Depending upon the pixel resolution of your monitor and the operating system, this initial display may be small, but you will find that you can control the amount of screen the plot covers, either by stretching the plot screen with your mouse, or by clicking on the maximize button at the corner.

Note the menu bar near the top of the plot screen and the status bar at the bottom. These provide information but also give you the capability to change and enhance the plot in various obvious and not-so-obvious ways. Initially, it might be best to focus on the non-apparent. In particular, at any time that no other operation is pending, if you press the F1 function key DataView will present context-specific help. This help facility, via hyperlinks, can provide the answer to virtually any question you may have concerning the program's graphics facilities. Secondly, if you point your mouse at the plot and press the left mouse button, the dialogue form shown in Figure 2-1 will immediately appear and allow you to change the variable(s) plotted, should you wish. If you press the right mouse button, you will be asked if you wish to copy the plot to the Clipboard, from which it can be pasted into other applications. If you also installed the SnagIt software, as described in the DataView *Getting Started Guide*, you can in addition capture the plot and produce JPEG, GIF, BMP, and other file formatted displays of DataView plots. Finally, press the <Esc> keyboard key and the plot will vanish.

A further, multiple series selection capability is associated with the Index button on the Plot Dialogue box shown in Figure 2-1. While this form is on your screen, press **Index** and choose **Brief Index**, thus displaying the variables stored in a data bank or Memoryfile. Then, using your mouse and double-clicking, you

can individually highlight particular series' mnemonics. Do this for two or more series sequentially: as each is highlighted, press the <A> key on your keyboard, then highlight the next and again press the <A> key. DataView will capture these mnemonics, place commas between them, and when you click the **OK** button on the Index form, immediately copy the entire string to the command space of the Plot Dialogue box. Press its **OK** button or the <Enter> key and a plot will appear displaying multiple series. DataView is able to plot as many as 7 variables simultaneously.

But you can do more than just plot multiple series. Presuming the data are quarterly, consider instead a command of the form:

PLOT APCT(GNP),0

The function APCT automatically calculates annualized percent changes and PLOT instantly puts these results on the screen, including a suitable vertical scale, as is illustrated in Figure 2-3, shown on the next page; the "0" following the comma draws the horizontal zero line shown. More generally, any scalar number included on its own as a term in the plot command causes a horizontal line to be drawn corresponding to its value, given of course that this value is compatible with the range of the series plotted.

Onscreen Plot Control Facilities

As suggested earlier, a strength of DataView's plotting facilities is the ease with which you can set up and alter displays. Plots can be used as a tool for scanning and analysing data without the need for prior preparation. We have already considered two plots: the first the simple plot of a series, GNP, the second a plot of its annualized percent change; in the latter case, we specified a horizontal line at the value 0, so as to clearly mark positive and negative changes.

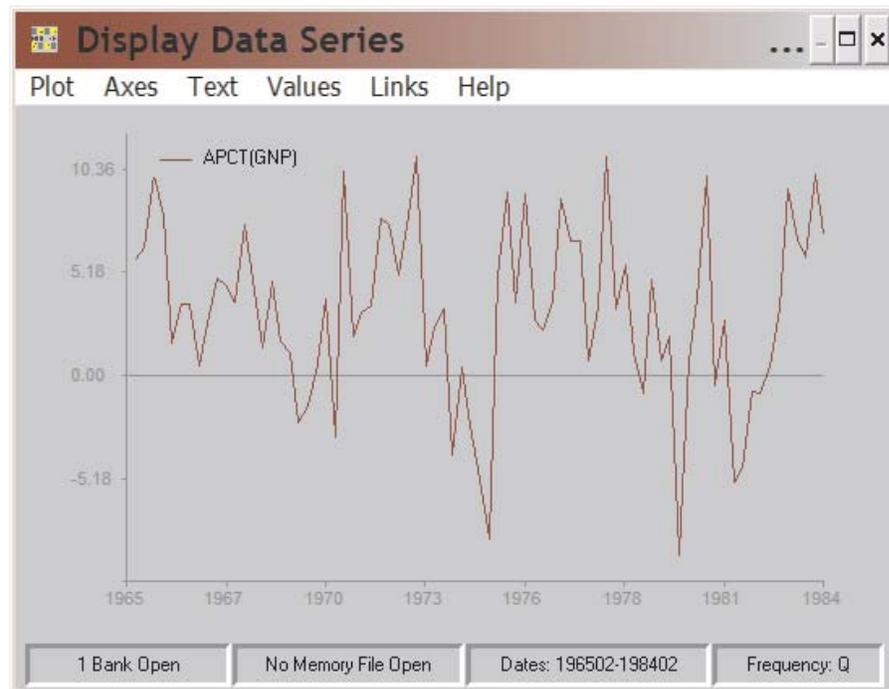


Figure 2-3. Simple Plot with Transformation

As a start, one of these plots might be satisfactory, but for many purposes you may prefer a more finished, possibly even extensively annotated plot. The easiest way to begin to develop a more finished plot is to make use of the menu facility near the top of the Plot screen.

Look again at Figure 2-3. On the menu bar, the keywords are **Graph**, **Axes**, **Text**, **Values**, **Links**, and **Help**, the last two referring of course not to characteristics of the graph but instead links to other software environments and online help respectively; these were described in the previous chapter and will be ignored here.

The menu items can all be selected using the mouse. However, it is evidently also possible to select using the first letter of each keyword, which for this reason is marked by an underbar. The items are selected using a combination of the <Alt> key and first letter, in the usual way.

First Main Menu Category: Graph

Each of the first four main menu bar categories will be considered in turn, beginning with the leftmost one, “**Graph**.” If you click on this category, when the dropdown menu initially appears, it is the first item in this category that is highlighted. As can be seen in Figure 2-4, the first five are **Type**, **Size**, **Gridlines**, **Legend**, and **Background**. The effect of selecting any of the first four of these is generally to cause a secondary menu list to appear, providing additional choices. Figure 2-4 shows the result of choosing **Type**, revealing that there are five possible secondary choices associated with this selection.

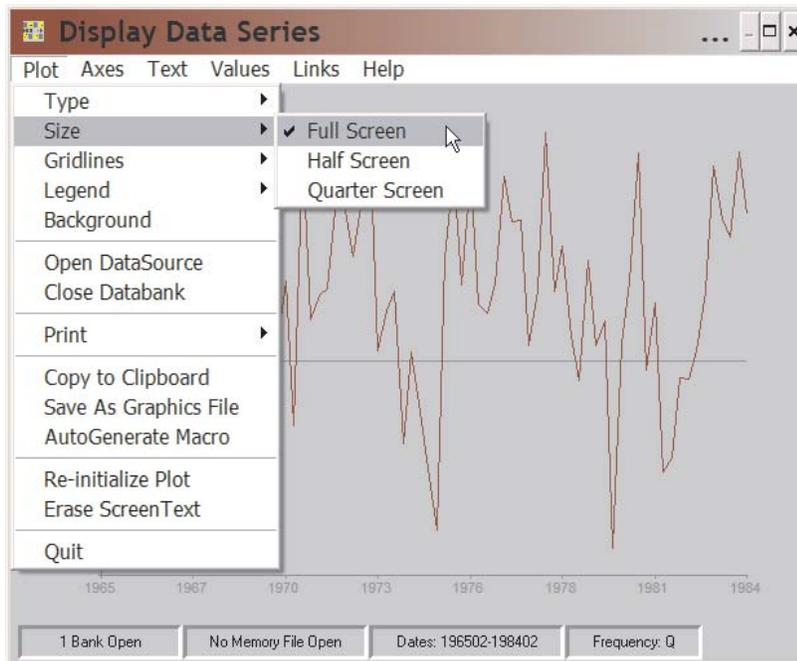


Figure 2-4. Size of Plot

As is almost self-evident, **Type** refers to the way in which the plotted variables are displayed: as a line graph, a bar graph, a graph displaying unconnected points, or a mixed graph; a mixed graph is one in which each of two or more variables’ representation can be individually selected. In fact, there are more choices than these.

Evidently, the choice of Bar as a type provides you with a further choice, between Ordinary Bar and Stacked Bar. Similarly, if this were a XY-Graph (a plot of one or more variables against some other), instead of a time plot, there would be a choice of “Dates” instead of “Bars;” but for the moment, ignore such potential complications.

The next item under GRAPH is **Size**. This option provides three choices, as shown in Figure 2-5: Fullscreen, Halfscreen or Quarterscreen. You can choose whether the graph should fill the screen or share the screen with a scrollable column table of data values. That is, both Halfscreen and Quarterscreen permit you to look at the numbers at the same time as the graph. Moreover, if you have plotted four or more variables, you will find that the left and right cursor keys allow you to pan left and right in order to see all the data. The purpose of the Quarterscreen, as opposed to Halfscreen, may not be immediately apparent, until you capture the screen as an image, at which point you will find if you clip it that this option

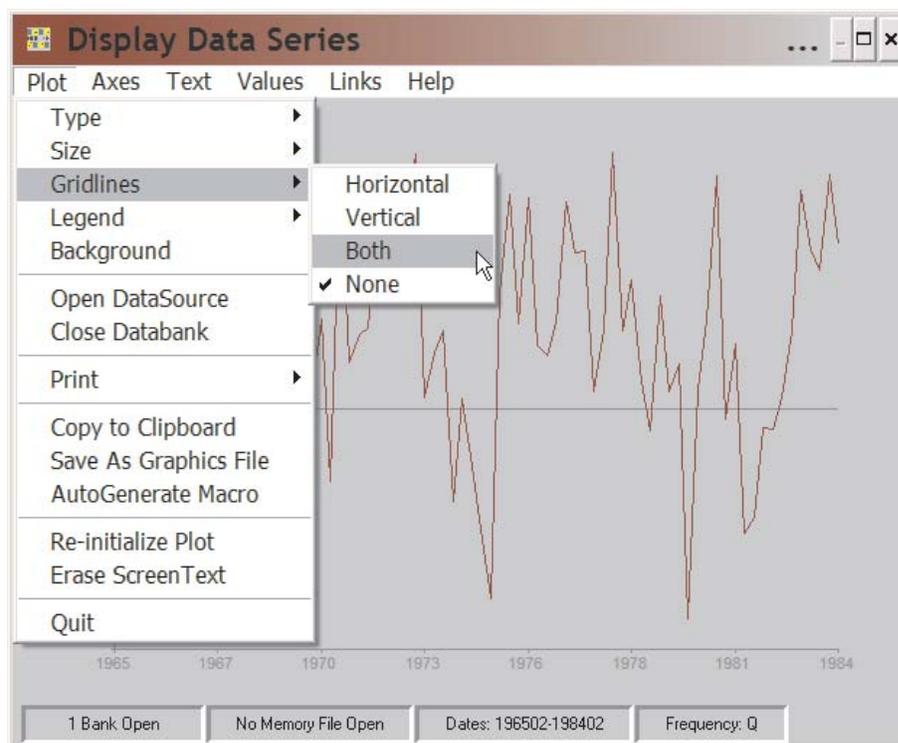


Figure 2-5. Gridlines Selection

gives you some control over the size of this copy at a given resolution.

The next possible GRAPH choice is to draw **Gridlines**. Vertical or horizontal lines can be produced, either separately or together, as is indicated by the secondary choices shown in Figure 2-6. Whichever particular choice of gridlines type is made—assuming that gridlines are to be produced—a Gridlines dialogue box will next appear. This box is illustrated at the top of the next page. Using it, the next choice is between Density, Style, and Color. **Density** refers to the number of tickmarks per gridline; the default is 1, for both vertical and horizontal tickmarks. **Style** refers to line style, of which there are 6 basic choices. **Color** refers to the color of the gridlines, of which there are a number of choices. You can make your choice among these characteristics in any order you choose.

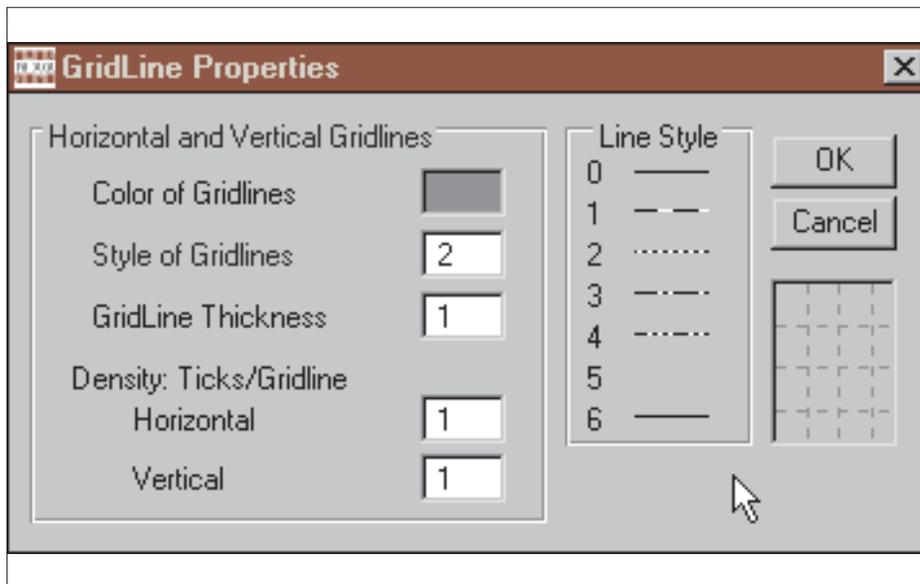


Figure 2-6. Gridlines Control

The next GRAPH option is the **LEGEND**, which identifies the plotted variables and can be placed almost anywhere on the screen. As illustrated in Figure 2-7, the first Legend choice to be

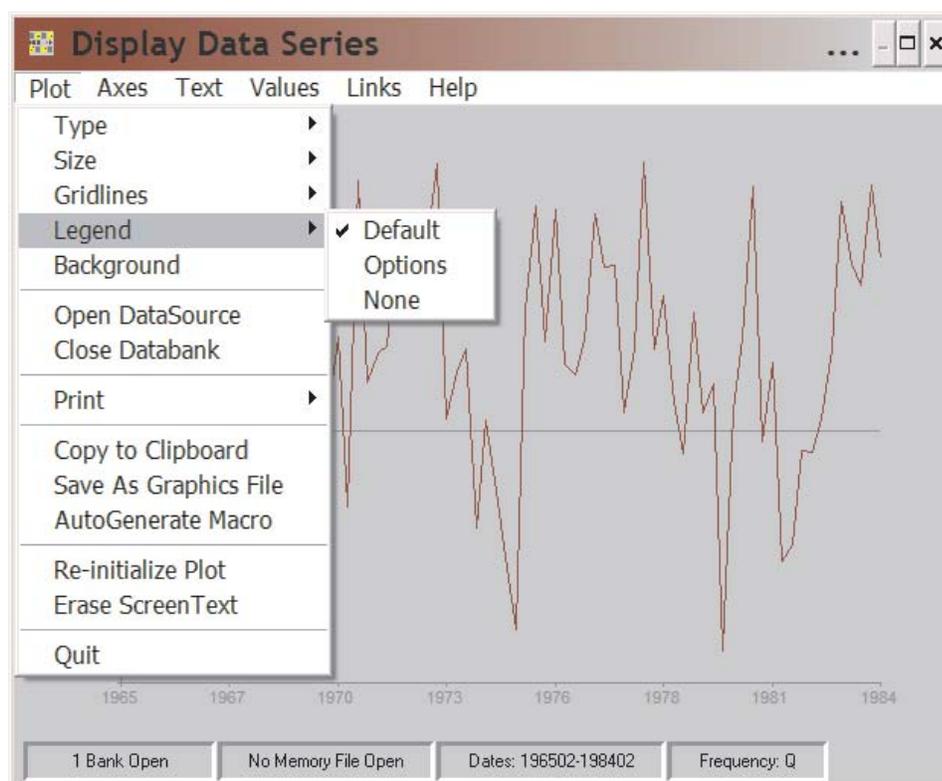


Figure 2-7. Legend Choices

made is whether to display the current default (“**Default**”), to make some change (“**Options**”), or to omit it (“**None**”). Assuming that the choice made is **Options**, there are a number of possible further choices, as shown by the Legend dialogue box in Figure 2-8, which appears if you click on **Options**: The choice categories are, generally, Placement, Content, and Border, although these concepts are not all made explicit by the dialogue box. *Placement* refers to where the Legend should be put, whether inside or outside the axes of the graph, or anywhere on the screen (“**Where It Fits**”); the last of these can provide sophisticated effects, but can involve some complexity, since space must often be allocated. The “**Outside**” choices automatically clear space at the top, bottom, or one of the sides of the graph.

Contents refers to five essential attributes of the legend: legend title, the descriptions of the graphed variables (“**Variable De-**

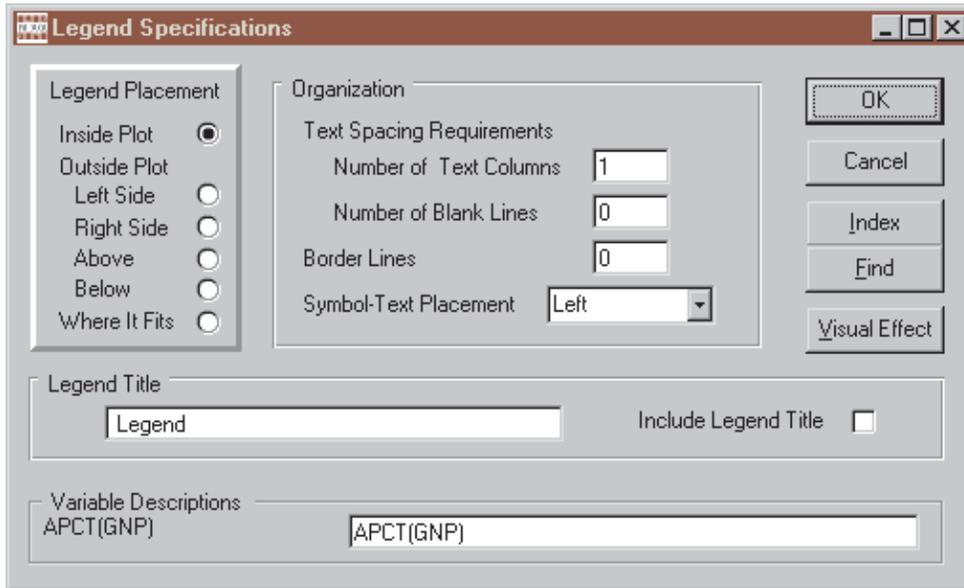


Figure 2-8. Legend Dialogue Box

criptions”), whether or not one or more blank lines should appear between these descriptions (“**Number of Blank Lines**”), where the symbols should be placed relative to the text descriptions (“**Symbols-Text Placement**”), and the number of columns that the descriptions should form (“**Number of Text Columns**”). The last three of these are included under the title *Organization*. As shown, the original defaults are: no legend title, only the series mnemonic names (or expressions), no blank lines, symbols on the left, and one column. To include a legend title, click the box **Include Legend Title**; the default is then the word “Legend.”

Border of course generally refers to the ruling line ornament that sets off the legend from the plot. By default, there is no obvious border, but if you wish to change this, click **Visual Effect**, which will cause an additional dialogue box to appear, entitled *Other Legend Visual Effects*; this dialog box is shown in Figure 2-9. The characteristics of the border, if visible, are: Line Style, Color, Thickness, and Background. The defaults are: no border line and a legend background the same as that of the plot itself.

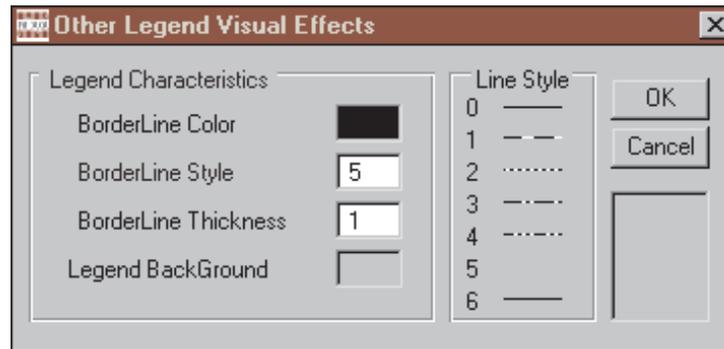


Figure 2-9. Other Legend Settings

In order to discover how to get the exact effects that you like, you will need to experiment with these legend settings. However, there are several things that need to be taken into account:

- Concerning the variable descriptions, the longest text for any single variable description implicitly controls the width of the legend, including the amount of space available for any legend title; thus the title must be no longer than the longest variable description. However, you can type these descriptions with embedded backward slashes (“\”) in order to specify that the description should appear on two or more lines. For example, if you were to type:

Gross\National\Product

the effect would be to place each word on a separate line:

**Gross
National
Product**

- Choosing **Blank Lines** to have a value other than zero permits you to specify the number of blank lines *between* text descriptions—but, there must be two or more variables described in the legend for any such blank lines to appear.
- With reference to **Symbol-Text Placement**, “Symbol” can

refer to a line symbol, a box (in the case of a bar chart), or a point symbol. The purpose of each is obviously to visually link the variable's text description to its graphical representation.

- Line Style setting 6 is actually the only one that permits the thickness of the border to be changed. Although settings 0 and 6 visually look the same, the specific purpose of the latter is to permit changes in line thickness.
- Finally, the number of **columns** that actually appear in a legend will depend upon the number of variables graphed. The number of columns must be a positive number less than or equal to this number of variables.

The final GRAPH option that directly affects the appearance of a plot is **Background**. This term refers to the screen background color against which the plot appears. There is a rich choice of background colors, the actual number depending upon the operating system used and your specific hardware configuration. But, in general, when you select **Background**, you are shown a multi-selection color display, from which you can make the choice.

The GRAPH options considered so far pertain to characteristics of a plot. In contrast, the remaining options are much more general in effect, allowing data banks to be opened or closed, for instance, or plots to be “printed.” The latter option provides a choice: to print it as a line graph, at the resolution of your printer, or to produce essentially a screendump; this WYSIWYG screendump usually reproduces best if the legend is suppressed. Alternatively, choose **Copy to Clipboard** to capture the graph, including the legend, as a clipboard graphic; the graph can then be pasted into word processing documents and other such external environments. As mentioned earlier, it is also possible to indicate that a plot should be copied to the Clipboard by pointing to it and clicking the right mouse button, so that there are in fact two distinct ways to accomplish this operation.

A particular GRAPH option that is extremely useful is **Autogenerate Macro**. To use it requires only that you provide a name for the macro. To understand it, you need to be aware that, corresponding to the menu options being described here that determine the characteristics of a plot, are a set of behind-the-scenes commands. Collected into a macro file, these permit the characteristics of a particular plot to be reproduced. However, many of the commands are rather non-intuitive, particularly in comparison with their corresponding menu equivalents—although they are described in detail in the online help facility. Fortunately, when you choose to Autogenerate a macro, in the process giving it a name, DataView will automatically create the particular set of commands that will allow you to reproduce the plot at some later time. Moreover, you can then change it and Autogenerate a new macro.

You need to be aware that such macros exclusively include the commands that define a plot's characteristics, including the PLOT command that directly causes DataView to display it. But they do *not* include the associated data on the variables. Consequently, to reproduce a plot, you must first open a data bank or Memoryfile containing these data, then execute any autogenerated macros. This requirement is not, however, a weakness, but actually just the opposite, for this approach allows you to update and revise a data base over time, then with an absolute minimum of effort reproduce any number of plots without changing the associated macros.

The effects of the choices **Re-Initialize Graph** and **Erase ScreenText** are described later. Generally, when a plot is re-initialized, the default settings are immediately re-imposed, so that the purpose of the first of these options is to re-establish all the default settings. However, the concept *ScreenText* has not yet been introduced, so that it is better to leave this topic until later; it refers to the ability to superimpose on the graph descriptive text of your own choosing.

Second Main Menu Category: Axes

The second main menu category, **Axes**, gives you control over the appearance of each axis, as well as the number of axes. As you will see from Figure 2-10, the axes controlled consist of the left and right vertical (or y-axes) plus the horizontal (or x-axis). You can also control which of the two vertical axis any variable is plotted against (“**SplitScale**”). Finally, there are several additional options, which include control of the color of the axes, whether the axes box the graph, and what variable is plotted on the x-axis: **TIME** or a particular variable or expression. If a particular variable or expression is plotted on the horizontal axis, the plot of course becomes a scatterplot.

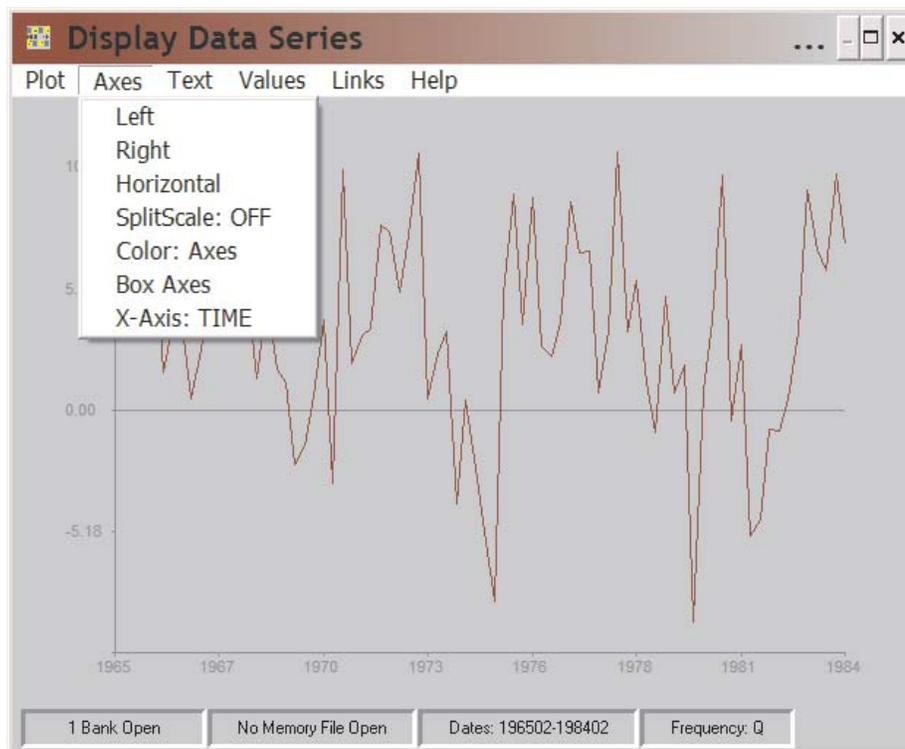


Figure 2-10. Axis Options

The first choice, **Left**, refers to the characteristics of the left-hand vertical axis of a plot. If you make this choice, the result is to

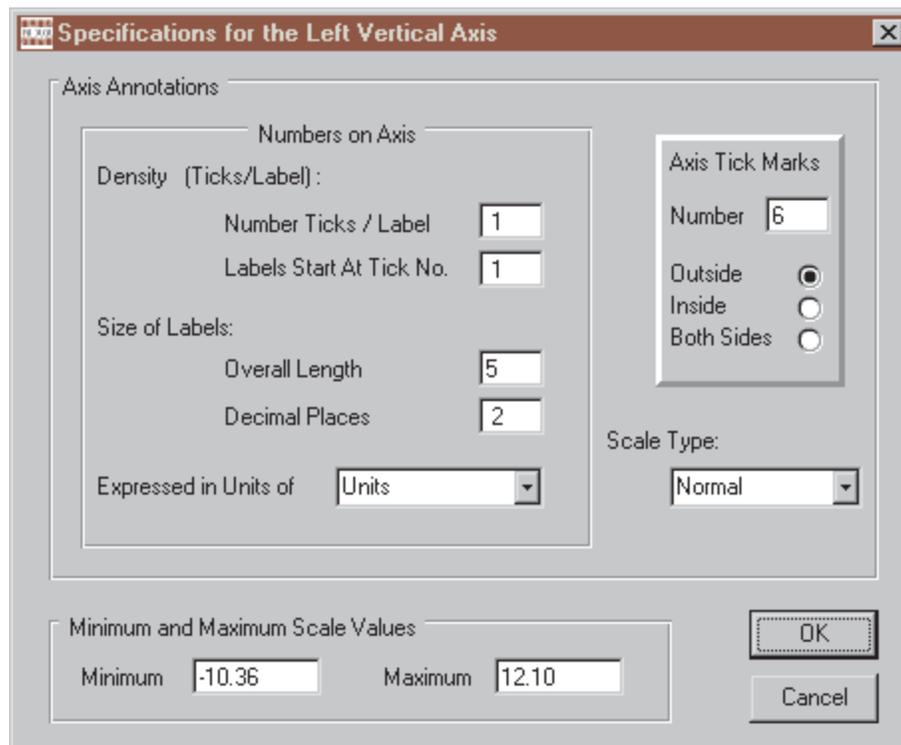


Figure 2-11. Axis Specifications

cause the display of the dialogue box shown as Figure 2-11. Essentially, this dialogue box controls two aspects of a plot axis: the numeric annotations and the value range that these numbers express.

Considering the latter aspect first, the **Range** is set by default initially, based upon the computed range of all the variables appearing in the plot. When two or more variables are plotted, this range is calculated so that the maximum value is marginally greater than the maximum value of any variable and the minimum value is marginally smaller than the minimum value of any variable. If you wish, you can change the Range, but your option is only to widen it; it cannot be set more narrowly than the default.

The **Scale Type** has two settings: Normal and Log Scale. The default is **Normal**. Log Scale of course refers to a logarithmic scale, base 10. The scale values (referred to as axis “labels”) are

always shown in normal form, but when **Log Scale** is chosen, the data are plotted logarithmically. Note, in particular, that this requires all the variable values plotted against that scale to be strictly positive.

Tick Marks can face out from the axis, away from the plotted values (“**Outside**”), inside, towards the plotted values (“**Inside**”), or in both directions (“**Both Sides**”). The default is Outside. The number of tick marks is also under your control, more or less. Obviously, since each numeric label next to a tick mark has a certain vertical size, an arbitrarily large number of marks cannot be fitted into a given space on the computer screen. Note also that since the plot can be expanded to cover the entire screen or contracted to cover only part of it, you will not necessarily see the same number of tick marks displayed in each case. The number of tick marks is thus more a matter of their density on the scale than it is the specific number; that is, 15 tick marks are three times the density of 5 tick marks.

Labels refers to the numbers on the axis scale, as indicated earlier. There are three aspects: Units, Density, and Format. **Units** refers to the scale of the values displayed. For example, the original scale numbers might be 4 digits or more (5000,10000,15000,20000,25000); these can be scaled to a minimum of a single digit (5,10,15,20,25) by the choice of units—here 1000.0. The units value chosen should be chosen so that the product of it and the values shown will equal the original data values. The **Density** of the labels is stated with reference to Tick Marks. The default is to put a label on each tick mark. However, you can choose to place a label every k^{th} tick mark, beginning at the n^{th} one. Incidentally, the zeroth tick mark on the vertical scale is the one corresponding to the horizontal axis; by default, the label for this is left blank.

Finally, **Format** refers to the size of the label and the number of decimal places shown: for example, a label could be six charac-

ters wide, of which 2 are decimal places. In general, DataView automatically computes the number of spaces required for a label, based upon the size of the values and the appropriate number of decimal places, but you can choose to override this calculation. If stars appear as scale labels (“*****”), the numbers are too big to fit into the space allocated for the labels; in this case you will of course need to increase the number of spaces allowed for the labels.

Another axis characteristic is the **Caption**. **Caption** refers to the description, if any, that appears to the left of the scale labels, such as “Billions of Dollars.” The vertical axis captions can be displayed level or rotated in 90 degree increments. They can also be placed at any of several points along the axis. The default is a blank caption. Because these are textual in nature, captions are one of the text items that are considered later under the main menu category **Text**.

The right vertical axis can be the mirror image of the left vertical axis, or it can have an independent existence. Initially, if **Right** is selected, the axis specification dialogue box looks superficially like that shown in Figure 2.10, except that most of the display cannot be changed. There are certain exceptions to this rule, the most obvious being Scale Type. On this form, **Scale Type** displays 3 options: No Right Axis, Duplicate Left Axis, and Index Multiple of Left. **No Right Axis** is the default, and refers to the absence of a right axis scale. **Duplicate Left Axis** indicates that the right axis should be a replica of the left axis. **Index Multiple of Left**, in turn, causes the right axis to repeat the left axis, except that if you choose this option, you will be permitted to express the right scale values as a real value multiple of the left axis scale values, using a text box that appears when you click on this choice.

In fact, if either Duplicate Left Axis or Index Multiple of Left Axis is selected, the right scale will not necessarily be precisely a replica of the left scale. Labels, caption, and to some degree tick

marks can be independently specified. The aim is to permit some level of variation in appearance even when the two scales are essentially the same. However, the tip off in this case is that the Axes window shows **Splitscale Off**.

A *SplitScale* plot is a particular type. In contrast to the case in which the right and left scales are essentially mirror images, this type occurs because it is possible to plot two or more series or expressions that involve non-comparable scales. For example, you may wish to plot simultaneously two very different series, say Gross National Product and the Unemployment Rate. The first of these generally will be expressed in units of Millions of Dollars, whereas the second will be expressed as a rate, normally varying between 4 and 12 percent. The two series cannot be plotted on the same scale in any meaningful way. However, if the left scale is used to plot GNP in millions of dollars, and the right scale used to plot unemployment, as a percent, the two series become visually comparable, as illustrated in Figure 2.12.

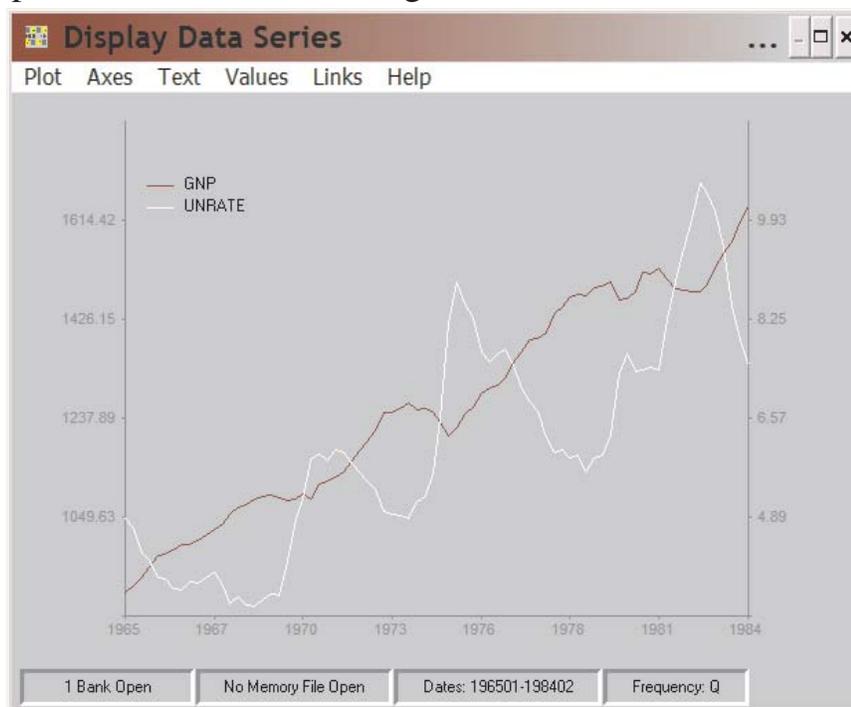


Figure 2-12. Example SplitScale Plot

The **Splitscale** option operates as a toggle, changing from Off to On and back again whenever this option is invoked, provided that 2 or more series or expressions have been plotted. When Splitscale is **On**, the right axis is independent of the left, giving you the same degree of control of its characteristics as you have for the left axis.

The final **Axes** options consist of three specific controls: Color, Axes Unboxed (or Boxed), and X-axis. Selecting the **Color** option causes a color scale to appear that allows you to choose the color of the axes; this affects the axes themselves, not the labels, which are controlled by the Text Color option that is described later. The **Axes Unboxed/Boxed** option operates as a toggle, allowing you to display the axes either as an open L or U (depending upon the number of y-axes) or completely boxed in.

X-Axis, in contrast, is much more than visual in effect. This option controls the values that are plotted on the x-axis: either TIME or an ordinary variable or an evaluated expression. When TIME (the default) is plotted on this axis, the scale is defined in terms of the current date range setting. When an ordinary variable is plotted on this axis, all plots made are plots against that variable. In this case, the horizontal axis scale is defined in terms of the values of that variable, in the same way that the y-axis is in terms of the variables that are plotted on it. In this case, for example, the x-axis scale can be specified as a normal scale (the default) or as a log scale.

Reflecting the values measured on the X-axis, the **Horizontal** axes option has two modes. If X-axis has been used to specify the name of an ordinary variable or an expression, then selecting Horizontal results in choices similar to those in the case of the left y-axis: Range, Scale Type, Tick Marks, Labels, and Caption. What differences exist exist because of the orientation; for example, labels appear parallel to this axis, not perpendicular to it.

If, in contrast, the x-axis measures TIME, then superficially the Horizontal option offers the same choices as in the other case, but the interpretation is different. In this case, **Range** refers to a date range and **Scale Type** offers the choice between Dates (the default) and User Given; in the latter case, you can impose your own labels in place of the ordinary date labels. Similarly, while **Tick Marks** offers the same choices as before, the **Label** option is different, offering the choices: Placement, Density, and Format. **Placement** specifically refers to the placement of the labels relative to the tick marks, and whether or not the labels are staggered or aligned. **Density** gives you the ability to vary the number of ticks per label. **Format** refers to the format of the date labels, whether these should show just years or year and period; even then the format will depend upon the current observation frequency.

Third Main Menu Category: Text

The **Text** menu option controls textual information, such as titles, captions, and footnotes, as illustrated by Figure 2.13 on the next page. **Titles** and **Footnotes** can be entered successively, once these options have been selected. You can provide a maximum of 2 title lines and 6 footnote lines. This text is entered free format using dialogue boxes that appear when these options are selected. Among the text characteristics you can specify in each case are the font, font size, placement, and style.

Axis Captions permits captions to be entered for each plot axis. As in the case of Titles and Footnotes, you can control font, font size, style, and placement. However, in addition, for the vertical axes you can also control the rotation of the text.

The **Color** option in turn permits you to specify the color of the text; whenever this option is selected, a multicolor display appears that shows the choices available.

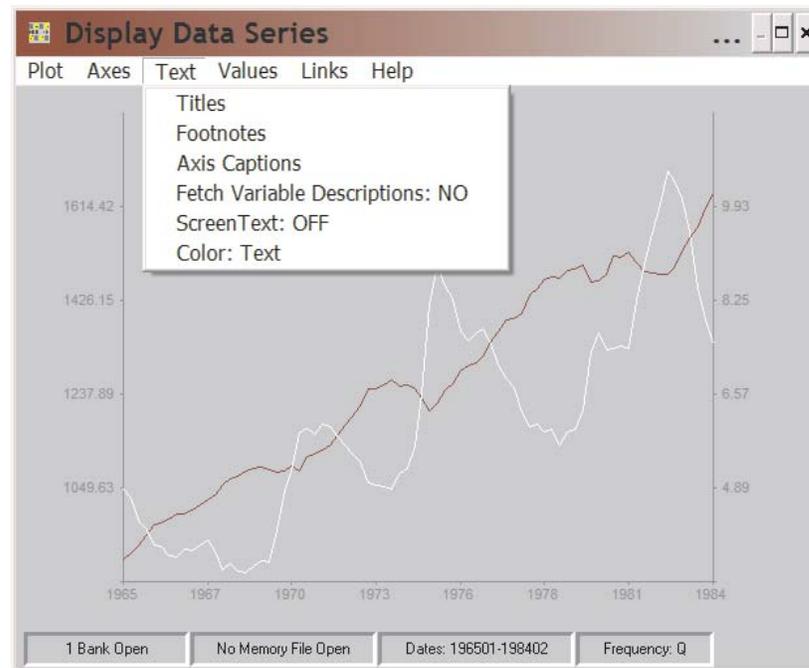


Figure 2-13. Text

The fourth text option, **Screen Text**, is one of DataView's special features. When this option is chosen, the menu categories **Graph**, **Axes**, and **Values** will become greyed-out (disabled) and even within the **Text** category **Screen Text: On** will be the only one enabled. The cursor will display as an I-beam. Using your mouse, you will be able to click on any part of the screen, at the point of click leaving a small insertion mark. If you then begin typing, you will see that what you type is placed on the screen at that point and to the right, character by character. You can move the mouse, clicking elsewhere, and in the process change the location on the screen of what you next type.

The <Enter> and <Esc> keys have a particular reserved use in this context, but the other keys can be used in normal fashion for text entry. The <Enter> key causes a normal carriage-return line-feed, but brings the next point of entry to one line immediately below the previous line's initial point of entry. The <Esc> key

cancels the entry of Screen Text; alternatively, clicking on the text menu item **Screen Text: On** causes the same cancelling action. Text typed onto the screen during this operation remains until either the plot is reinitialized (**Re-Initialize Graph**) or the text is cleared by clicking on the **Graph** option **Erase ScreenText**.

Fourth Main Menu Category: Values

Figure 2.13 displays the options available in the **Values** category, specifically for the case of a time plot. The subordinate categories differ for a scatterplot.

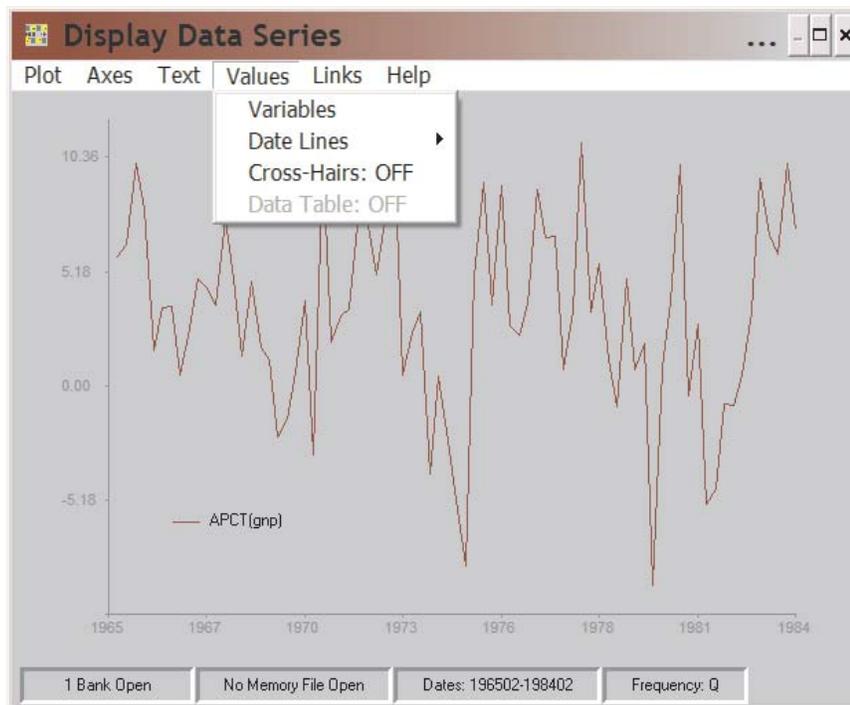


Figure 2-14. Plotted Values Characteristics

The first choice, **Variables**, permits you to control various aspects of the way in which variable values are plotted. In the case of a simple time plot, with either a single y-axis or a replicated right axis, this option offers you two choices for each series

plotted: you can control the **Style** of the plotted line, bars, or points and you can control their **Color**. Alternatively, if *Splitscl* is *On* and if *Type* is specified as *Mixed*, you will have two further choices: you can control the **Axis** against which each series is plotted and you can control **Type** individually—whether that series is plotted as a line, bars, or points. Note in Figure 2.15 that all these characteristics are always shown in this display for each series—but you will be able to change only those that are “live.” The variation in the case of an XY-plot (with an ordinary series plotted on the x-axis) is that *Bars* is not an option—*Dates* replace *Bars* in this case.

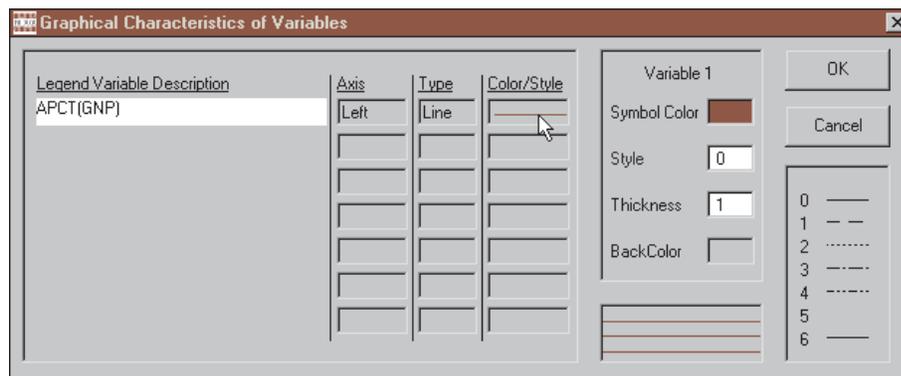


Figure 2-15. Variables Characteristics

In the case of a Time Plot, the second option under **Values** is **Date Lines**: vertical lines each of which marks a particular observation date. These lines are commonly used to separate forecasts from history or to mark cyclical phases. As many as 40 date lines can be used simultaneously.

In the case of an XY-Plot, in contrast, instead of Date Lines, you have the option of displaying a **Bi-secting Ray**. Especially when this line forms a ray from the origin at an angle of 45 degrees, it marks the locus of equal value plotted points. However, you may have to set one or more of the scales to achieve this precise result.

When plotting series against time, the third item is **Cross-hairs**, which toggles On and Off. When this option is toggled On, if

you point your mouse at the graph, within the axes, and press the left-button, a small cross-hairs symbol will appear on the plot. Beside it will be the value of the left y-axis at that spot. You must turn off Cross-hairs subsequently by re-clicking on the menu item.

In the case of an XY-plot, instead of Cross-hairs, the option will be **Quadrants**. When invoked, Quadrants causes the graph to be shown with its “face” marked into quadrants, as a scatterplot evaluation aid.

Finally, in the case of a time plot, if **Size** is selected as Quarter-screen or Half-screen and/or in the case of regression and other specialist plots, the entry **Data Table: ON** will appear as the final item. It may also appear some other times, but be greyed-out. Whenever its an option, this choice is toggled On and Off. It causes a data table of values to appear or disappear from the right hand side of the plot. Arguably, the effect of its use is the same as changing the size of a plot from fullscreen to half-screen or quarterscreen, but in some cases this option will provide you more flexibility.

Creating and Using Tables

Tables can be created and displayed in either of two ways. The first uses DataView's indigenous facilities only and might be regarded as producing draft-quality tables. The other uses DataView's capability to write directly to the worksheet cells of a standard spreadsheet program, such as Excel, Lotus 123, or Quattro Pro; properly enhanced, these tables will be of presentation quality. This particular implementation of the second choice is new to DataView and is a result of the development of the Windows version. The first method will be familiar to users of the DOS version.

Because it is more visual in approach, the process of creating worksheet-based tables will be considered first. This discussion will lead naturally to a consideration of the other type of table. As will be discussed, both types of tables can be generated using legacy table templates originally created using DOS versions of DataView.

Spreadsheet-Generated DataView Tables

In order to produce worksheet-based tables, the first requirement is that you must have previously designated the spreadsheet package you wish to use. If not done before, this can be done within DataView by clicking on the **Settings** menu item of the Central Control screen. Then Click on **Directories** and fill in the details, as explained in the DataView *Getting Started Guide* or, much more briefly, at the end of Chapter 1 of this document.

The second requirement is that one or more data banks or a Memoryfile must be open for access. If, in particular, you wish to produce the examples shown in this Chapter on your own screen, you will first need to open the demonstration data bank, DEMOBANK.BNK, shipped with your copy of DataView.

The actual process of creating a table begins by clicking on the **Reports** category of the Central Control screen menu then **Create Spreadsheet Table**, as illustrated by Figure 2-16.

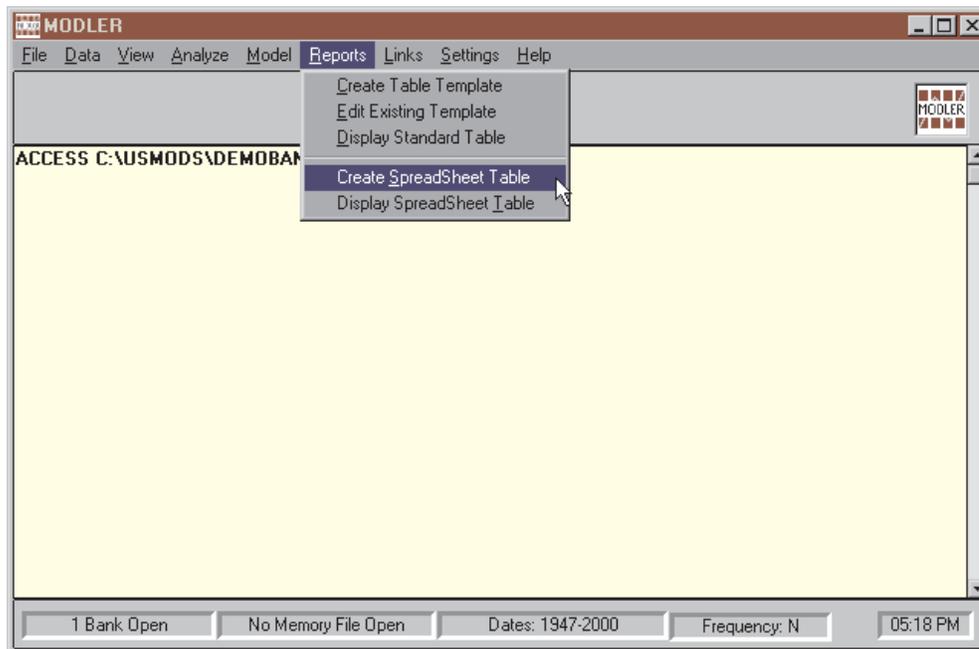


Figure 2-16. Reports: Creating Spreadsheet Table

If there is a data source open, the second click displays the dialogue box shown below as Figure 2-17. Note that this form has several buttons down its right hand side including, most obviously, a large button at the bottom right. In this representation it is labelled “Excel.” If you use Excel as your designated spreadsheet package, the form shown on your screen will be the same; however, if you use Lotus or Quattro Pro, then the name that appears on the button will be one of these. Note also that the button just above it is labelled “Help.” Clicking **Help** will provide you with context specific help and additional information to that provided here. Furthermore, near the top of this form will be a textbox labelled “Worksheet” containing the word “None.” In-

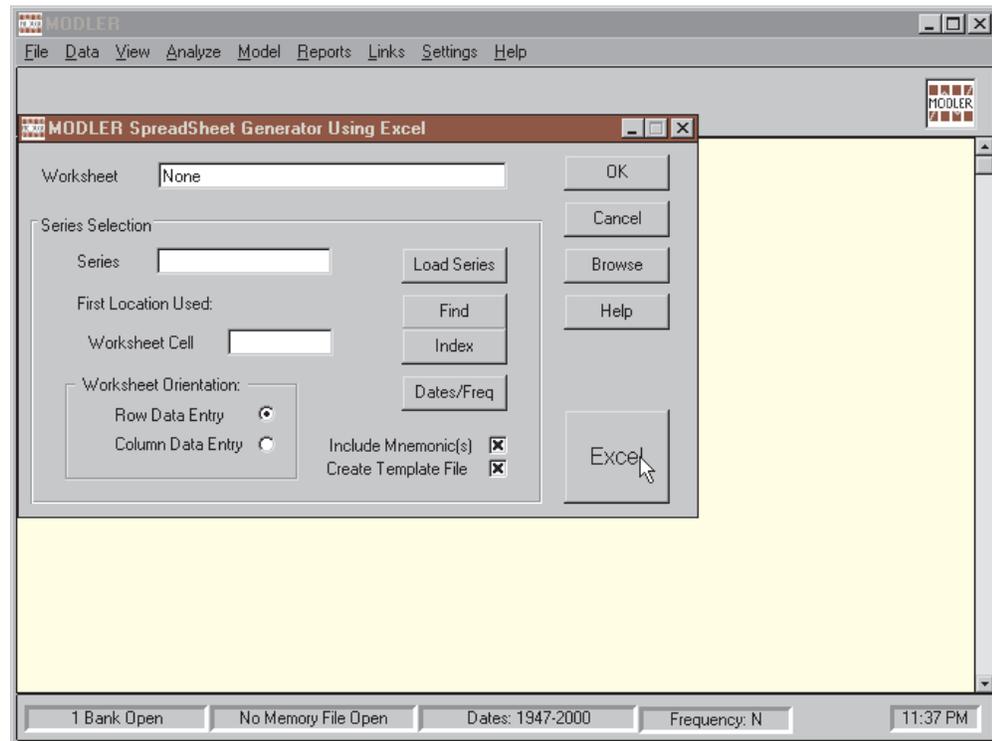


Figure 2-17. MODLER Spreadsheet Manager

so far as this is the first attempt to create a spreadsheet table, this textbox can be ignored for the time being; if filled in, the filename should be that of an existing worksheet that you wish to modify.

A large portion of the form is entitled “Series Selection.” Within this area are text boxes and several buttons. Proceeding clockwise from the top, just below the **Load Series** button, note the **Find**, **Index**, and **Dates/Frequency** buttons. Respectively, these permit you to search for series in any open data bank by specifying a keyword, provide access to the data bank index(es), and allow you to specify the date range and frequency of the data to be placed in the spreadsheet table. Initially, you will do best if you set the date range so as to provide a table with only a few observations per series; the frequency should be that of the series to be displayed in the spreadsheet table. In the example, note that the frequency has not been set previously, so that the dates and frequency will need to be specified.

Next, look at the check boxes, which are labelled “Include Mnemonic(s)” and “Create Template File.” The purpose of the first of these will be discussed in more detail later, but it evidently refers to whether or not the data placed in the worksheet should include a mnemonic series name (or, if an expression, the expression itself) as well as the numeric observations. The second, if checked, causes a template file to be generated automatically as you create the initial table. If created, this template can be saved to reproduce the table subsequently. This too is a topic the details of which are best left for the moment.

You will see also a sub-section of the form entitled “Worksheet Orientation” with radio buttons that allow you to choose whether to enter the data by row or by column. Obviously, this choice permits you to create tables that either track horizontally across the screen, or display as column oriented tables. The location that you will fill in just above, “First Location Used,” determines the row and column placement of the first observation on each series (or expression), the remaining observations flow across the worksheet or down, depending upon the Orientation chosen.

Finally the textbox labelled “Series” is where you will progressively place the mnemonic for each series to be displayed in the table. Often it will be simply a series mnemonic. However, as indicated, you are free to enter instead an expression that can include operators and implicit functions, as well as mnemonic names. To choose a familiar example, certain rows or columns of the table can display the percent change for series. At least initially, you would be wise to restrict yourself to simple expressions, but in principle any expression that obeys DataView’s rules is permissible.

However, before you actually start to enter series or expressions, the step you must next take is to launch your spreadsheet program. To do this, press the button labelled “Excel” (or, alternatively, “Lotus” or “Quattro”). Figure 2-18 illustrates the effect of press-

ing the **Excel** button. Note in particular that a blank worksheet is displayed and that the DataView form floats above it. You can, however, move this form around your screen, so as to obtain the best view of the underlying worksheet for particular operations. Initially, you might wish to move the form to the bottom right of your screen, by clicking on the top of it and dragging. Incidentally, should this form ever disappear behind the spreadsheet program display, you can make it reappear by clicking on your Windows Desktop status bar (*not* the DataView status bar).

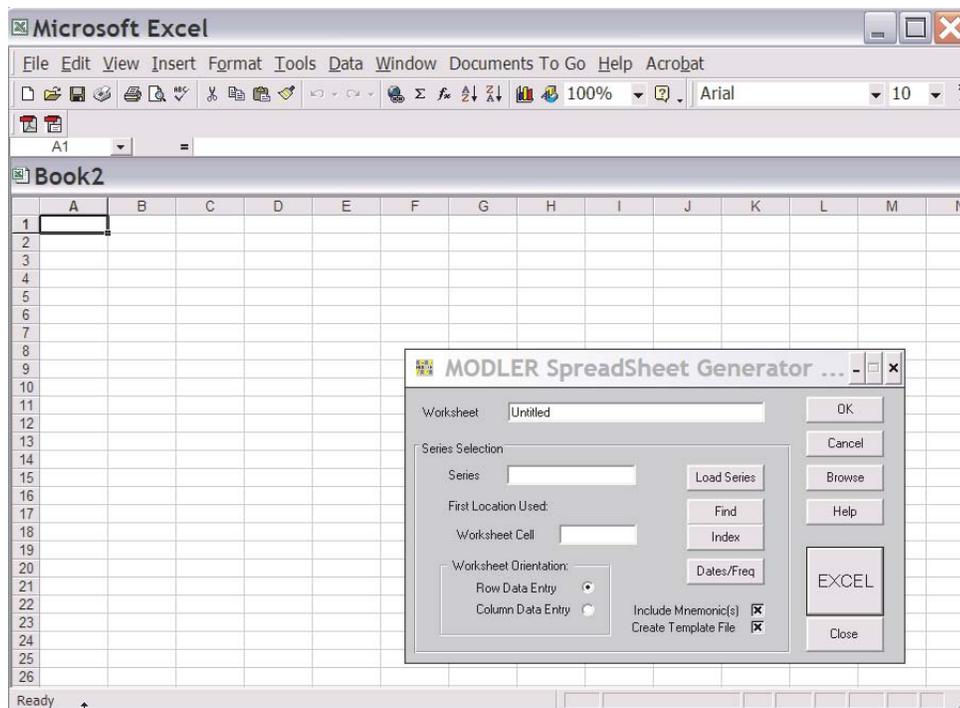


Figure 2-18. Launched Spreadsheet

It is important to realize that at this point you actually have *full control* of the operations of the spreadsheet program, notwithstanding the DataView Spreadsheet Manager Form. Independently of DataView, you can enter either text or values into cells—or do anything else you might wish that obeys the protocols of your spreadsheet program. In particular, you can create titles

for the table, or set aside particular rows or columns for subtitles. What the DataView form uniquely permits you to do is to retrieve observations from a DataView data source and write selectively to specified rows or columns of the worksheet. Otherwise, you are in an Excel, or Lotus, or Quattro Pro world, assuming that your spreadsheet package is one of these.

The benefit of being able to write selectively to worksheet cells is that once the table has been created and enhanced with titles and other embellishments, and the worksheet named and saved, you can later recreate it using a revised set of observations from DataView. Or you can reset the dates to some other time period and (within limits, depending exactly on how you fashion the spreadsheet table) produce a table for an entirely different date range.

In contrast, the restriction that selective writing to worksheet cells imposes is that any subsequent changes you make to the row/column organization of the worksheet table may need to be made correspondingly to the DataView template file as well (if created and saved) before it can be used later to recreate the table successfully. These issues will be considered further below.

A Worked Example

At this point, an example might help. To set this up, first open the bank Demobank.BNK for access and then set the frequency to quarterly and the date range to 198101 to 198304. Once you have launched your spreadsheet program, as described earlier, you should be looking at a display very similar to, or exactly like Figure 2-19 on the next page.

Assume that the purpose is to create a table containing data on Consumption Expenditures, and that the bank you are using, DEMOBANK.BNK, is not very familiar to you. In order to discover the data it contains on consumption expenditures, press

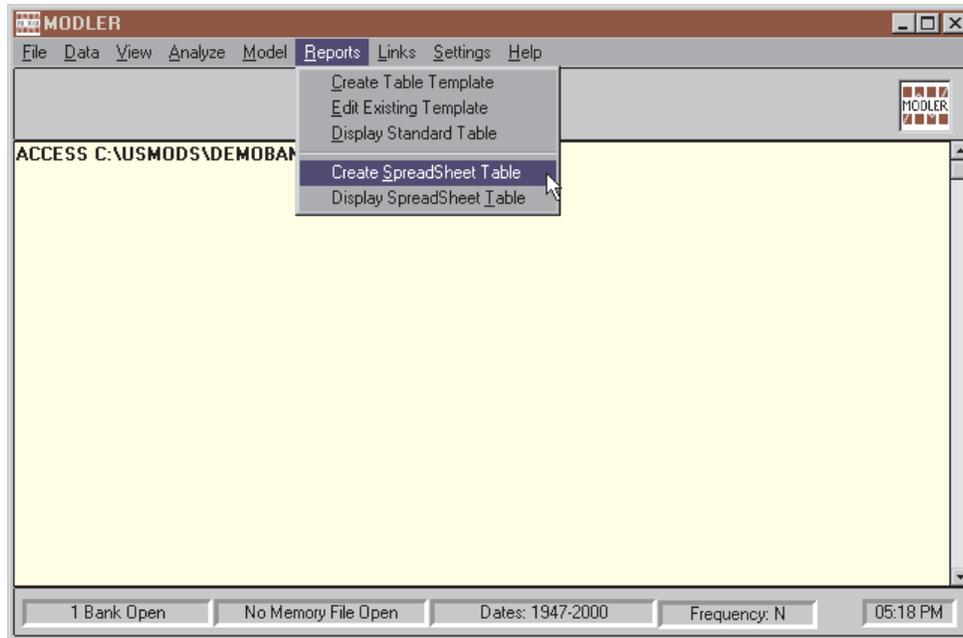


Figure 2-19. Launch Spreadsheet Program

the **Find** button on the DataView Spreadsheet Manager Form, which will cause the program to ask you to provide a search string. Enter as this string, the text “consum.” When you press the OK button on the string specification form, you should next see on your screen the Find Utility display shown as Figure 2-18. You may discover, depending upon where you put the DataView Spreadsheet Manager Form, that this Find display is partially hidden behind the DataView form, but if you move it out where you can see it, it should look exactly like the one shown here.

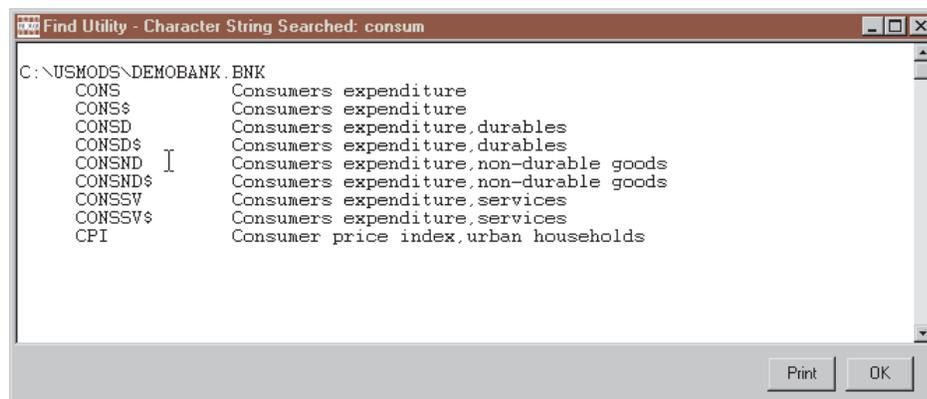


Figure 2-20. Find Utility Display

Moving your mouse down the display, double click on the mnemonic name CONS\$. The characters CONS\$ should now appear in the textbox labelled “Series” on the DataView Spreadsheet Manager Form. Alternatively, you could of course have entered CONS\$ yourself, or found the name using the **Index** button instead of the **Find** button.

Next enter R2C1 in the textbox labelled “Worksheet Cell” just below; R2C1 obviously implies Row 2 Column 1. Then press the button **Load Series** on the Spreadsheet Manager Form. You should instantly see observations on this variable begin to populate the second row of your worksheet, with the mnemonic CONS\$ located in the first column and the observations to the right of it. Next put CONSD\$ into the Series textbox on the Spreadsheet Manager Form and R3C1 into the first location textbox. Press **Load Series**.

The use of the codes R2C1 and R3C1 to designate the originating worksheet cell may strike you as being unconventional. This terminology will not necessarily match that used in your spreadsheet package, but it does clearly designate which row and column location is to be the first one. Given the location of this cell, DataView uses the dates setting and frequency to determine the remaining locations automatically.

If you have participated in the example so far, in Rows 2 and 3 of your worksheet you should now observe observations on the two variables CONS\$ and CONSD\$. Now repeat the process of successively providing a series name and first location, but for the two additional series use the names CONSND\$ and CONSSV\$, and instead for first location respectively enter R4C1 and R5C1 respectively. Press **Load Series** in between. The final result, in the context of the worksheet, should be a simple table displaying four series. If you wish you could add as the first row a table title, using your spreadsheet’s protocols to do this. Obviously you could do much more to enhance the table, but that is left to your

imagination, as pertaining to the spreadsheet package rather than DataView.

There are, however, certain points that need to be made. The process of entering the series mnemonics and the first observation locations, followed by **Load Series** each time, is designed so that it can be accomplished rapidly, without lifting your fingers from the keys. If you experiment, you will discover that if you press the <Enter> key immediately after entering the mnemonic, the cursor immediately moves down to the First Location textbox. If you enter the Row/Column code and press <Enter>, the **Load Series** button can then be “pressed” by pressing the <Enter> key once more. Simultaneously, the observations will begin to appear across the worksheet and the cursor will move at the end of this to the Series textbox, ready for another sequence. Thus, once you have picked up the rhythm you should be able to produce tables quite rapidly, assuming of course that you know the mnemonic name of each series you wish to display in a table.

The second point has to do with the checkbox on the Spreadsheet Manager Form labelled **Include Mnemonic(s)**. If you remove the check, you will discover that the First Location textbox now refers to the first observation on each series copied to the worksheet. One of the reasons this option exists is that, for instance, you might wish to leave the first column undisturbed, possibly because you already put there a description of the series, so that there is no point in copying the mnemonic itself to the worksheet. Of course, in this case, the mnemonic will still be used in the context of the Spreadsheet Manager Form to designate a series to be copied.

Finally, it has been mentioned in passing that expressions rather than series names can be used in the **Series** textbox. Not only is this true, but it is also true that if you specify the frequency of the series to be copied as annual, for example, instead of quarterly, and if you have opted for automatic frequency conversion, not

only will you be able to use expressions in this context, but frequency transformations will also be made automatically. Of course, you must make sure that the data source from which you retrieve each series correctly specifies the frequency transformation method that is appropriate for it.

If, at this point, you click the OK button on the Spreadsheet Manager Form, you should observe on the Windows status bar the slow flash of the status item corresponding to your spreadsheet package. Click on this, and you should be asked whether or not you wish to save the worksheet you have been using. At this stage, you may as well *not* save it, since the worksheet itself will have no further use in the context of this example. However, the next distinct screen that you will see after dealing with your worksheet is that illustrated in Figure 2-21. Assuming that you left the checkbox “Create Template File” checked, the effect will be to cause DataView to create a table template file.

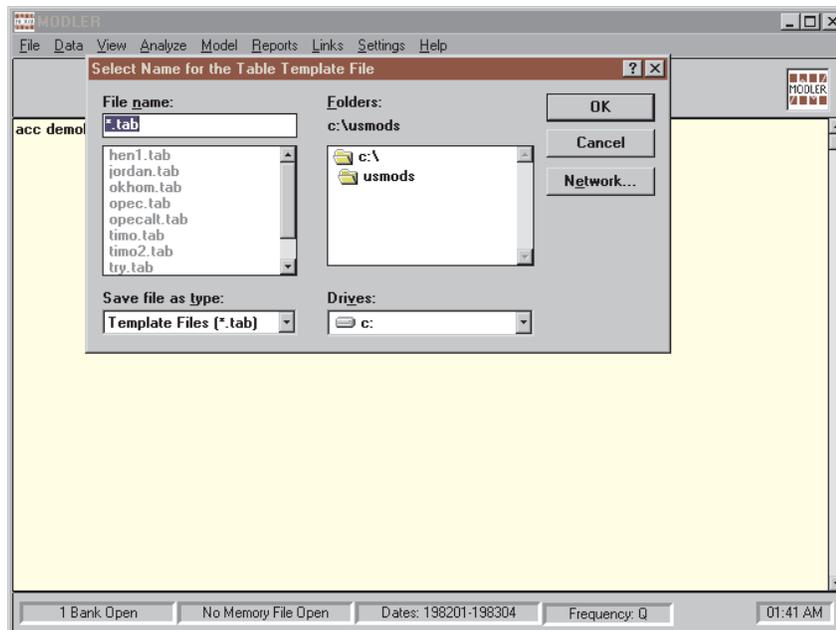
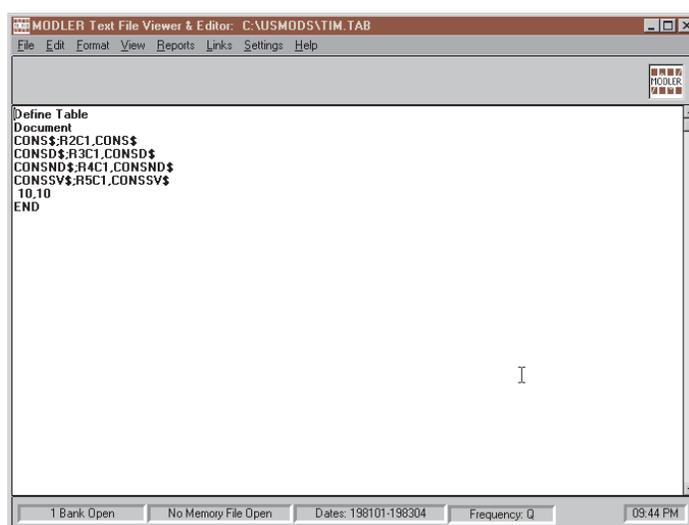


Figure 2-21. Name Table Template File

The contents of this template file are in turn shown in Figure 2-22. As will be demonstrated, it can be used subsequently to reproduce the table, exactly as it now appears on your screen. The rules that govern the organization of template files such as this will be explained later. However, looking at the contents of this file, even without considering detail, it is evident that its command lines have some resemblance to the information entered interactively into the textboxes of the Spreadsheet Manager Form. The template file is obviously generated from that information, to which are added some additional lines, before and after.

A screenshot of a text editor window titled "MODLER Text File Viewer & Editor: C:\USMODSVT.M TAB". The window contains the following text:

```
Define Table
Document
CONS$R2C1,CONS$
CONS$R3C1,CONS$
CONSND$R4C1,CONSND$
CONSSV$R5C1,CONSSV$
10,10
END
```

The status bar at the bottom of the window shows "1 Bank Open", "No Memory File Open", "Dates: 198101-198304", "Frequency: Q", and "09:44 PM".

Figure 2-22. Table Template File

If you now return to the Central Control screen, click on **Reports** and then on the last item **Display Spreadsheet Table**, you will next see a form essentially the same as that shown in Figures 2-17 and 2-18. Note that in certain respects this form is similar to that used to create a worksheet table, but that this one includes a textbox labelled “Template” and that certain items are greyed-out.

Look first at the textboxes labelled Worksheet and Template. The first of these can be ignored; if you were to include a filename here, DataView would interpret it to be an existing file that you wished to modify. The second, Template, must be filled in, using

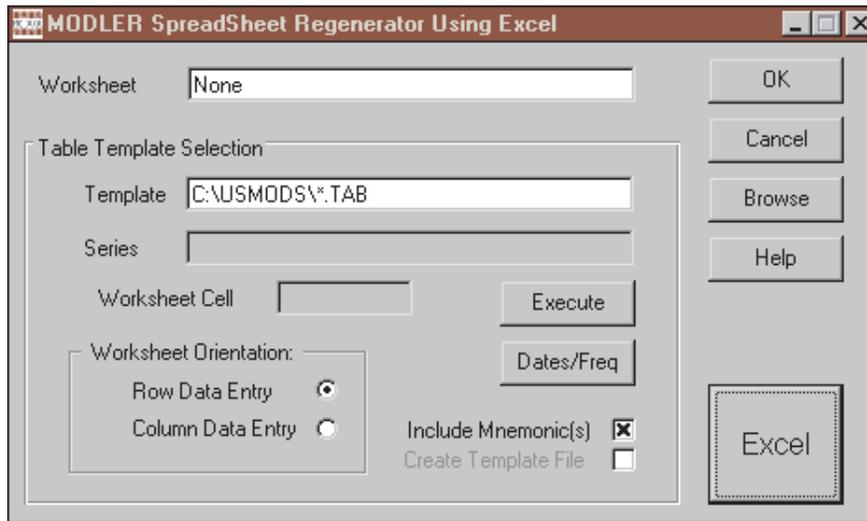


Figure 2-23. Spreadsheet Regenerator Form

the filename previously given to the template file generated earlier. The next step is to press the large button at the bottom right of the form, which should have the name of your designated spreadsheet unit; the effect will be to launch your spreadsheet program.

This example presumes that the date range and frequency are the same as earlier. If you then press the **Execute** button, you should find that the effect is to re-create exactly the table discussed earlier. Alternatively, if you change the date range, but the new dates are compatible with those in Demobank.BNK, then the effect should be to produce a table for the different date range. You can also experiment by changing the observation frequency, choosing for instance annual, rather than quarterly as the production frequency of the table.

One of the inferences to be drawn is that starting from an interactively created table, the ability to generate a template almost automatically has provided a rather flexible way to produce production tables. Simply by changing the date range or the observation frequency the template is made to apply to a variety of distinct tables.

DataView ASCII Text Tables.

Leaving to the side momentarily the generation of spreadsheet tables, there are various types of indigenous ASCII Text tables that can be produced using DataView. A Number of these are displayed in the context of later chapters of this User Guide, essentially illustrating the results of various operations. In contrast, here, the focus is strictly upon producing simple but effective user-designed tables, working with the templates that control their form and structure. Following from the discussion in the previous section of this chapter, one of the principal aims of this discussion is to provide insight into the command structure of table template files. This information can be important when working with worksheet-based tables, particularly if something goes wrong. However, in order to clearly distinguish the issues involved, the possibility of using a DataView table template to generate or display a spreadsheet table will be ignored initially.

Your First Text Table

In the simplest case, defining and printing a DataView table can be as easy as these five steps:

- Click on **Reports** from the Central Control Screen, then choose **Create Table Template**
- In response to the resulting DataView prompt, provide a file-name (say, DEMTAB1.TAB) for the new Template File
- Use the DataView Template Viewer and Editor, which appears next, to type the lines:

TITLE: This is our first table

ITEMS: GNP, CONS,GOVP

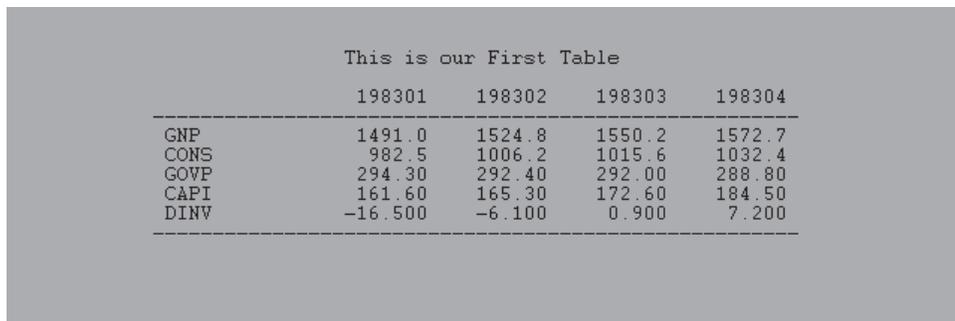
The declaratory keywords (**TITLE** and **ITEMS** which are here

shown in bold simply for identification) must be used in order to identify the command operations. However, all that is required, essentially, is to provide a title and then a list of variables that should be included in the table.

Then Save and Close the file.

- Click on **Reports** from the Central Control Screen, then choose **Print Standard Table** and provide the name of the template file just created.

The result should be the table:



This is our First Table				
	198301	198302	198303	198304
GNP	1491.0	1524.8	1550.2	1572.7
CONS	982.5	1006.2	1015.6	1032.4
GOVP	294.30	292.40	292.00	288.80
CAPI	161.60	165.30	172.60	184.50
DINV	-16.500	-6.100	0.900	7.200

Figure 2-24. A Simple Table

This table by default uses the series' mnemonic names as descriptors and lets DataView choose the width of columns and the number of decimal places for each of the observations.

Some Elaborations: Descriptions and Subtitles

It is instead possible to create custom item descriptions, as well as to specify the fieldwidths for both the descriptions and the observations. One method of doing this involves only a slight elaboration of the above table template.

Proceed as follows:

- On the template row immediately after that for **ITEMS**, put the command **DOCUMENT** on its own. DataView will then expect on successive lines a description for each item in the list, as will be illustrated.
- In addition, the **ITEMS** command can also include certain keywords, such as **SUBTITLE** and **SKIPLINE**, that will considerably improve the table's looks. **SUBTITLE** causes the description to be located as a centered subtitle; **SKIPLINE** causes a blank line to be inserted in the table.

The net effect is to create a set of commands such as:

```

TITLE:This is our second table
ITEMS:SKIPLINE,SUBTITLE,GNP,CONS,GOVP,CAPL,DINV
DOCUMENT
(billion real dollars)
Gross National Product
Consumer Spending
Government Spending
Fixed Investment
Inventory Investment
26,10

```

Evidently, the first 6 lines following the **DOCUMENT** line are the item descriptions, although there is no description needed for the first item (“**SKIPLINE**”) and the second line “(billion real dollars)” must be inferentially recognized as the **SUBTITLE**.

But it may not be obvious what the purpose of the final line is. This line specifies the width of the description field (26) and the data fields (10). Only one number is needed for the data fields because these are assumed to be all the same width. The description field width must be at least the width (in characters) of the longest description, and you probably will want some white space

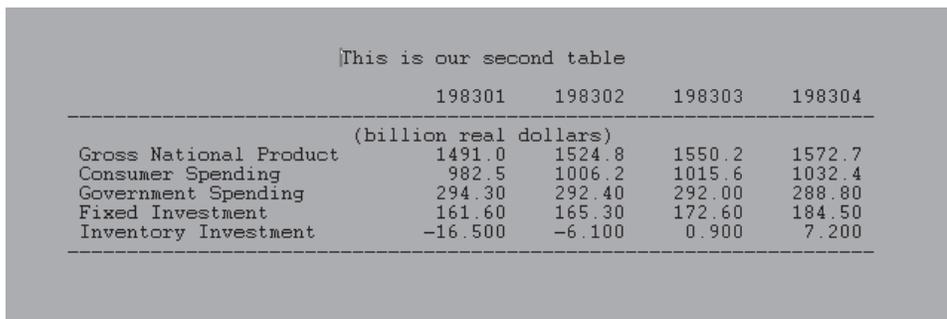
as well. The data field width should be at least as wide as the widest number; 10 is usually safe on this score, and values greater than 10 usually result in additional white space.

Once having supplied the titles and number of columns, and saved the modified template file, under the name DEMTAB2.TAB, you can print the table from the Central Control screen using the command:

PRINT TABLE DEMTAB2.TAB

as well as by clicking on **Reports** and then following the **Print Standard Table** sequence, as before.

A table produced by this method is shown in Figure 2-25 and is something of an improvement on the first table. The essence of the change is of course the addition of descriptions, as well as a subtitle. However, a number of the characteristics of the table are provided by default.



```

This is our second table
      198301   198302   198303   198304
-----
(billion real dollars)
Gross National Product   1491.0   1524.8   1550.2   1572.7
Consumer Spending         982.5   1006.2   1015.6   1032.4
Government Spending      294.30   292.40   292.00   288.80
Fixed Investment         161.60   165.30   172.60   184.50
Inventory Investment     -16.500   -6.100    0.900    7.200
-----

```

Figure 2-25. Simple Table With Descriptions

Storing a Table Definition: Making a Template

It is worth pausing at this point to emphasize that templates allow the essence of a table to be stored for later use. In this context, “Template” specifically refers to the set of commands, like those above, that define the characteristics of a table. Note that the series observations are not included; they are always retrieved from the Memory File or a data bank each time the table is printed. This facility allows a table to be produced repeatedly without having to define it each time: the same tables can be produced at periodic intervals as new series observations become available; simply change the dates and reprint the tables.

Note also that whereas DataView incorporates a text editor the process of making a template is not bound to DataView. In particular, another method of making a template file is simply to use a text processor, such as Notepad or Wordpad, or even a full-fledged word processor, provided that the templates you create are *always* created as text only files. Do not use Tab characters or any control characters when you create these files. Also, do not give them a TXT extent, unless you are prepared to always use this extent when you refer to your template file. DataView will, by default, always assume the extent to be TAB unless you explicitly tell it otherwise.

Specifying the Dates

If you explore assiduously the relevant portion of the DataView help file that pertains to table templates, you will discover that a dates command can be included within a template. However, in general, as has been done above, dates and observation frequency are usually best set separately, in advance of creating or using a table. When this is done, DataView adjusts each table to fit the date range.

In the examples given above, the date limits were set to permit the tables to fit on a single screen. However, if a wider date interval is chosen and if there are too many dates to fit across the screen, DataView automatically breaks the table up into sub-periods. The table will also be subdivided if there are too many rows (more than can fit on a single hardcopy page), at least if you use the just-described ITEMS command.

The range of dates displayed can be changed by re-setting the dates before reissuing the PRINT TABLE command, or otherwise displaying the table using the menu equivalent. Another option is to supply a list of selected dates for the columns of a table, such as:

```
DLIST 198301 198302 198401 198402
PRINT TABLE templatename
```

The DLIST option is actually very powerful, since it allows dates to be chosen that refer to spaced observations; for example, every other year, once every five years, or once every ten years. However, if you use DLIST in this way, make sure to have previously set the date range for the entire date interval, including all dates specified by DLIST.

Decimal Places

If you were to apply extensively the table template facilities shown so far, it would not be too long before you began to realize that letting DataView control the decimal places displayed is asking too much of the program. For example, it is sometimes desirable to display the same number of decimal places for each of the observations shown in a table whereas DataView will treat

each number separately when determining the location of the decimal.

You can control the maximum number of decimal places for the display of numbers in tables with the global command:

SET DECIMALS=k where k is in the range 0 to 4

This command applies to the entire table. However, you can fix the number of decimal places in each row by putting a suitable number (0 to 5) followed by a comma in front of the text documentation for that row, for example:

1,Gross National Product

This local command works in the absence of a global SET DECIMALS command. It also locally overrides the global command for the specific table rows in which it is used. As an example, consider the table template:

```
TITLE:DEMONSTRATION TABLE
ITEMS:SUBTITLE,CONS,GOVP,CAPI,GNP,SKIPLINE,SUBTITLE,TRBAL$,
GOVBAL$,SKIPLINE,SUBTITLE,WPIND,CPI,SKIPLINE,EMPL,UNRATE
DOCUMENT
(billion 1972 dollars)
0,Consumer spending
0,Govt purchases
0,Fixed investment
0,GNP
(billion current dollars)
0,Trade balance
0,Govt budget balance
(indexes 1967=100)
1,Wholesale prices
1,Consumer prices
2,Civil employment (mil)
1,Unemployment rate (%)
25,8
END
```

When shipped with DataView, this file is called DEMO-TAB3.TAB. Thus you can quickly produce the corresponding table using the commands:

SET DATES=198302-198402
PRINT TABLE DEMOTAB3

DEMONSTRATION TABLE				
	198301	198302	198303	198304
(billion 1972 dollars)				
Consumer spending	982	1006	1015	1032
Govt purchases	294	292	292	288
Fixed investment	161	165	172	184
GNP	1491	1524	1550	1572
(billion current dollars)				
Trade balance	19	-6	-16	-29
Govt budget balance	-151	-123	-133	-129
(indexes 1967=100)				
Wholesale prices	313.8	313.8	317.0	318.4
Consumer prices	293.6	296.8	299.8	303.1
Civil employment (mil)	99.20	100.00	101.50	102.50
Unemployment rate (%)	10.4	10.1	9.5	8.5

Figure 2-26. A More Elaborate Table

The resulting table is:

Incidentally, the commands to display tables, set dates, set decimals, etc, are illustrated partially to let you know that there is an alternative to the menus, but also because these commands can be included in macros, so that knowing the commands can be very useful in some contexts.

An Alternative Template Style

The process of beginning with a table title and a list of variables, and then progressively providing documentation and other embellishments in order to generate successively more attractive tables permits intuition to lead the way up the learning curve. However, the use of an item list is ultimately limiting, since at some stage it will be desirable to move beyond displaying variables alone.

Consider instead a template that has the following form:

```
TITLE:This is our alternative second table  
DOCUMENT  
HEADLINE;  
SKIPLINE;  
SUBTITLE;(billion real dollars)  
GNP;Gross National Product  
CONS;Consumer Spending  
GOVP;Government Spending  
CAPI;Fixed Investment  
DINV;Inventory Investment  
SAVE  
26,10
```

Note three things in particular. First, the absence of an **ITEMS** list, and that instead the contents of the former **ITEMS** list are individually now the initial elements of each document line; there is also a new item, **HEADLINE**, that causes dates to be printed across the top of the table. Second, the use of a semi-colon to separate the variable name or keyword from the description. Third, the word **SAVE** that appears on the next line after the last variable in the table (“**DINV**”). The reason for the word **SAVE** is that, in the absence of an **ITEMS** list, DataView needs some way to tell which is the last item in the body of the table.

The template file containing these commands is **ALT-DEMO2.TAB** and you can produce the corresponding table using the command:

PRINT ALTDEMO2.TAB

with the exception of the slight change in the title, you should find that this table is the same as our second table.

If, in addition, you thereafter click on Reports and then choose **Display Spreadsheet Table**, subsequently entering ALT-DEMO2.TAB as the template file, and finally click on Execute, you should not be surprised to find that this template will also generate a worksheet-based table. In fact, by clicking on **Display Spreadsheet Table**, instead of clicking on **Print Standard Table**, all the table templates illustrated so far can be used to produce worksheet based tables. The difference is that if a Row-Column reference is omitted, DataView will simply produce a table starting in the upper left hand corner of the worksheet and work down row by row and column by column.

Other Table Making Options

As well as the options just described, DataView permits you to create tables that display mixed frequency data and incorporate row transformations. These options can be used together or separately. Mixed frequency tables can contain as many as three observation frequencies. The row transformations allowed include most of DataView's implicit functions and most operations; however, there are limitations concerning the command length. The command length does not prohibit the creation of tables with complex transformations: alternatively, transformations may be stored in the Memory File and retrieved during the table printing.

There are in fact a number of options in addition to these, including the capability to retrieve historical and forecast data from a model solution file. All these options are described in later chapters of this User Guide or in the relevant section of the online help.

Appendix

Template DEMTAB3A.TAB

The template file DEMTAB3.TAB shown in the body of this chapter will not display properly as a Spreadsheet table. To use it in this context you must change it as illustrated below. In the following, note the omission of the ITEMS command and the inclusion of the items themselves in the lines following DOCUMENT, in each case followed by a Semi-Colon. The ITEMS command can only be used in the context of Spreadsheet tables if the item documentation is limited to just a description of each item. Including Skiplines, Subtitles, and decimal controls is incompatible with the ITEMS approach.

```

title:DEMONSTRATION TABLE
DOCUMENT
SUBTITLE;(billion 1972 dollars)
CONS;0,Consumer spending
GOVP;0,Govt purchases
CAPI;0,Fixed investment
GNP;0,GNP
SKIPLINE;
SUBTITLE;(billion current dollars)
TRBAL$;0,Trade balance
GOVBAL$;0,Govt budget balance
SKIPLINE;
SUBTITLE;(indexes 1967=100)
WPIND;1,Wholesale prices
CPI;1,Consumer prices
SKIPLINE;
EMPL;2,Civil employment (mil)
UNRATE;1,Unemployment rate (%)
25,8
END

```

