Chapter 9
Creating Reports
in Excel

One of the most powerful features of Standard & Poor's Research Insight is its ability to communicate with Microsoft Excel® through Active-X Technology. Excel requests data from the Research Insight database and the exchange between the two applications takes place so quickly that you immediately see the requested data displayed in the Excel spreadsheet. You can view Research Insight Reports and Charts directly in Excel, and create your own spreadsheets in Excel using all of the features and data available in Research Insight. The link between Excel and Research Insight brings you the power of both applications.

In this chapter, we'll show you how to create your own spreadsheets using Research Insight data. For more information on Research Insight and Excel refer to *Chapter 11 - Using Standard & Poor's Research Insight with Excel*, of the Getting Started manual.

This chapter gives you detailed information about

- creating Excel spreadsheets with Research Insight data

- batch printing

- cell referencing

- adding time period references

Creating an Excel Spreadsheet with Research Insight Data

Suppose you want to find out whether the Price to Earnings from Operations ratio for Black & Decker indicates that the company is a relatively "good buy." This chapter leads you step-by-step through creating a report in Excel on Black and Decker's Price/EPS from Operations for the past 12 months (to examine its stability over time); comparing the company to its industry peers; incorporating the company's short business description and finally printing the report for all companies in the comparison population.

Before you begin the exercise, first import **Active Sector** data through the Value Added Data download. For information on using the Task Scheduler to schedule internet downloads, refer to Chapter 12 - Additional Data Available through the Task Scheduler.

Basic Add-in Functions

Standard & Poor's has developed six add-in functions that you will use to bring Research Insight data into in Excel. The add-in functions are described below.

=spws("key","expression")
Displays a single data value in one cell for a company.

=spws_time_series("key","expression","begin_period","end_period", "array_direction")
Displays a data value over a period of time (an array) for a company.

=spws_set(set,"expression","array_direction")
Displays a single data value for each member of a set of companies.

=spws_set_sort(set,"expression","sort variable","sort direction", "array_direction")
Sorts a set of companies based on your own criteria.

=spws_screen("screen","set","date")
Runs a saved screen and returns a set of companies that pass your investment criteria for a given time period.

=spws_set_size ("set")
Displays the number of companies in a set.

Displaying Data for One Company in Excel

You'll use the spws add-in function to retrieve data from Research Insight for Black and Decker.

<div align="center">

=spws("key","expression")

</div>

1. Let's begin by establishing the company's name and address. In cell **A1**,
    enter **=spws("bdk","conm")** and press **Enter.** This returns the company name,
    Black & Decker Corp.
2. In cell **A2** enter **=spws("bdk","add1")** and press **Enter.** This returns the street
    address for Black & Decker.

	A	B
1	BLACK & DECKER CORP	
2		"

3. In cells **B2**, **C2**, and **D2**, complete the address information replacing "add1" in the above
    formula with **add2**, **add3**, and **addzip**, respectively.

	A	B	C	D
1	BLACK & DECKER CORP			
2	701 E Joppa Rd	Towson	MD	21286-5502

Selecting Companies with the Run Assistant

You can modify the formula you used above to open the Research Insight Run Assistant, rather
than specifying one specific company.

4. Select cell **A1**.
    In the Excel formula bar, replace "bdk" with **Ticker**.

    `=spws(Ticker,"conm")`

    Press **Enter** and you will see the message "No company or set was specified for this
    formula".
5. Click the 🏃 **(S&P Run Assistant)** button to open the Run Assistant dialog box.
6. Enter **bdk** in the **Companies** field and click **OK**.

Other examples using the spws add-in function:

=spws(ticker,"sale")
Returns the current years sales for the specified company.

=spws(ticker,"@pavg(oppe,-11,0)")
Averages the specified company's last 12 months Price/EPS from Operations ratio.

Displaying Data Over Time for a Company

The time series function displays a single data value over time for one company. With this function you can highlight a range of cells and enter the formula once to fill in the range.

=spws_time_series("key","expression","begin_period","end_period", "array_direction")

Continuing with the exercise, you will now add some historical market data to the spreadsheet, to see how Black and Decker's current Price/EPS from Operations ratio compares to those over the past year.

7. To enter the dates for the range of months, highlight cells **A7** to **A18** and enter **=spws_time_series(ticker,"@mnt(0m)","0m","-11m","down")**, then press the **Ctrl+Shift+Enter** keys simultaneously. This enters the formula as an array of data. You can enter arrays either down or across the spreadsheet.

8. Next, add a title to the column: enter **Period** in cell **A6**.
9. Now bring in the Price/EPS from Operations data from Research Insight. Highlight cells **B7** to **B18,** enter **=spws_time_series(ticker,"oppe","0m","-11m","down")** and press **Ctrl+Shift+Enter**.
10. Add a title for the second column: enter **Price/EPS-Ops** in cell **B6**.

Other examples using the time series add-in function:

=spws_time_series(ticker,"trt1y","-11m","0m","down") -11m is the first period in the array. Returns the one year total return for each of the last 12 months.

=spws_time_series(ticker,"mkvalm","0m","-11m","across") Array moves across not down. Returns a company's monthly market value for the last 12 months.

=spws_time_series(ticker,"sale","y90","y96","down") Returns Sales from y90 to y96.

=spws_time_series(a1,"epspx","0y","-19y","down") 0y is the first period in the array. Returns EPS for the last 20 years for whatever ticker is in cell A1.

Displaying Data for a Set of Companies

The spws_set add-in function displays a data value for each member of a set of companies. With this function you can highlight a range of cells, enter a formula just once, and retrieve data for a set of companies.

=spws_set(set,"expression","array_direction")

You can use the spws_set function to compare Black and Decker's Price to Earnings ratio to its peers. To add the Price/EPS from Operations for Black & Decker's industry peers to the report:

11. Highlight cells **D7** to **D18**, enter **=spws_set(set,"conm","down")** and press **Ctrl+Shift+Enter**. (The formula only returns the name of Black & Decker until you change the set in Step 12.)
12. Click the **Run Assistant** button. **Bdk** should still appear in the **Companies** field.
13. In the Find Similar Companies list, select **Industry Sector** to search for all of the companies in Black & Decker's sector.
14. To screen out companies with a low market value, select the **Valuation** tab, click the **Market Value** check box, enter **150** in the far right field and click **OK**.
To eliminate ADR companies from the report, under the **Population Particulars** tab, select **Non-ADR Companies**. (If the tab is not visible, click Customize, and select the tab to add it to the Run Assistant.)
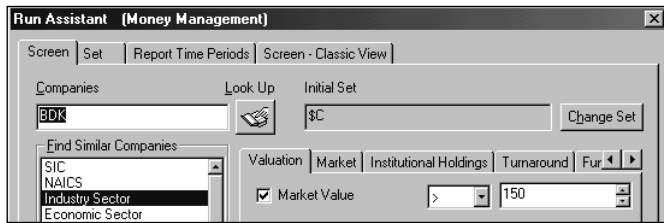
The companies in the set will now populate the spreadsheet. Notice that the array has modified the range to fit the number of companies actually present in the set.

15. To add the companies' respective Price/EPS from Operations, highlight cells **E7** to **E15**, enter **=spws_set(set,"oppe","down")** and press **Ctrl+Shift+Enter**.

BLACK & DECKER CORP	21.9457
HELEN OF TROY CORP LTD	11.08108
MAYTAG CORP	17.06411
MESTEK INC	14.49367
SALTON INC	8.381744
SNAP-ON INC	18.72283
STANLEY WORKS	21.36865
TORO CO	14.31818
WHIRLPOOL CORP	13.5072

16. To find the average of the companies' Price/EPS from Operations enter **=average(E7:E14)** in cell **E6**. To add a label, enter **Average=** in cell **D6**

Average=	15.922
BLACK & DECKER CORP	21.9457
HELEN OF TROY CORP LTD	11.08108
MAYTAG CORP	17.06411
MESTEK INC	14.49367
SALTON INC	8.381744
SNAP-ON INC	18.72283
STANLEY WORKS	21.36865
TORO CO	14.31818
WHIRLPOOL CORP	13.5072

The report you created shows that Black & Decker's Price/EPS from Operations value is higher than the industry average.

Other examples using the set add-in function:

=spws_set("$sp_500","tic","down")
Returns the tickers for the companies in the S&P 500.

=spws_set(a1,"tic","down")
Returns the tickers for the $setname located in cell A1.

=spws_set("$setname","prccm[@mnt(0y)]/epspx","across") array moves across not down.
Returns an annual price to earnings ratio for companies in the set titled $setname.

Sorting Data in a Set

The spws_set_sort add-in function sorts a set of companies based on your own criteria. You can sort a list of companies in ascending or descending order (use "a" and "d" for short in the formula.)

**=spws_set_sort(set,"expression","sort variable","sort direction",
"array_direction")**

Now sort the set of companies in your report to look for undervalued companies based on our Price/EPS from Operations item.

18. Modify the formula in cell **D7** to **=spws_set_sort(set,"conm","oppe","a","down")** and press **Ctrl+Shift+Enter.** Now the set names have been sorted by the "oppe" item.

19. Modify the formula in cell **E7** to **=spws_set_sort(set,"oppe","oppe","a","down")** and press **Ctrl+Shift+Enter.**

Average=	14.86718
SALTON INC	8.381744
HELEN OF TROY CORP LTD	11.08108
WHIRLPOOL CORP	13.5072
TORO CO	14.31818
MESTEK INC	14.49367
MAYTAG CORP	17.06411
SNAP-ON INC	18.72283
STANLEY WORKS	21.36865
BLACK & DECKER CORP	21.9457

From the sorted list, Salton Inc. appears to be an undervalued company in this sector, and may be worthy of further research.

Screening and Backtesting

The spws_screen add-in function allows you to **backtest** an investment strategy. Spws_screen runs a saved screen in the background and returns a set of companies that pass your investment criteria for a given time period. The resulting set is ready for use in any Research Insight set function.

=spws_screen("screen","set","date")

For further information on how the spws_screen function can be used, you can refer to the Research Insight pre-defined report "backtest.xls" to see how you can use this function to test your stock selection theory, and compare it to the S&P 500 for relative performance.

Continue the exercise with the following steps to see how the screening criteria, Price/EPS from Operations <=14 and a market value > 150 million, would have performed for Black & Decker's Industry Sector in 2001.

First create and save a screen.

20. Click the **S&P Run Assistant** button.
    The Run Assistant dialog box should still display the information you entered earlier.
21. Add the Price/EPS from Operations to the Valuation tab by clicking **Customize** and adding a new Indicator Item, **oppe**, to the **Valuation** Indicator Group. For more information on customizing indicator tabs, refer to the Customizing Screening Criteria section in Chapter 2 - Using the Research Assistant, of the *Getting Started* manual.
22. Select the **Valuation** tab, click the **Price/EPS from Operations** check box, select

24. Click **Cancel** in the Run Assistant dialog box to return to Excel.
25. In cell **A21**, enter **=spws_screen("test.scn","test.set","dec96")**.
    The "dec96" entry runs the test.scn screen as of December 1996 and saves the companies
    that passed the criteria to the set "test.set" and returns a result of "$test"B which can be used
    in other functions. Let's see what the average one year return for this set was as of a year
    later, December 1997.
26. In cell **A22**, enter **=spws("*","@cavg(trt1y[dec97],"&a21&")")**.

$test
42.06376033

    This returns the average total return for the referenced set in cell A21. The part of the
    formula "&a21&", is an example of concatenation and is covered later in this chapter.

Display Number of Companies in a Set

This add-in function shows the number of companies in a set.
        =spws_set_size("set")

27. In cell B21 enter **=spws_set_size("$test")**.
    In December 1996 only 5 companies passed the screening criteria.

At this point you have a spreadsheet that provides pertinent information about Black & Decker and its peers, and market data with which to make knowledgeable investment decisions.

	A	B	C	D	E
1	BLACK & DECKER CORP				
2	701 E Joppa Rd	Towson	MD	21286-5502	
3					
4					
5					
6	Period	Price/EPS Ops		Average=	15.65369
7	Feb02	21.9457		SALTON INC	8.381744
8	Jan02	18.62443		HELEN OF TROY CORP L	11.08108
9	Dec01	15.21371		WHIRLPOOL CORP	13.5072
10	Nov01	14.93549		TORO CO	14.31818
11	Oct01	13.34274		MESTEK INC	14.49367
12	Sep01	10.57627		MAYTAG CORP	17.06411
13	Aug01	13.3322		SNAP-ON INC	18.72283
14	Jul01	14.47797		STANLEY WORKS	21.36865
15	Jun01	11.53801		BLACK & DECKER CORP	21.9457
16	May01	11.59257			

	11.65497			7	Apr01
	10.38136			8	Mar01
				9	
				20	
	5			21	$test
42.06376033				22	
				23	
tures and sells				24	Manufac
r and professional				25	consume
ols and accessories,				26	power to
hardware, outdoor				27	security
(electric lawn and				28	products
ools), plumbing				29	garden t
and fastening and				30	products
y systems.				31	assembl
				32	

You can view the report for any of the companies in the set by selecting company from the drop-down list above the report.

|		Set Size = 8	BDK - BLACK & DECKER CORP	
	D30	=	BDK - BLACK & DECKER CORP	
	A		SMG - SCOTTS COMPANY	F
3			SSD - SIMPSON MANUFACTURING INC	
4			SWK - STANLEY WORKS	
5			SCX - STARRETT (L.S.) CO -CL A	
6	Period	Price/EPS-Ops	Average=	14.63658
7	Sep98	16.51786039	BLACK & DECKER CORP	16.51786
8	Aug98	16.66666995	SCOTTS COMPANY	12.81381
9	Jul98	22.56944889	SIMPSON MANUFACTURING INC	11.93878
10	Jun98	24.20635397	STANLEY WORKS	13.64679

Batch Printing

Follow these steps to print the spreadsheet for all of the companies in your set.

1. Select **Batch Print** from the **S&P** menu.
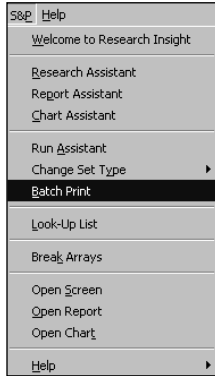
2. Click **OK** in the Print Research Insight Sheets dialog box.
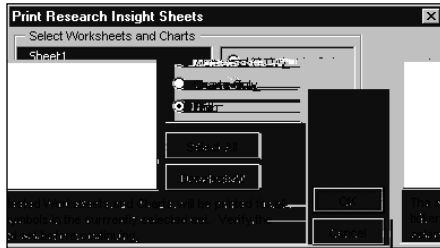
    A separate spreadsheet will now be printed for each of the companies.

Cell Referencing

To help you save time when setting up your worksheet, this section provides a quick review of the different types of cell referencing in Excel.

Relative Referencing

When you move a formula, the cell references within the formula do not change. When you copy a formula, absolute cell references do not change; relative cell references do change.

When you create a formula, references to cells or ranges are usually based upon their position relative to the cell that contains the formula. In the following example, cell B6 contains the formula =A5; Excel finds the value one cell above and one cell to the left of B6. This is known as relative referencing.

B6	▼	=	=A5
	A	B	C
1			
2			
3			
4			
5	100		
6	200	100	

When you copy a formula that uses relative references, the references in the pasted formula update and refer to different cells relative to the position of the formula. In the following example, the formula in cell B6 has been copied to cell B7. The formula in cell B7 has changed to =A6, which refers to the cell that is one cell above and to the left of cell B7.

B7	▼	=	=A6
	A	B	C
1			
2			
3			
4			
5	100		
6	200	100	
7		200	

Absolute Referencing

If you don't want references to change when you copy a formula to a different cell, use an absolute reference. For example, if your formula multiplies cell A5 with cell C1 (=A5*C1) and you copy the formula to another cell, both references will change. You can create an absolute reference to cell C1 by placing a dollar sign ($) before the parts of the reference that do not change. To create an absolute reference to cell C1, for example, add dollar signs to the formula as follows: =A5*C1.

C5	▼	=	=A5*C1	
	A	B	C	D
1			10	
2				
3				
4				
5	100		1000	
6	200		2000	

Cell C6 uses the formula =A6*C1

This formula references cell A1 for the ticker, and returns that company's name in cell A2.

3. You can also reference the mnemonic to another cell by entering **conm** in cell **B1** and changing the formula in cell **A2** to **=spws(A1,B1)**.

| A2 | ▼ | = | =spws(A1,B1) |

	A	B
1	ibm	conm
2	INTL BUSINESS MACHINES CORP	

Adding Time Period References to a Report

Concatenation in Excel provides a shortcut to retrieve Research Insight data for specific time periods. Just "sandwich" the cell reference between quotes and an ampersand (e.g., "&cell_reference&"). In addition to the Excel syntax, notice that the formula below also contains Research Insight syntax: the square brackets indicate a time period reference in Research Insight, e.g., [Y92] indicates the 1992 annual period.

=spws(a1,""&$b4&"["&c$3&"]")
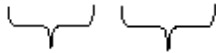
Concatenates the item   Concatenates time period reference

C4	▼	=	=spws(A1,""&$B4&"["&C$3&"]")			
	A	B	**C**	D	E	F	G
1	mrk						
2							
3			y92	y93	y94	y95	y96
4		sale	9662.5				
5		cogs					
6		ni					
7		epspx					
8		prccm					

Enter a concatenated expression such as **=spws(a1,""&$b4&"["&c$3&"]")** in the example above, then use Excel's AutoFill feature to copy the expression for the other items in the matrix. To use Autofill, position the mouse over the lower right corner of the highlighted cell; the mouse pointer turns into a cross; drag the cell down the column.

	y92	y93	y94	y95	y96
sale	9662.5				
cogs	1805.8				
ni	1984.2				
epspx	2.12				

Calculate the items for the rest of the years by dragging the cells to the right.

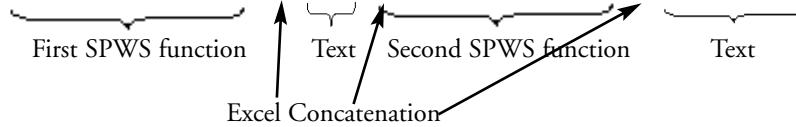|	y92	y93	y94	y95	y96
sale	9662.5	10498.2	14969.8	16681.1	19828.7
cogs	1805.8	2149.2	5487.1	6993	8797.5
ni	1984.2	2166.2	2997	3335.2	3881.3
epspx	2.12	1.87	2.38	2.7	3.2

=ssws(a1,"prccm[@mnt("&c$3&")]") where C$3 contains the text Y92

Concatenates a time period reference

Notice that the concatenation begins and ends with where Y92 should be inserted.

	C10	▼	**=**	=spws(A1,"prccm[@mnt("&C$3&")]")		
	A	B	**C**	D	E	F	G
1	mrk						
2							
3			y92	y93	y94	y95	y96
4		sale	9662.5	10498.2	14969.8	16681.1	19828.7
5		cogs	1805.8	2149.2	5487.1	6993	8797.5
6		ni	1984.2	2166.2	2997	3335.2	3881.3
7		epspx	2.12	1.87	2.38	2.7	3.2
8							
9							
10			43.375				

The following example combines text and SPWS functions:

=ssws(a1,"conm")&" has "&ssws(a1,"emp")&" employees"

First SPWS function   Text   Second SPWS function   Text

Excel Concatenation

	A12	▼	**=**	=spws(A1,"conm")&" has "&spws(A1,"emp")&" employees"				
	A	B	C	D	E	F	G	H
1	mrk							
2								
3			y92	y93	y94	y95	y96	
4		sale	9662.5	10498.2	14969.8	16681.1	19828.7	
5		cogs	1805.8	2149.2	5487.1	6993	8797.5	
6		ni	1984.2	2166.2	2997	3335.2	3881.3	
7		epspx	2.12	1.87	2.38	2.7	3.2	
8								
9								
10			43.375					
11								
12	MERCK & CO has 53.7999992370605 employees							

To decrease the number of decimal places for the number of employees, we need to use an Excel function within our expression as follows:

=spws(A1,"conm")&" has "&fixed(spws(A1,"emp"),3)&" employees"

SPWS Function embedded in Excel's FIXED function

	A	B	C	D	E	F	G	H	I
A12			=	=spws(A1,"conm")&" has "&FIXED(spws(A1,"emp"),3)&" employees"					
1	mrk								
2									
3			y92	y93	y94	y95	y96		
4		sale	9662.5	10498.2	14969.8	16681.1	19828.7		
5		cogs	1805.8	2149.2	5487.1	6993	8797.5		
6		ni	1984.2	2166.2	2997	3335.2	3881.3		
7		epspx	2.12	1.87	2.38	2.7	3.2		
8									
9									
10			43.375						
11									
12	MERCK & CO has 53.800 employees								