CHAPTER ONE

ARRAY AND SPREADSHEET BASICS

The chapter discusses the basic concept of array, importance of array, array constant, array range, how to enter and edit array formula, and how to calculate array results. It serves as a requisite chapter for lessons on spreadsheet application in matrices.

Learning Objectives

By the time you complete this chapter, you should be able to:

(a) Create array constants
(b) Edit an array range
(c) Contrast array range and array constant
(d) Create an array formula
(e) Use spreadsheet to do array computations with array formula
(f) Create Names for referencing cells

Overview of Arrays

Arrays are rectangular ranges of formulas or values that Excel treats as a group. In Excel, these values can reside in a single row (a one-dimensional horizontal array), a column (a one-dimensional vertical array), or multiple rows and columns (a two-dimensional array). You can't create three-dimensional array or array formulas in Excel. Array formulas refer to evaluations whose results are placed in a range of cells (instead of a single cell) and are invoked by *ctrl*+*shift*+*enter*. A group of curly brackets ({}) will automatically enclose the formula to remind the user that it is an array formula. Whenever you type an array formula, press the CTRL, SHIFT and ENTER keys all together and release them at same time.

Some Excel functions perform matrix operations such as multiplication, inverse and transpose. They are implemented as array formulas. There are also other built-in Excel functions, such as LINEST (for linear regression) that require the

results be placed in a range of cells, thereby requiring an array formula.

Array Formula

One of the advantages of working with arrays in Excel is that you can perform a large amount of calculations in a small space, and also save memory by replacing repetitive formulas. For example

= a1 * b1, = a2 * b2, ... , = a10 * b10

can be written as a single formula

= a1 * b1

Arrays are rectangular ranges of formulas or values that Excel treats as a group. Some array formulas or functions return an array of results that appear in many cells.

An array formula is an executable expression that performs calculations on one or more of the items in an array and returns either a single or multiple results. For example, you can place an