



MATLAB for Finance

2 Operators



Variables

- Variables are definite by the assignment (no declaration required)

```
>> rate= 0.037
```

```
>> v=[1 2 3]
```

```
>> A=[1 2; 3 4]
```

```
>> B=[5 6 7
```

```
8 9 10]
```

```
>>
```

```
>> s='abcde'
```



Subscripts

- Subscripts are denoted by parenthesis (). It is also possible to refer to the elements of a matrix with a single subscript

$$v(2)$$

With

$$A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$$

The element

$$A(1, 2)$$

can be obtained also by

$$A(3)$$

Why should we use subscripts?

$$B(:, 3) = []$$



Operators

- + addition
- subtraction
- * multiplication
- / division, solution (X) of $XA=B$
- \ solution (X) of $AX=B$
- ^ exponentiation
- ' transpose
- () valuation order
- ; end of the line / *no-echo*
- , or *space* split the elements along the row
- [] empty matrix

Colon Operator (:)

✚ One of the most important operators. It occurs in several different forms:

✚ iterator

`1:10` (1 2 3 4 5 6 7 8 9 10)

`1:2.5:10` (1.0000 3.5000 6.0000 8.5000)

`0:pi/4:pi` (0 0.7854 1.5708 2.3562 3.1416)

✚ portions of a matrix

`A(1:k, j)` (the first k elements of column j)

`A(:, end)` (*all* the rows of the *last* column)

`A(:, :)` (the whole matrix)

`A(:)` (the matrix in *one* column)



Dot Operator (.)

✚ The element-by-element use of $*$ $/$ $^$ operators are given by the $.$ (*dot*) operator:

$$A \ . \ * \ A$$

$$v \ . \ / \ v$$

$$v \ . \ ^ \ 2$$

Array

- ✚ Is a collection of elements of the same type (double/real, strings, ...)
- ✚ ONE-dimension array (vector): [1 4 3 6 7]
- ✚ TWO-dimension array (matrix)
- ✚ THREE-dimension array: cf. XL's sheets