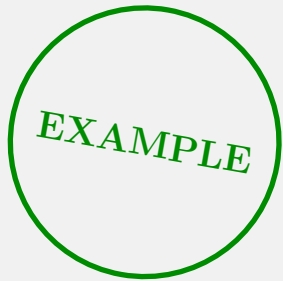


VBA: DATASET ANALYSIS

Sales data, price changes and corrections

Automated Decision Making in Business and Economics



Open the file: » Sales representative



The dataset and the first question

Each of the **43 data rows** records a sale of office supplies: its date, region, representative and item, followed by **Units**, **Unit Cost** and **Total**.

From inputs to sales totals

Units and Unit Cost are inputs. Total is calculated as

$$\text{Total} = \text{Units} \times \text{Unit Cost}.$$

The PivotTable summarises the **average Total** by representative and region.

What happens to these averages if the unit cost of every **Desk** increases or decreases by **1%**? VBA changes the selected inputs; Excel recalculates Total, and we refresh the PivotTable.

The result should be:

Average of Total Sales	Region			
Rep	Central	East	West	Importo totale
Andrews	109,59			109,59
Gill	349,97			349,97
Howard		268,38		268,38
Jardine	562,44			562,44
Jones		295,38		295,38
Kivell	777,36			777,36
Morgan	462,59			462,59
Parent		1.034,10		1.034,10
Smith	547,14			547,14
Sorvino			320,90	320,90
Thompson			601,56	601,56
Importo totale	464,13	461,70	414,45	456,46

Question: what happens if unit price of desks varies of +1% ?

Average of Total Sales	Region			
Rep	Central	East	West	Importo totale
Andrews	109,59			109,59
Gill	349,97			349,97
Howard		268,38		268,38
Jardine	562,44			562,44
Jones		295,38		295,38
Kivell	777,36			777,36
Morgan	462,59			462,59
Parent		1.034,10		1.034,10
Smith	547,14			547,14
Sorvino			320,90	320,90
Thompson			601,56	601,56
Importo totale	464,13	461,70	414,45	456,46

Question: what happens if unit price of desks varies of -1% ?



Question: what happens if unit price of desks varies of +1% ?

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54



Question: what happens if unit price of desks varies of +1% ?

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54

Run across this columns
looking for occurrences of the
word “Desk”



Question: what happens if unit price of desks varies of +1% ?

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54

Once found,



Question: what happens if unit price of desks varies of +1% ?

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54

Once found, move two cells horizontally...



Question: what happens if unit price of desks varies of +1% ?

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54

Once found, move two cells horizontally...

... and increase the value of the cell of +1%.

```
Sub Shockpos()
```

```
For Each cell In Range("D:D")
```

```
Next cell
```

```
End Sub
```

Write this code

```
Sub Shockpos()
```

```
For Each cell In Range("D:D")
```

```
Next cell
```

```
End Sub
```

we let the variable cell run between the first and the last cell of column D

```
Sub Shockpos()  
  
For Each cell In Range("D:D")  
  
If cell.Value = "Desk" Then  
  
End If  
  
Next cell  
  
End Sub
```

if the value of cell
coincides with the string
“**Desk**” then...

```
Sub Shockpos()  
  
For Each cell In Range("D:D")  
  
If cell.Value = "Desk" Then  
  
cell.Offset(0, 2).Value = cell.Offset(0, 2).Value + 0.01 * cell.Offset(0, 2).Value  
  
End If  
  
Next cell  
  
End Sub
```

Move of +2 cells
horizontally

```
Sub Shockpos()  
  
For Each cell In Range("D:D")  
  
If cell.Value = "Desk" Then  
  
cell.Offset(0, 2).Value = cell.Offset(0, 2).Value + 0.01 * cell.Offset(0, 2).Value  
  
End If  
  
Next cell  
  
End Sub
```

increments the value of that
cell of +1%

```
Sub Shockpos()  
  
For Each cell In Range("D:D")  
  
If cell.Value = "Desk" Then  
  
cell.Offset(0, 2).Value = cell.Offset(0, 2).Value + 0.01 * cell.Offset(0, 2).Value  
  
End If  
  
Next cell  
  
End Sub
```

close the if
statement

```
Sub Shockpos()  
  
For Each cell In Range("D:D")  
  
If cell.Value = "Desk" Then  
  
cell.Offset(0, 2).Value = cell.Offset(0, 2).Value + 0.01 * cell.Offset(0, 2).Value  
  
End If  
  
Next cell  
  
End Sub
```

close the for loop

```
Sub Shockpos()  
For Each cell In Range("D:D")  
    If cell.Value = "Desk" Then  
        cell.Offset(0, 2).Value = cell.Offset(0, 2).Value + 0.01 * cell.Offset(0, 2).Value  
    End If  
Next cell  
End Sub  
  
Sub Shockneg()  
For Each cell In Range("D:D")  
    If cell.Value = "Desk" Then  
        cell.Offset(0, 2).Value = cell.Offset(0, 2).Value - 0.01 * cell.Offset(0, 2).Value  
    End If  
Next cell  
End Sub
```

same, but negative
shock.

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54
1/23/14	Central	Kivell	Binder	50	19,99	999,50
3/24/15	Central	Jardine	Pen Set	50	4,99	249,50
5/14/15	Central	Gill	Pencil	53	1,29	68,37
7/21/15	Central	Morgan	Pen Set	55	12,49	686,95
4/10/15	Central	Andrews	Pencil	66	1,99	131,34
12/12/14	Central	Smith	Pencil	67	1,29	86,43
4/18/14	Central	Andrews	Pencil	75	1,99	149,25
5/31/15	Central	Gill	Binder	80	8,99	719,20

+1%

-1%

Rep	Central
Andrews	109,5925
Gill	349,974
Jardine	562,438
Kivell	777,36
Morgan	462,59
Smith	547,1433333
Importo totale	464,1279167

create two buttons, one for each macro

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54
1/23/14	Central	Kivell	Binder	50	19,99	999,50
3/24/15	Central	Jardine	Pen Set	50	4,99	249,50
5/14/15	Central	Gill	Pencil	53	1,29	68,37
7/21/15	Central	Morgan	Pen Set	55	12,49	686,95
4/10/15	Central	Andrews	Pencil	66	1,99	131,34
12/12/14	Central	Smith	Pencil	67	1,29	86,43
4/18/14	Central	Andrews	Pencil	75	1,99	149,25
5/31/15	Central	Gill	Binder	80	8,99	719,20

+1%

-1%

Rep	Central
Andrews	109,5925
Gill	349,974
Jardine	562,438
Kivell	777,36
Morgan	462,59
Smith	547,1433333
Importo totale	464,1279167

hit the shock!

New unit costs.

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	126,25	252,50
6/17/15	Central	Kivell	Desk	5	126,25	631,25
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54

Total sales update
accordingly

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	126,25	252,50
6/17/15	Central	Kivell	Desk	5	126,25	631,25
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54

update the Pivot table to see the results

Sum of Total	Region			
Rep	Central	East	West	Importo totale
Andrews	109,5925			109,5925
Gill	349,974			349,974
Howard		268,375		268,375
Jardine	562,438			562,438
Jones		295,38		295,38
Kivell	778,9225			778,9225
Morgan	462,59			462,59
Parent		1.034,1		1.034,1
Smith	547,9766667			547,9766667
Sorvino			322,965	322,965
Thompson			601,555	601,555
Importo totale	464,4925	461,6992308	415,8283333	456,8576744

The same dataset: correcting quantities

We now use the sales records to correct two data-entry errors:

- ▶ Every record for **Smith** has **one unit too many**.
- ▶ Every **Pencil** record for **Gill** is missing **two units**.

Changing Units also changes Total, because Total is calculated from Units and Unit Cost.

The problem to solve

Find the relevant rows, adjust Units, then use the refreshed PivotTable to compare the **average Total for each representative** before and after the correction.

An error has been made!

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54
1/23/14	Central	Kivell	Binder	50	19,99	999,50
3/24/15	Central	Jardine	Pen Set	50	4,99	249,50
5/14/15	Central	Gill	Pencil	53	1,29	68,37
7/21/15	Central	Morgan	Pen Set	55	12,49	686,95
4/10/15	Central	Andrews	Pencil	66	1,99	131,34
12/12/14	Central	Smith	Pencil	67	1,29	86,43
4/18/14	Central	Andrews	Pencil	75	1,99	149,25
5/31/15	Central	Gill	Binder	80	8,99	719,20

An error has been made!

All units sold by **Smith**
must be decreased of **1**
unit.

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
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1/15/15	Central	Gill	Binder	46	8,99	413,54
1/23/14	Central	Kivell	Binder	50	19,99	999,50
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12/12/14	Central	Smith	Pencil	67	1,29	86,43
4/18/14	Central	Andrews	Pencil	75	1,99	149,25
5/31/15	Central	Gill	Binder	80	8,99	719,20

An error has been made!

All units sold by **Smith**
must be decreased of **1 unit**.

All pencils sold by **Gill**
must be increased of **2**
units.

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
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12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54
1/23/14	Central	Kivell	Binder	50	19,99	999,50
3/24/15	Central	Jardine	Pen Set	50	4,99	249,50
5/14/15	Central	Gill	Pencil	53	1,29	68,37
7/21/15	Central	Morgan	Pen Set	55	12,49	686,95
4/10/15	Central	Andrews	Pencil	66	1,99	131,34
12/12/14	Central	Smith	Pencil	67	1,29	86,43
4/18/14	Central	Andrews	Pencil	75	1,99	149,25
5/31/15	Central	Gill	Binder	80	8,99	719,20

An error has been made!

All units sold by **Smith** must be decreased of **1 unit**.

All pencils sold by **Gill** must be increased of **2 units**.

Which is the average of total sales per representative after the adjustment?

A	B	C	D	E	F	G
OrderDate	Region	Rep	Item	Units	Unit Cost	Total
9/1/14	Central	Smith	Desk	2	125,00	250,00
6/17/15	Central	Kivell	Desk	5	125,00	625,00
9/10/15	Central	Gill	Pencil	7	1,29	9,03
11/17/15	Central	Jardine	Binder	11	4,99	54,89
10/31/15	Central	Andrews	Pencil	14	1,29	18,06
2/26/14	Central	Gill	Pen	27	19,99	539,73
10/5/14	Central	Morgan	Binder	28	8,99	251,72
12/21/15	Central	Andrews	Binder	28	4,99	139,72
2/9/14	Central	Jardine	Pencil	36	4,99	179,64
8/7/15	Central	Kivell	Pen Set	42	23,95	1.005,90
1/15/15	Central	Gill	Binder	46	8,99	413,54
1/23/14	Central	Kivell	Binder	50	19,99	999,50
3/24/15	Central	Jardine	Pen Set	50	4,99	249,50
5/14/15	Central	Gill	Pencil	53	1,29	68,37
7/21/15	Central	Morgan	Pen Set	55	12,49	686,95
4/10/15	Central	Andrews	Pencil	66	1,99	131,34
12/12/14	Central	Smith	Pencil	67	1,29	86,43
4/18/14	Central	Andrews	Pencil	75	1,99	149,25
5/31/15	Central	Gill	Binder	80	8,99	719,20

```
Sub correct()
```

```
End Sub
```

```
Sub correct()
```

```
For Each cell In Range("C2", "C44")
```

```
Next cell
```

```
End Sub
```

```
Sub correct()  
  
For Each cell In Range("C2", "C44")  
  
If cell.Value = "Smith" Then  
  
  
  
End If  
  
Next cell  
  
End Sub
```

```
Sub correct()  
  
For Each cell In Range("C2", "C44")  
  
If cell.Value = "Smith" Then  
  
    cell.Offset(0, 2).Value = cell.Offset(0, 2).Value - 1  
  
End If  
  
Next cell  
  
End Sub
```

```
Sub correct()  
  
For Each cell In Range("C2", "C44")  
  
If cell.Value = "Smith" Then  
  
    cell.Offset(0, 2).Value = cell.Offset(0, 2).Value - 1  
  
ElseIf cell.Value = "Gill" And cell.Offset(0, 1).Value = "Pencil" Then  
  
End If  
  
Next cell  
  
End Sub
```

```
Sub correct()  
  
For Each cell In Range("C2", "C44")  
  
If cell.Value = "Smith" Then  
    cell.Offset(0, 2).Value = cell.Offset(0, 2).Value - 1  
  
ElseIf cell.Value = "Gill" And cell.Offset(0, 1).Value = "Pencil" Then  
    cell.Offset(0, 2).Value = cell.Offset(0, 2).Value + 2  
  
End If  
Next cell  
  
End Sub
```

Before

Average total sales	
Rep	Totale
Andrews	109,5925
Gill	349,974
Howard	268,375
Jardine	562,438
Jones	295,38
Kivell	777,36
Morgan	462,59
Parent	1.034,1
Smith	547,1433333
Sorvino	320,9025
Thompson	601,555
Importo totale	456,4623256

After

Average total sales	
Rep	Totale
Andrews	109,5925
Gill	351,006
Howard	268,375
Jardine	562,438
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Kivell	777,36
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Why do +1% and then -1% not restore the original value?

$$x \longrightarrow 1.01x \longrightarrow 0.99(1.01x) = 0.9999x \neq x.$$

Example: $125 \rightarrow 126.25 \rightarrow 124.9875$.

The second 1% is calculated on 126.25, not on the original 125. The final value is 0.01% below the original: this is not a rounding error.

Before creating the Restore button: save the original data once

1. **Foglio1** is the worksheet already supplied with the workbook. It contains the working dataset in **A1:G44**; do **not** create another sheet called **Foglio1**.
2. Do this **before** pressing +1% or -1%. If the data have already changed, reopen an unchanged copy of the workbook first.
3. Click the + beside the worksheet tabs to create one new blank sheet.
4. Rename the new sheet exactly **OriginalData**.
5. On **Foglio1**, select **A1:G44** and choose **Copy**.
6. On **OriginalData**, click cell **A1** and choose **Paste**.

Leave **OriginalData** visible and do not edit it!

It is simply the backup sheet that you have just created.

Add one simple Restore macro

Open **Developer** → **Visual Basic**. Paste this below **Shockpos** and **Shockneg** in the same module. If no module exists, choose **Insert** → **Module** first.

```
Sub RestoreOriginal()  
  
    ThisWorkbook.Worksheets("OriginalData").Range("A1:G44").Copy _  
        Destination:=ThisWorkbook.Worksheets("Foglio1").Range("A1")  
  
    ThisWorkbook.Worksheets("Foglio1").Calculate  
    ThisWorkbook.RefreshAll  
  
End Sub
```

Save the workbook as an Excel Macro-Enabled Workbook (.xlsm); otherwise Excel cannot save the VBA code.

What every part of the Restore macro means

VBA text	Meaning in this workbook
<code>ThisWorkbook</code>	The .xlsm file that contains this macro.
<code>Worksheets("OriginalData")</code>	The backup sheet that you created on the previous slide. The tab name must match exactly.
<code>Worksheets("Foglio1")</code>	The existing working sheet supplied with the dataset. If you renamed its tab, change this text in the macro too.
<code>Range("A1:G44")</code>	The header, all 43 observations and the formulas in column G.
<code>Copy Destination:=...Range("A1")</code>	Copies the saved block back over the working dataset, beginning at cell A1.
<code>_</code> at the end of the line	Continues the same VBA instruction on the next printed line; it is not a sheet name.
<code>Calculate</code>	Recalculates the formulas on <code>Foglio1</code> .
<code>RefreshAll</code>	Updates the PivotTable after the original data have been restored.

Create and test the Restore button

1. Return to the worksheet **Foglio1**.
2. Choose **Developer** → **Insert** → **Button (Form Control)**. On macOS, choose **Developer** → **Button**.
3. Draw the button on the sheet. When **Assign Macro** opens, select **RestoreOriginal** and click **OK**.
4. Rename the button **Restore original data**.
5. Test it: click +1%, then -1%. A cost of 125 becomes 124.9875. Now click **Restore original data**: it returns to 125 and the PivotTable returns to its initial values.

If the Developer tab is hidden: Excel → Settings (or Preferences) → Ribbon & Toolbar → enable Developer.