Microsoft Excel 2010 Step-by-Step Exercises

PivotTables and PivotCharts: Exercise 4

In this exercise you will:

- Use PivotTable Filters to control which data is displayed
- Filter the PivotTable using Slicers
- Customise Slicers to create a user-friendly Dashboard

Introduction

This exercise assumes that you have completed the steps in Exercise 3 and continues from the point where you saved the workbook after *Step 45*. If you didn't save your work, or wish to omit the previous exercises, you can download a copy of the completed Exercise 3 workbook *CommodityShipments (PivotTables PivotCharts).xlsx* from my web site at http://www.fontstuff.com/training/excel/stepbystep.htm

The Project So Far

In Exercise 3 we increased the complexity of the PivotTable by adding another field, and experimented with layout, grouping and nesting of fields. The PivotTable displays the total tonnage of shipments made between a number of countries in North and South America to a number of countries in Europe. The exporting countries are listed in the first column of the PivotTable, grouped by region (*North America* and *South America*) and by *Year*, the latter group being collapsed so that the individual exporting countries are not shown. The top two rows of the PivotTable show the names of the destination countries and the month of the shipment. The PivotTable worksheet currently looks like this (*Fig. 1*):

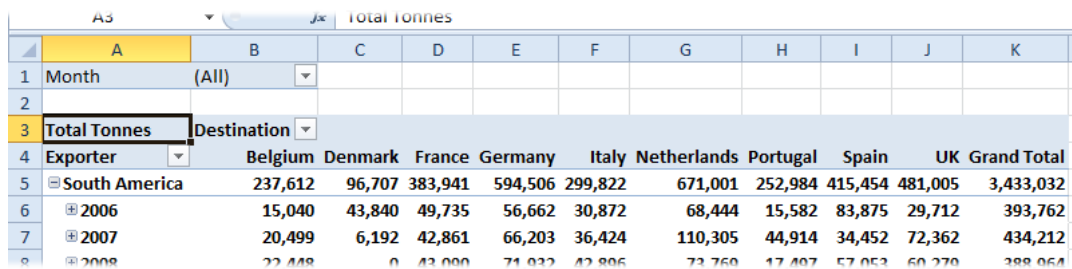*Fig. 1 The PivotTable created in Exercise 3.*

Applying Filters

As you can see, the PivotTable is beginning to get crowded, and we haven't included all the available fields yet. One way to simplify things is to filter the data so that the PivotTable displays only that data that we are interested in at any time. Excel offers several ways to do this.

Step 46:   Go to the **Column Labels** box on the **PivotTable Field List** and drag the **Month** button into the **Report Filter** box.

Note: Alternatively, you could click the down-arrow on the ***Month*** button and choose **Move to Report Filter** from the menu.

In case you were wondering why Excel didn't start the PivotTable in the first row of the worksheet, here's why. In the upper left corner of the worksheet Excel has created a *Report Filter* using the *Month* field (*Fig. 2*). It currently shows *(All)* indicating that data for all the available values in the *Month* field is being displayed.

Fig. 2 Excel has created a Report Filter for the Month *field.*

If you have used worksheet filters in Excel before you will be familiar with this tool. Let's filter the PivotTable to show the data for a chosen month.

Step 47:   Click the down arrow on the filter button (to the right of *(All)*). Excel displays a list of the unique items it finds in the *Month* field. Place a tick in the checkbox marked **Select Multiple Items** so that each item is given its own checkbox. Click the checkbox next to **(All)** to deselect all the checkboxes then click on **1** to place a tick in the checkbox for month *1*. Click the **OK** button to apply the filter (*Fig. 3*).
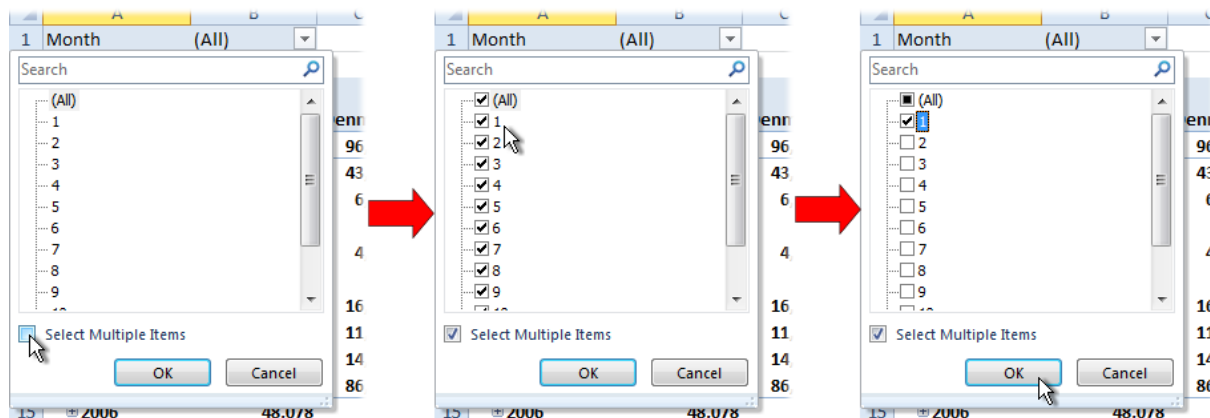

Fig. 3 Apply a filter to the Month *field.*

The Report Filter now shows the number *1* and a small filter icon to indicate that the PivotTable is currently displaying filtered data for the value *1* in the *Month* field. The data on the PivotTable has changed accordingly (*Fig. 4*).

Fig. 4 The PivotTable is now displaying filtered data.

The Report Filter tool allows you to choose more than one item from the list…

Step 48:   Open the **Report Filter** by clicking the button that now shows a down arrow and a filter icon and place ticks in the checkboxes for months **2** and **3**, then click **OK** to apply the filter (*Fig. 5*).

The PivotTable data is now filtered to show the values for months *1*, *2* and *3*. The text on the Report Filter button now reads *(Multiple Items)* indicating that the PivotTable is now displaying data filtered by more than one value in the *Month* field (*Fig. 5*).
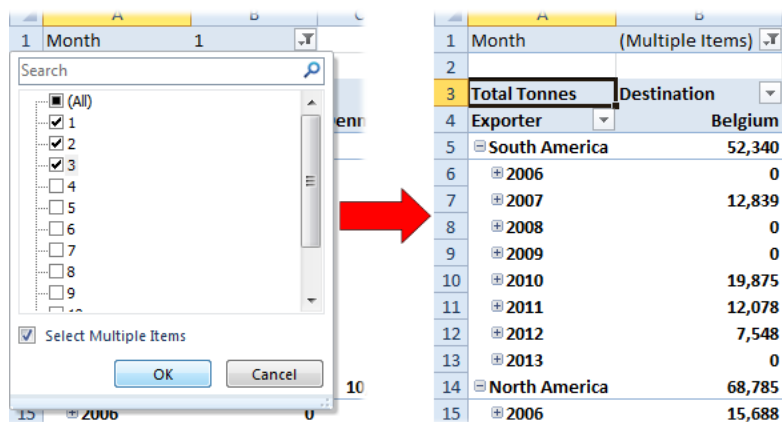

Fig. 5 Filtering by multiple values of a field.

If we had left the *Month* field in the PivotTable and kept it visible, it would be clear which items have been filtered for, but since we removed that field earlier we now have a problem. Unless we open the Report Filter and take a look we can't see the filter values simply by looking at the PivotTable. Fortunately, we have a fix for that which we will come to in a little while.

In the meantime let's include another field in the filter. This time we will use a different method to apply the filter. Take a look at the upper section of the *PivotTable Field List*. Note that adjacent to the *Month* field entry there is now a filter icon indicating that the PivotTable is filtered by that field.

Try this: Point at the filter icon adjacent to the **Month** field in the upper part of the **PivotTable Field List** so that a down arrow appears and click it. Excel displays a filter tool identical to the one you just used for the Report Filter. The tool shows which values are currently chosen and allows you to make changes if you wish. Click the **Cancel** button to close the filter tool without making any changes.

Excel allows you to apply a filter directly from the PivotTable Field List.

Step 49:   Point at the **Commodity** field in the upper part of the **PivotTable Field List** and click the down arrow that appears to open the filter tool. Click the checkbox next to **(Select All)** to deselect all the items then place a tick in the checkbox for **Soybeans**. Click **OK** to close the filter tool and apply the filter.

Now that a filter has been applied to the *Commodity* field a filter icon appears against its entry in the upper part of the PivotTable Field List (*Fig. 6*). This is the only indication that the data displayed in the PivotTable has been filtered by the *Commodity* field.
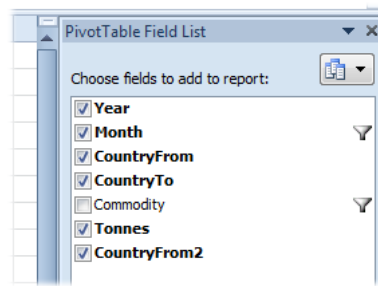
Fig. 6 Filter icons indicate which fields have filters applied.

If the PivotTable Field List were not visible then there would be no indication at all that a filter had been applied to the *Commodity* field. Another problem! But again there is an easy way to deal with it…

Step 50: Go to the **PivotTable Field List** and drag the **Commodity** field into the **Report Filter** box.

The Report Filter in the upper left corner of the worksheet now includes the *Commodity* field (*Fig. 7*). It also shows that the data has been filtered for *Soybeans*. The PivotTable itself has moved down the worksheet one row to accommodate the new item in the Report Filter. If more than one item had been chosen from the *Commodity* field the Report Filter would show *(Multiple Items)* as it does for the *Month* field.
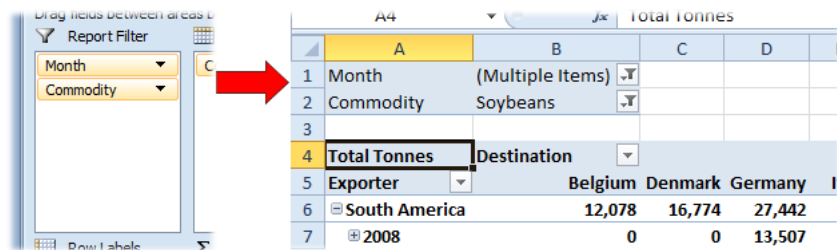

Fig. 7 Adding the Commodity *field to the Report Filter.*

The ability to filter the data displayed in a PivotTable is a useful and important feature but, as you have seen, it is not ideal. In fact, it has probably been retained in recent versions of Excel to maintain compatibility with earlier versions of the program. Now we have a much more user-friendly tool, the *Slicer*.

Adding Slicers

The slicer is a user-friendly tool that facilitates the filtering of PivotTable data whilst giving a visual indication of the values making up the filter.

Note: Until now we have been filtering fields that were not otherwise displayed in the PivotTable. This does not have to be the case. There is no reason why you should not apply a filter to any field, whether separately visible on the PivotTable or not.

Step 51: Go to the **Options** tab of the **PivotTable Tools** section of the Ribbon and in the **Sort & Filter** group click the **Insert Slicer** button to open the *Insert Slicer* dialog box. Click the checkboxes next to **Month** and **Commodity** to place a tick in each then click **OK** (*Fig. 8*).
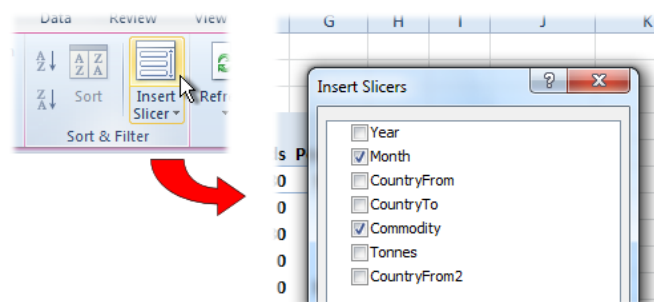

Fig. 8 Adding slicers to the PivotTable.

Excel has added two slicers to the worksheet. As you can see, a Slicer is a form of dialog box that performs the same function as the Report Filter, but with a friendlier user interface. There is one Slicer for each of the specified fields, the name of the field being shown at the top. As with the Report Filter, each Slicer presents you with a list of the unique items it finds in its field, arranged in alphabetical order. Each item is in the form of a button which is shown highlighted when the Slicer is applying a filter for that item. You can see that, because we had already applied a filter to the PivotTable, the *Month* Slicer has months *1*, *2* and *3* highlighted, and the *Commodity* Slicer has *Soybeans* highlighted (*Fig. 9*).

Fig. 9 Excel created a separate Slicer for each specified field.

Note: Although in this exercise you created Slicers for field that had already been filtered using the Report Filter tool, you do not have to work this way. To filter the data on a PivotTable you can use the Report Filter or a Slicer or both, whichever method you prefer.

Step 52:   Go to the **PivotTable Field List** and drag the **Commodity** button from the **Report Filter** box to an empty space on the worksheet (*Fig. 10*). Do the same with the **Month** button.
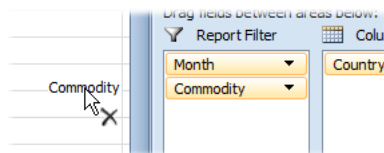
Fig. 10 Drag the Commodity *button into an empty space.*

Doing this removes the two fields from the Report Filter section of the worksheet but leaves the Slicers we added intact.

Using a Slicer

The usual rules for selecting items apply when using a Slicer. Here are some examples:

Step 53:   On the **Commodity** Slicer click on **Barley**.

Now *Barley* is selected instead of *Soybeans* and the PivotTable data changes accordingly. Selecting a single item like this automatically de-selects any other items on the same Slicer.

Step 54:   Hold down the **[Shift]** key and on the **Commodity** Slicer click on **Rice**.

Now *Barley*, *Maize* and *Rice* are all selected and the PivotTable data changes accordingly. To select a number of adjacent items on the Slicer, select the first item then hold down the [Shift] key whilst clicking on the last one.

Step 55:   Hold down the **[Ctrl]** key and on the **Commodity** Slicer click on **Wheat**.

This adds *Wheat* to the existing selection and the PivotTable data changes accordingly. When selecting non-adjacent items on the Slicer, hold down the [Ctrl] key whilst clicking on each additional item.

In the upper-right corner of the Slicer, to the right of the name of the field to which it applies, is a button with an icon of a filter and a red cross. This is used to clear the filter.

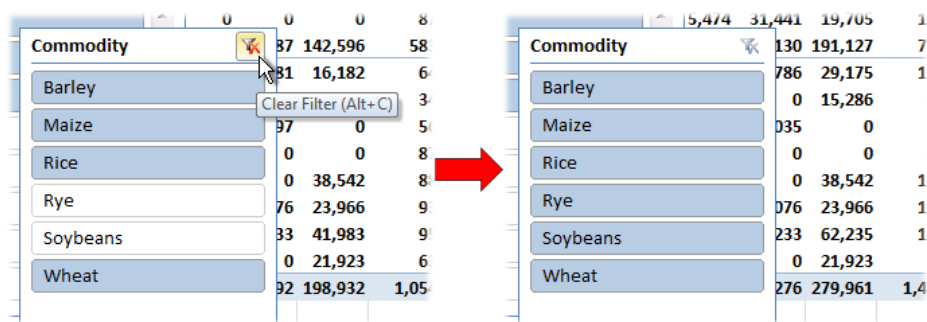> **Step 56:**   Click the **Clear Filter** button on the **Commodity** slicer (*Fig. 11*).

Fig. 11 Clearing the Slicer's filter.

When you clear a Slicer's filter it removes any filter rules that were applied and selects all the buttons on the Slicer to indicate that all available data for that field is being shown on the PivotTable. In addition, the Clear Filter button is then disabled (greyed-out). The enabling and disabling of the Clear Filter button confirms whether or not any filter is applied on that Slicer even if you cannot see all of its buttons.

Removing a Slicer

You can also clear a filter from the PivotTable by removing the Slicer itself (as long as you do not have a Report Filter in place for the same field).

> **Step 57:**   Right-click on the **Month** Slicer and choose **Remove "Month"** from the menu.

> **Note:** If at first you get a different menu then click somewhere else on the Slicer and try again. You can also remove a Slicer by selecting it and pressing the [Delete] key.

When you removed the *Month* slicer the data on the PivotTable changed again because its removal also cleared the filter from the *Month* field. However, if a filter was being applied by a Slicer when it is removed Excel remembers the filter settings for that field even though it ceases to apply them.

> **Try this:** take a look at the **PivotTable Field List** (click on the PivotTable if it is not visible). Notice that there is a filter icon adjacent to the *Month* field entry in the list. Point at the filter icon and click the down arrow that appears. When you do this a filter tool opens showing the same selection of items that were selected on the Slicer when you removed it. There is also an option to *Clear Filter From "Month"*. Leave that as it is. Click **Cancel** to close the filter tool. Now go to the ribbon and ask for a Slicer for the **Month** field. When the *Month* slicer returns it has the same items selected as before and immediately applies the filter to the PivotTable. This shows that when a Slicer is removed, Excel remembers any filter that it was applying at the time and re-applies it if the Slicer is reinstated. **Remove** the **Month** slicer as you did before so that only the **Commodity** Slicer remains.

Before moving on to the next section we will make a change to the PivotTable…

> **Step 58:**   Go to the **PivotTable Field List** and in the **Row Labels** box click the down arrow on the **Year** button and choose **Remove Field** from the menu.

> **Step 59:**   Go to the **Options** tab of the **PivotTable Tools** section of the Ribbon, click the **Insert Slicer** button, select the **Year** and **CountryFrom** fields and click **OK**.

Customizing Slicers

As well as providing an easy and user-friendly way of applying filters to a PivotTable, Slicers give a visual indication of which data is being displayed even when the fields themselves are not included in the PivotTable. Using Slicers you can start to build your PivotTable into a powerful *Dashboard* for presenting your business data.

You can use the same methods to move and arrange Slicers as you would any other object (such as a drawing or a chart). Move a Slicer by dragging it by its title bar, or select the Slicer by clicking on it then use the [Arrow] keys on your keyboard to move it up, down, left or right on the worksheet.

Notice that when a Slicer is selected the PivotTable Field List disappears along with the PivotTable Tools section of the Ribbon. Instead a Slicer Tools section appears with its own Options tab showing a range of tools specific to Slicers.

Step 60:   Arrange the **Year**, **CountryFrom** and **Commodity** slicers in a row below the PivotTable. Select all three slicers by clicking on the first and holding down **[Ctrl]** whilst clicking on each of the others then on the **Options** tab of the **Slicer Tools** section of the ribbon click **Arrange** then **Align Top**. Click **Arrange** again and choose **Distribute Horizontally**.

You now have the three Slicers neatly arranged and aligned with each other (*Fig. 12*).

Total Tonnes	Destination									
Exporter	Belgium	Denmark	France	Germany	Italy	Netherlands	Portugal	Spain	UK	Grand Total
⊟ **South America**	237,612	96,707	383,941	594,506	299,822	671,001	252,984	415,454	481,005	3,433,032
Argentina	50,581	64,927	161,517	217,817	79,310	208,328	56,861	192,587	183,471	1,215,399
Brazil	95,073	4,529	103,191	117,341	106,720	289,679	101,406	130,703	134,513	1,083,155
Mexico	91,958	27,251	119,233	259,348	113,792	172,994	94,717	92,164	163,021	1,134,478
⊟ **North America**	153,824	86,987	196,895	366,858	247,833	534,641	103,794	212,922	371,433	2,275,187
Canada	42,665	11,461	113,593	243,399	103,270	262,345	54,801	110,135	155,833	1,097,502
USA	111,159	75,526	83,302	123,459	144,563	272,296	48,993	102,787	215,600	1,177,685
Grand Total	391,436	183,694	580,836	961,364	547,655	1,205,642	356,778	628,376	852,438	5,708,219

Year	CountryFrom	Commodity
2006	Argentina	Barley
2007	Brazil	Maize
2008	Canada	Rice
2009	Mexico	Rye
2010	USA	Soybeans
2011		Wheat
2012		
2013		

Fig. 12 The PivotTable with three Slicers.

A range of colour schemes can be applied to Slicers, to match or contrast with that of PivotTable. The available colour schemes are shown on the *Slicer Schemes* section of the *Slicer Tools, Options* tab of the Ribbon. Each style has a name and you can define a style of your own if required. The current style is shown highlighted. Simply click on another to apply it (*Fig. 13*).

Fig. 13 Applying a style to a Slicer.

Step 61:   Click on the **Title Bar** of one of the Slicers to select it and go to the **Slicer Styles** section of the **Slicer Tools, Options** tab of the Ribbon. Click the lower down arrow of the **Slicer Styles** box to display a wider range of styles, then click on one to apply the style to the selected Slicer. Repeat with the other Slicers (*Fig. 14*).

Fig. 14 Different styles applied to Slicers.

In addition to the cosmetic changes that can be made to Slicers, a number of options are available to control how they behave in use. The following steps demonstrate the usefulness of some of these.

> **Step 62:** On the **Year** Slicer click on **2006** then on the **Commodity** Slicer click on **Soybeans**.

As you made your selections the PivotTable changed to reflect the filters you just applied. You will also see two features of Slicers over which you have some control (*Fig. 15*).

Fig. 15 Using Slicers to filter for 2006 *and* Soybeans*.*

Notice that on the *CountryFrom* Slicer the button for *Brazil* has moved to the bottom of the list (the list items were previously in alphabetical order) and its appearance has changed, looking greyed-out. This is a visual indication that the source data contains no shipments of Soybeans from Brazil in 2006.

> **Try this:** Although greyed out the *Brazil* button has not been disabled. To confirm this click the **Brazil** button on the **CountryFrom** Slicer. The *2006* and *Soybeans* buttons remain selected but their appearance has now changed, and all the data has disappeared from the PivotTable, confirming that there is no data for *2006*, *Soybeans* and *Brazil*. Return the PivotTable to its previous appearance by clicking the **Clear Filter** button on the **CountryFrom** Slicer.

You can dictate the way that a Slicer behaves by changing its options.

> **Step 63:** Click the **Title Bar** of the **CountryFrom** Slicer to select it then go to the **Slicer Tools, Options** and click the **Slicer Settings** button. In the **Slicer Settings** dialog box remove the tick from the checkbox labelled **Visually indicate items with no data**. Leave the dialog box open.

> **Step 64:** In the **Caption** textbox of the **Slicer Settings** dialog box change the entry from *CountryFrom* to **Exporter**. Click the **OK** button to close the dialog box and apply the changes (*Fig. 16*).
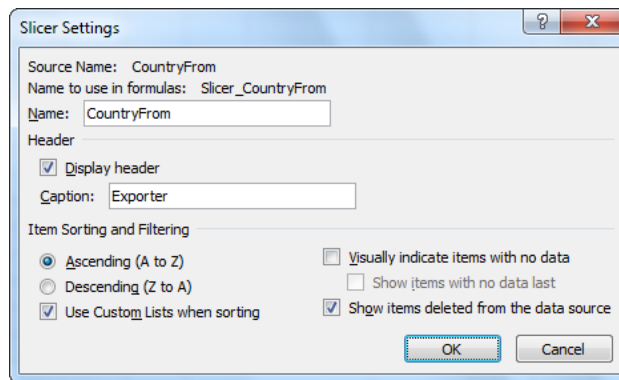
Fig. 16 The Slicer Settings dialog box.

The *Brazil* button has disappeared from the *CountryFrom* Slicer which now displays the title *Exporter*. Notice also that the neat horizontal arrangement of the Slicers has also changed and there is now a wider gap between the *Exporter* and *Commodity* Slicers (*Fig. 17*).

Fig. 17 The position and appearance of the Slicers have changed.

The horizontal alignment of the slicers has changed because the default behaviour of an object on a worksheet is to move with the underlying cells. As the dimensions of the PivotTable change when the data changes, the Slicers may also change position.

> **Try this:** Select **2007** on the **Year** Slicer and **Argentina** on the **Exporter** Slicer. Notice that the *Commodity* Slicer has now moved some distance to the left and now sits partially behind the *Exporter* Slicer.

To prevent this behaviour another setting must be changed.

> **Step 65:** Remove the filters applied by the three Slicers by clicking the **Clear Filter** button on each one.

The PivotTable has now returned to the condition it was in when the slicers were first positioned on the worksheet.

> **Step 66:** Select all three Slicers by clicking on the Title Bar of the first one and holding down **[Ctrl]** whilst clicking on each of the others. On the Ribbon go to **Slicer Tools, Options** and click **Group** then **Group**.
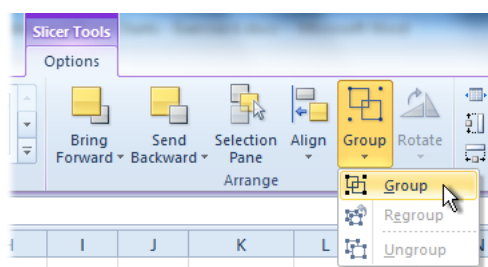

Fig. 18 Group the selected Slicers.

A box appears around the three Slicers indicating that they are now grouped and as such can be treated as a single object on the worksheet. Their positions in relation to each other will not change, but each member of the group can still be selected individually if changes are to be made to their properties or other options.

Step 67: Choose **2007**, **Argentina** and **Soybeans** from the appropriate Slicers and notice that their positions relative to each other no longer change (*Fig. 19*).

Fig. 19 Grouping Slicers maintains their spacing on the worksheet.

As mentioned earlier, Slicers can be treated like other worksheet objects and individually moved or sized in the usual way by dragging the handles that appear around the edge of each when they are selected. The same applies to a group of slicers. For example…

Step 68: Make sure no Slicers are selected by clicking on an empty cell on the worksheet then click on the Title Bar of one of the Slicers. This selects the whole group. Point at the sizing handle midway down the right hand edge of the group box so that a horizontal two-headed arrow appears, then drag to the left to resize the slicers, leaving them wide enough to display all their text items (*Fig. 20*).
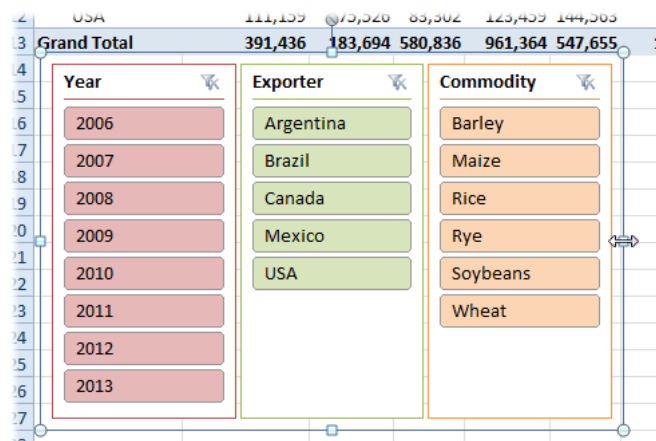

Fig. 20 The Slicers can be resized as a group.

Note: You might notice that although grouping prevents the horizontal spacing of a group of Slicers from changing, their relative widths might change. If this becomes a problem right-click on a Slicer, a selection of Slicers, or the group (whichever is appropriate) and choose *Size and Properties* from the menu. In the *Properties* section of the dialog box choose *Don't move or size with cells*.

If space is limited, the height of the Slicers can also be changed. Note that, although all the items are on display, there is empty space in both the *Exporter* and *Commodity* Slicers.

Step 69: Use the sizing handle midway along the lower edge of the Slicer group box to reduce the height of the slicers, so that all the **Commodity** items remain visible (*Fig. 21*).

This also illustrates what happens if there is not enough room on the Slicer to display all the items in that Slicer's field. The *Year* slicer now has a scrollbar to allow the user access to all the available *Year* items.
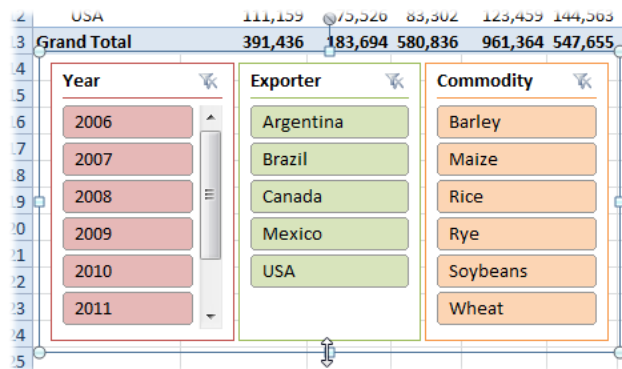
Fig. 21 The height of the Slicer group has been reduced.

If you would prefer not to see a scrollbar on a slicer, and space permits, you can use the option to show the items in multiple columns.

> **Step 70:** Select just the **Year** Slicer (this might require one or two clicks depending on its current selection status) then on the Ribbon go to **Slicer Tools, Options** and change the **Columns** setting to **2**.

The items on the *Year* Slicer are now shown in two columns so that all the available choices are on display without the user having to scroll (*Fig. 22*).
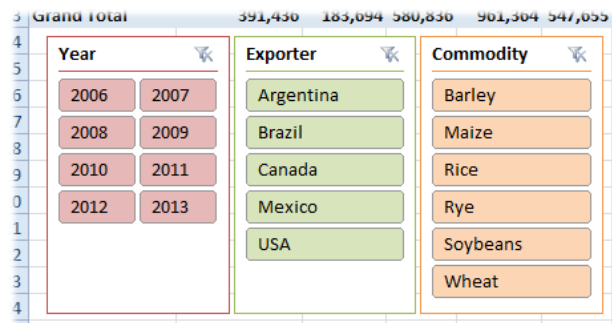

Fig. 22 The Year *Slicer now shows two columns of buttons.*

Most of the remaining Slicer options are self-explanatory and deal with the appearance or positioning of Slicers on the worksheet. An important exception is the *PivotTable Connections* tool. This tool allows the user to use a single Slicer to filter more than one PivotTable. When a Slicer is selected and the PivotTable Connections button clicked Excel displays a dialog box listing the available PivotTables for the selected Slicer (*Fig. 23*). Simply place a tick against the PivotTables you want the Slicer to filter and click *OK*.
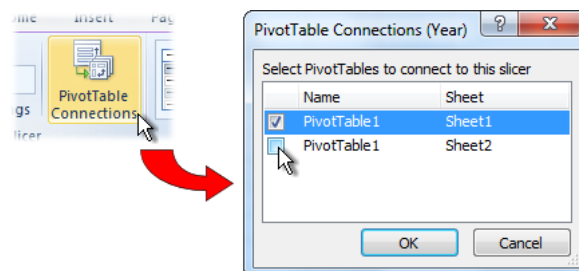

Fig. 23 Use PivotTable Connections to filter multiple PivotTables.

Conclusion

This concludes Exercise 4. In this exercise you have learned how to use Filters to control which data is included in the PivotTable, and discovered how to employ Slicers to perform the same task in a more efficient and user-friendly way. The next exercise will continue from this point so if you wish to proceed to the next exercise you should save the file in its current state.