Exercise 3: Introduction to DAX

In the next steps you will replace the source file and add all available tables within the new source file. The new file adds data to different scenarios as well as taxation.

1. Replace the source of “Exercise 2.xlsx” with “Exercise 3.xlsx” (same steps as in Exercise 2) and apply changes
2. Import the Sheet “Scenario” from “Exercise 3.xlsx”
3.  In model view: connect ‘Scenario’[Scenario ID] to ‘Fact’[Scenario ID]:

   ‘Scenario’[Scenario ID] ⟷ ‘Fact’[Scenario ID]:

4. Import the data from the sheet “regions_countries_VAT” from the Excel file “Exercise 3 regions_countries_VAT.xlsx”.

Now we will use DAX and new visuals to improve our reporting to fit the new data we added to the model.

5.  In Data view, select fact table and add following **calculated columns**:
   a. VAT: displays column “VAT” from table “regions_countries_VAT”

      Hint

      Add via the RELATED() function:

      ```
      VAT = RELATED(***related table name***[***related column name***])
      ```

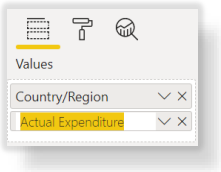
   b. Pick field “IT Sub Area” or “IT Sub Area ID” from table “IT Area”. Change the aggregation to “Count(Distinct)”.
   c. Total_expenditure: displays the sum of the columns Value and Value_times_VAT
6.  In data view: add following **measures** to the fact table:
   a. Actual = CALCULATE(SUM([Total_expenditure]), Scenario[ScenarioDescription]= "Actual")

      Hint

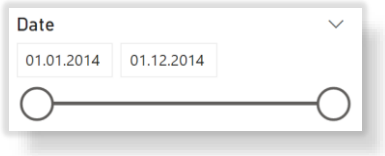
      You will want to sum up all entries in calculated column “Total_expenditures” in Fact table where ScenarioID equals 1, which corresponds to scenario description = “Actual” in Scenario table.

   b. Plan: Sum over total_expenditure with filter on Scenario[ScenarioDescription]= "Plan" (analogous to measure “Actual”)
   c. perc_deviation_plan_actual: values from column “Plan” minus values from column “Actual” divided by Actual
7.  In report view: add a new sheet and call it “Exercise 3”. Add following visualizations:
   a. Visualize the percentage difference between planned and actual expenditures(perc_deviation_plan_actual) per country in a clustered column chart. Give the chart a meaningful title.
   b. There are many countries with a deviation of -1. That means there were expenditures in 2014 even though no expenditures at all had been planned. To account for these cases, do the following steps.

c. Add a filter on the clustered column chart on perc_deviation_plan_actual so it does not show values of -1



d. Add a table with countries and their actual expenditures. Add a filter for those countries that do not have planned expenditures. Rename the column “Actual Expenditure” (Double click on “Actual” in Values section of visual)
e. Add a title for the table: “Countries with no planned expenditures”
f. Add a slicer with date values from Fact table:



g. Play with the slicer. Why do the entries in the table “Countries with no planned expenditures” vanish, if we select a period that ends before August 2014?
h. Click on measure “Actual” in Fact table. Add “+0” at the end of the DAX formula.
i. Play again with the slicer. Do the countries still vanish if we select a period before August 2014? Why?

Bonus Exercise:

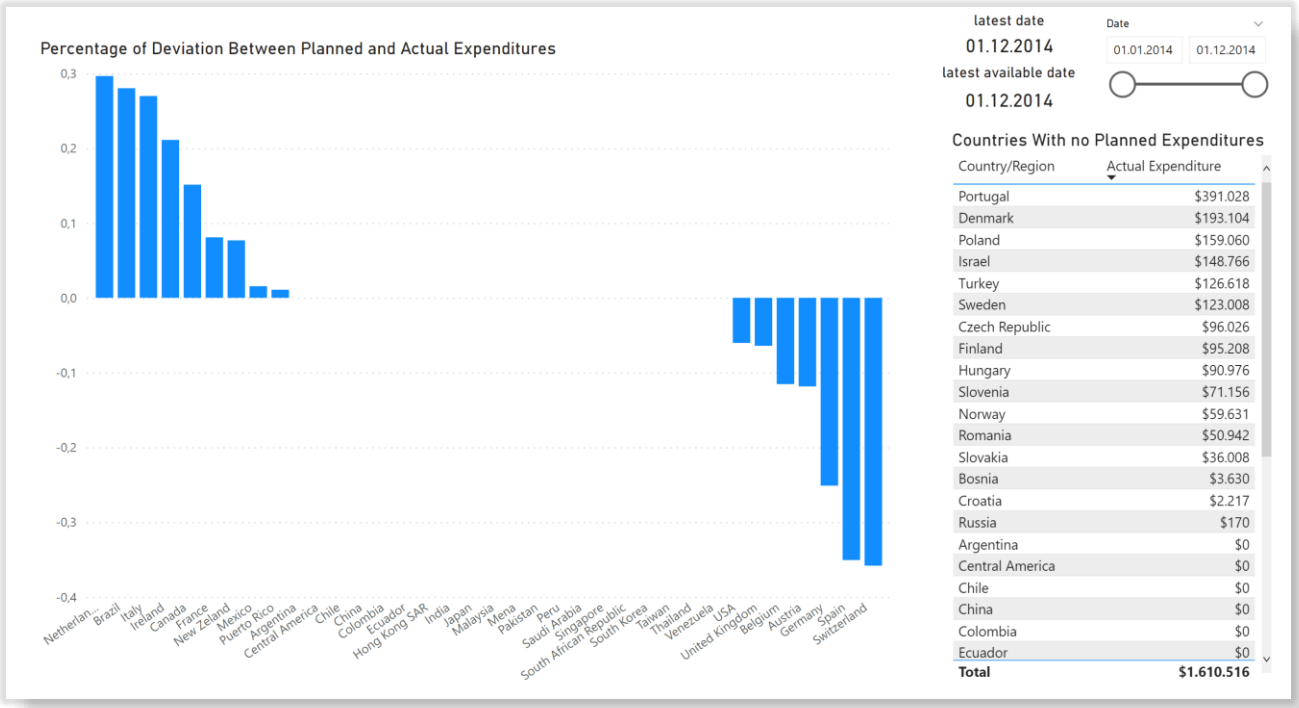
8. In Fact table, create a measure for the maximum available date:

```
max_date = max('Fact'[Date])
```

9. Add a card visual that displays the latest date. Format the visual, so it looks like in the screenshot on the next page.
10. Play with the date slicer. Why does the latest available date change?
11. From “Exercise 3.xlsx”, import sheet “Date”.
12. In date table: add a measure with the maximum available date:

```
universal_max_date = max('Date'[Date])
```

13. Add another card visual containing universal_max_date.
14. Try formatting the report, so it looks like in the below screenshot.



Reminder of important DAX-Syntax

- *Mathematical operators: +-*/*
- *Concatenation of strings: &*
- *Reference to a column from the same table via square brackets []*
- *Reference to a column from another table via "RELATED()"*