



STEPS OF QUANTITATIVE ANALYSIS – PART 1: Identifying high growing industries

The following instructions assume calculations for 2008-2010 period but could refer to any chosen period (you just adjust the number of years in the period in the calculations). Given the change in the standard classification codes in 2008 (and also given the change in the economic conditions in the same year) it makes sense to calculate growth rates for two periods: up to 2007 (the starting year depending on the data you have available); and for 2008-2010. In this case, you will have two excel files as the result of your exercise.

The Excel file (also attached) demonstrates the presentation and the calculations of the data on the case of Slovenian data.

1. Create an Excel file where you list all of the industries (with their NACE code and its description). This will be the framework on which you will the data and calculations will be added.
 - a. You might have 3-digit or 4-digit NACE data available; both can be used. In the case of small countries, it makes more sense to use 3-digit level data, since otherwise some industries will only contain a few companies and the resulting growth rates will heavily depend on outliers.
2. Add the available data for each industry: employment, sales (or operating revenue), export, number of firms, number of company births (if available).
 - a. Add the data for each year.
 - i. If the data was supplied to you in different tables for each year, make sure all years have the same list of industries (for example, if industry “Hunting, trapping and rel.ser.act.” did not have any firms and value created in 2010, but still existed in 2008 – and if the data for 2010 simply left out this industry since the values would be 0 anyway – than you would get a mismatch in the industry list when you put both years in the same table).
 - b. Some data (sales, operating revenue, export) are expressed in monetary values and it will probably be provided to you in the current prices (prices of the year the data refer to). To be able to get realistic estimates of growth, you need to make adjustment for inflation. So you need to convert the data into constant prices (by dividing the data in current prices by a price index).
 - i. I have used consumer price index for this purpose.
 - ii. Which year to choose as the base year (where CPI=100)? Any year, as long as you use it consistently. You might choose the first year for which you have the available data (eg. 2002).
 - iii. For all calculations that follow, you use the data in constant prices.
3. Calculate additional measures: export intensity (share of export in sales), operating revenue (or sales) per employee, and export per employee.



- a. Export intensity is a useful measure to identify industries that are competing on the global markets. You use it for choosing the relevant industries, along with the growth measures. It is enough to have it for the last year in the period only (in our case, 2010).
 - b. If employment in 2010 equals 0, the results will show as “#DIV/0!”. Just ignore this; if the industry in question did not create any employment in 2010, it is of no interest anyway.
4. Calculate growth rates of the relevant measures:
- a. Insert the columns you will need for growth rates to the left of the data (in this way you will have a better overview over the results). In our case, columns C to I.
 - b. You calculate the average growth rate using the data for the last year, first year, and the number of years. You can see the formula used in Excel if you position yourself on the relevant cell (and if you click on the cell twice, the cells that are used for calculations will show; you can leave this view by Esc or clicking elsewhere).
 - i. The logic of the formula used to calculate average growth rates is explained for example here: <http://pages.uoregon.edu/rgp/PPPM613/class8a.htm> (see »2. Calculating Average Annual (Compound) Growth Rates«).
 - ii. A simple explanation would be: you are looking for a growth rate with which eg. employment in 2008 was able to rise to employment in 2010; this will be an average growth rate for this period (it is not appropriate to calculate a simple average out of the 2008-09 and 2009-10 year-to-year growth rates).
 - c. In some cases, “#DIV/0!” might show again. The reason for this is that for this industry, the data was not available for the first year in the period (2008). This is possible if this industry have only recently been populated by companies. If this is the case and if you do have the data for 2009, you need to readjust the formula accordingly:
 - i. You filter out only those industries where “#DIV/0!” shows up (using Data – Filter).
 - ii. Check whether the data for 2009 and 2010 exist. If yes, click on the cell to activate the formula, change 2008 data point for the 2009, and do not forget to change the year in the formula too – from 2008 to 2009.
 - iii. Drag this readjusted cell to the rest of the industries with the same problem.
 - iv. If it still shows “#DIV/0!”, this means that the data (different to 0) only started in 2010. Then leave it as it is.
5. Now you should have the relevant calculations for all industries.