Problem sets 1: Data and measuring business cycles

EE312: Intermediate macroeconomics

Semester 1/2018

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Due on August 24th ,2018 at the BE office. (before 3 pm)

1. (Moderate) In year 1 and year 2, there are two products produced in a given economy, computers and bread. Suppose that there are no intermediate goods. In year 1, 20 computers are produced and sold at $1,000 each, and in year 2, 25 computers are sold at $1,500 each. In year 1, 10,000 loaves of bread are sold for $1.00 each, and in year 2, 12,000 loaves of bread are sold for $1.10 each.
   1.1) Calculate nominal GDP in each year.
   1.2) Calculate real GDP in each year, and the percentage increase in real GDP from year 1 to year 2 using year 1 as the base year. Next, do the same calculations using the chain-weighting method.
   1.3) Calculate the implicit GDP price deflator and the percentage inflation rate from year1 to year 2 using year 1 as the base year. Next, do the same calculations using the chain-weighting method.
   1.4) Suppose that computers in year 2 are twice as productive as computers in year 1. That is, computers are of higher quality in year 2 in the sense that one computer in year 2 is equivalent to two computers in year 1. How does this change your calculations in parts (1.1) to (1.3)? Explain any differences.

2. (Tedious) Working with the real DATA

   This question requires obtaining data from various sources. For the latest data of GDP, you can access the data from NESDB website.

   http://www.nesdb.go.th/main.php?filename=QGDP_report

   Click to the only one excel file that appears in the page. You can access the data of price indexes from

   2.1) Write down the series of real and nominal GDP (with seasonal adjustment) during the past eight quarters.
   2.2) Calculate the Y-o-Y growth of real GDP during the past 4 quarters. Compare and contrast your calculation using both seasonally-adjusted and seasonally-unadjusted. Are they the same? **Show your work!**

2.3) Write down the (seasonally-adjusted) series of real private investment and real public investment. Calculate the weight of real private investment and real public investment in GDP. **Show your work!**

2.4) Calculate the Y-o-Y growth of GDP deflator and private consumption deflator during the past 4 quarters. **Show your work!**

3. (Hard) As we discussed in class, the CPI is calculated for a fixed market basket. It measures the change in the cost of the market basket from the base year until the current year. An index with the market basket fixed in the first year, like the CPI, is technically called a *Laspeyres index*. An alternative index, the *Paasche Index*, is based on a market basket in the end year. It measures the change in the cost of a market basket fixed in the end year. Suppose that the base is 20016, and further that the market basket contains only two items, wine and cheese, and the quantities consumed and prices in 20016 and 20017 are

	Wine		Cheese	
Year	price	units	price	units
2016	1	50	0.5	100
2017	1.2	45	2	150

   a. Calculate the rate of inflation for the Laspeyres (CPI) index and the Paasche Index.
   b. Will inflation calculated using the Laspeyres index always exceed inflation calculated with the Paasche index? (Hint: Use standard indifference curve analysis.)
   c. Workers often receive an adjustment in their wages equal to only a fraction of inflation as calculated using the CPI. In view of the preceding analysis, explain why workers would likely be better off than they were before if they were fully compensated for inflation. Would this also be the case if inflation was calculated using the Paasche index?