

Assignments in the Course Economic Statistics Autumn 2012

To be handed in personally or by mail to Daniel.thorburn@stat.su.se or left in his mailbox at the department

Assignments for September 11. 2012

Problems 2 and 5 in Chapter 1 Understanding National Accounts

Assignments for September 25, 2012

Assignment 3

Year	Salmon		Cauliflower		Bread		Milk	
	Price	Quantity	Price	Quantity	Price	Quantity	Price	Quantity
2007	98.10	7.1	14.10	25	24.35	45	9.95	100
2008	102.10	7.7	13.90	24	24.55	47	10.25	95
2009	105.10	7.5	13.75	27	25.10	48	10.20	97
2010	102	7.7	13.50	29	24.80	45	11.00	93

Consider the above artificial data. Assume that these are the data on food consumption

- a) Compute the food price indices I_{2007}^{2008} , I_{2008}^{2009} and I_{2009}^{2010} , according to the Laspeyres and Paasche index formulas (from the table).
- b) Compute the index I_{2007}^{2010} according to Laspeyres in two ways by chaining the three indices and by a direct computation, neglecting the intermediate years.

- c) There is also consumption of meat with the total value of 2220, 2140, 2240, 2320 during 2007-2010. The index for heating and petrol for the three years are

Between years	Index link (Laspeyre)	Total cost first year	Total cost second year
2007 – 2008	1.12	5 400	5 900
2008 – 2009	1.23	5 900	7 100
2009 – 2010	0.95	7 100	6 600

- c) Suppose that the total economy consists of these two sectors (and the food sector consists of the five mentioned commodities. Weight together the two sectors (food index from a) and heating from this table) with weights proportional to their respective total value to obtain the consumer price index links for the total economy. (Use Laspeyres)

Assignment 4

Year	Commodity 1		Commodity 2	
	Price	Quantity	Price	Quantity
1	10	100	20	50
2	15	100	15	40
3	10	100	20	50

Compute the indices I_1^2 , I_2^3 , and I_1^3 , with Laspeyres formula.
Compare $I_1^2 \cdot I_2^3$ and I_1^3 Comment!

For October 4

Assignment 5.

Classification plays a large role both in Economic Statistics NACE, COICOP and ISCO (in Sweden SSYK), COFOG are four important classifications (use Internet).

- What do they mean and what do they classify?
- Find one example of a statistical product for each, where that classification is used.
- Find the best scheme to classify the following items and classify them accordingly with as many digits as you can find. (All schemes may be found at Internet)
 - Veal cutlets
 - The petrol station south of the university
 - A professor in statistics
 - Snuff
 - Nokia
 - Stockholm university
 - Statistics Sweden
 - A sofa
 - IKEA
 - An ecological tobacco farm
 - A painter (an artist painting in oil)
 - A painter (of houses etc)

Assignment 6

Look at the first table in problem 3, where you calculated the price indices. Estimate approximately the standard error of the first index for food (Laspeyres 2007-2008, the correct estimate was 101.99). (Here you must suppose that the four items are from a large population of products).

Assignments 7 and 8 To be handed in next Thursday October 18, 2012

7) Select a time series on the home page of SCB: (Note: the whole paragraph is the address)

<http://www.ssd.scb.se/databaser/makro/Visavar.asp?yp=bergman&xu=scb&omradekod=NR&huvudtabell=ForsorjbalENS95Kv&omradetext=Nationalräkenskaper&tabelltext=BNP+fr%E5n+anv%E4ndningssidan+%28ENS95%29%2C+f%F6rs%F6rjningsbalans+efter+anv%E4ndning%2E+Kvartal&preskat=O&prodid=NR0103&deltabell=&deltabellnamn=BNP+fr%E5n+anv%E4ndningssidan+%28ENS95%29%2C+f%F6rs%F6rjningsbalans+efter+anv%E4ndning%2E+Kvartal&innehall=ForsorjbalENS95FpKv&starttid=1993K1&stopptid=2012K2&Fromwhere=M&lang=1&langdb=1>

The following is an example with the choice: GDP to market prices, fixed prices with 2011 as reference year, period 1993Q1-2012Q2. (The home page is in Swedish so you may have to use a translator i.e. Google translate if you do not understand Swedish). (I have not conferred with Anders Jäder. He may use this example in his lecture. You may still use it but describe what you do. If so you should compare with his analysis)

Try to make a seasonal adjustment of the series and give also a smoothed and seasonal adjusted series. You may use any method but I recommend X11-Arima in SAS, if you know SAS, or Seats Tramo, if you have access to that. If you have problems with these you may use the simple procedure that DT described in the lecture.

1993K1	1993K2	1993K3	1993K4	1994K1	1994K2	1994K3	1994K4	1995K1	1995K2
528960	538140	487986	564426	543802	559539	508740	592479	574967	580899
1995K3	1995K4	1996K1	1996K2	1996K3	1996K4	1997K1	1997K2	1997K3	1997K4
523779	611743	590125	588740	534557	614908	582478	613602	552476	642835
1998K1	1998K2	1998K3	1998K4	1999K1	1999K2	1999K3	1999K4	2000K1	2000K2
610747	634692	577607	668902	638346	660937	602459	706327	669692	695703
2000K3	2000K4	2001K1	2001K2	2001K3	2001K4	2002K1	2002K2	2002K3	2002K4
630937	727854	684732	700129	636838	736875	692724	725855	656556	751946
2003K1	2003K2	2003K3	2003K4	2004K1	2004K2	2004K3	2004K4	2005K1	2005K2
716705	733317	674995	768096	741715	767494	701556	804868	754823	797578
2005K3	2005K4	2006K1	2006K2	2006K3	2006K4	2007K1	2007K2	2007K3	2007K4
727549	831001	796372	823438	759298	865526	829613	850937	778071	893548
2008K1	2008K2	2008K3	2008K4	2009K1	2009K2	2009K3	2009K4	2010K1	2010K2
833544	870368	781494	846200	780209	811635	735143	837114	809333	863979
2010K3	2010K4	2011K1	2011K2	2011K3	2011K4	2012K1	2012K2		
791179	907075	860163	900091	825424	916856	875231	907095		

8) Exercise 4 in Chapter 10 of Understanding National Accounts. (First try to do it without looking at the solution, but since the second question involves matrix inversion you are allowed to look there. However, I want the solution given with your own words)

Assignment 5. To be handed in Thursday 25

9) You have the following data and want to compute a hedonic index for the price change in motor cars between the two years

Year 1

Brand	ABS-brakes	l/mile	Price KSEK	Units sold
Forpel	Yes	0.45	167	172
Mazota	No	0.39	112	48
Audedes	No	0.56	247	72
Fiada	No	0.27	135	130
Renolvo	Yes	0.47	189	210
Fordler	Yes	0.78	210	57

Year 2

Brand	ABS-brakes	l/mile	Price KSEK	Units sold
Forpel	Yes	0.45	170	112
Mazota	Yes	0.39	122	51
Audedes	Yes	0.49	267	64
Fiada	No	0.25	138	120
Renolvo	Yes	0.45	189	155
Fordler	Yes	0.57	235	48

- Do a linear regression where you use the brand, the two properties and the year to explain prices. Find the coefficients for ABS and petrol consumption. (It is not recommendable to have 12 data and 9 explaining variables, but this is just a training example. And since the data are matched the problem is not that big)
- Correct the prices by deducting the correct amount for the quality changes from the prices
- Compute a hedonic Fisher index for the price change.