

EE 325 Section 2 HW4

STATA practice

Chapter 8 Question 8.36 part a

In order to receive HW points for #8.36a, students must submit your STATA output table. No photocopy of STATA output table will be accepted.

- a. Estimate both the model for the full dataset (years 1970-2005) and 1970-1981

Time period: 1970-2005

Source	SS	df	MS			
Model	3071.63945	1	3071.63945	Number of obs =	36	
Residual	265277.864	34	7802.29012	F(1, 34) =	0.39	
Total	268349.503	35	7667.12867	Prob > F =	0.5346	
				R-squared =	0.0114	
				Adj R-squared =	-0.0176	
				Root MSE =	88.331	

savings	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
income	.0037239	.005935	0.63	0.535	-.0083375 .0157852
_cons	184.8291	27.89717	6.63	0.000	128.1352 241.5229

Time period: 1970-2001

Source	SS	df	MS			
Model	45563.8764	1	45563.8764	Number of obs =	32	
Residual	163505.173	30	5450.17244	F(1, 30) =	8.36	
Total	209069.05	31	6744.16289	Prob > F =	0.0071	
				R-squared =	0.2179	
				Adj R-squared =	0.1919	
				Root MSE =	73.825	

savings	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
income	.0185695	.0064224	2.89	0.007	.0054533 .0316857
_cons	145.2147	25.65029	5.66	0.000	92.82983 197.5996

Time period: 2002-2005

Source	SS	df	MS			
Model	20709.4728	1	20709.4728	Number of obs =	4	
Residual	13310.9538	2	6655.47688	F(1, 2) =	3.11	
Total	34020.4266	3	11340.1422	Prob > F =	0.2198	
				R-squared =	0.6087	
				Adj R-squared =	0.4131	
				Root MSE =	81.581	

savings	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
income	-.1549933	.0878654	-1.76	0.220	-.5330476 .223061
_cons	1430.992	741.6149	1.93	0.193	-1759.919 4621.904

- b. Using Chow test, determine if there is a significant difference between 2002-2005 and the full dataset.

The Chow test for this question is constructed as follows:

$$RSS_{UR} = RSS_{pre2002} + RSS_{post2002} = 163,505.173 + 13310.9538 = 176,816.1268$$

$$F = \frac{(RSS_R - RSS_{UR})/k}{(RSS_{UR})/(n_1 + n_2 + k)} = \frac{(265277.871 - 176,816.1268)/2}{(176,816.1268)/(32)} = 88,461.7442$$

With 2 and 32 degrees of freedom, the F table in the book gives a 1% critical value of 5.39 (using denominator df of 30, which is more conservative). Reject the null hypothesis. Therefore, this supports the idea that there was a structural break between the two time periods.