
ECON 3150/4150, Spring term 2013. Lecture 5
The regression model with deterministic regressor- Example

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Model

- ▶ Use data set `BNPcap.dta` (Stata 12) or `BNPcapComp.dta` (Stata 12).
- ▶ Create the natural logarithm of *BNPcap* and call it, for example, *Lbnpcap*.
- ▶ We estimate, in Stata:

$$Lbnpcap_t = \beta_0 + \beta_1 trend + \varepsilon_t \quad t = 1830, 1831, \dots, 2010 \quad (1)$$

- ▶ *trend* is a deterministic variable that takes the values $\{1, 2, \dots, 181\}$.

STATA output

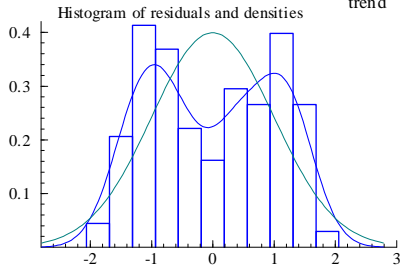
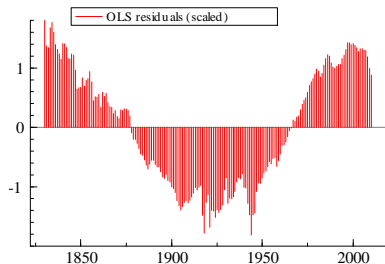
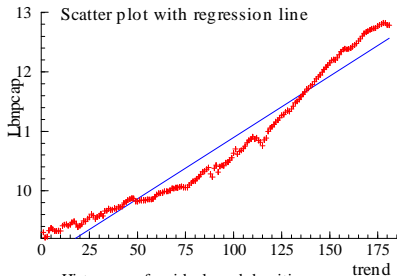
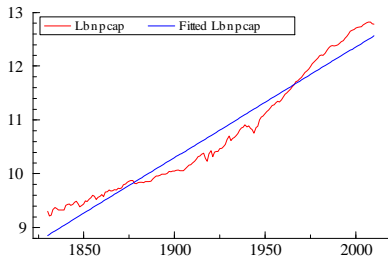
```
. regress Lbnpicap trend
```

Source	SS	df	MS
Model	210.118941	1	210.118941
Residual	11.0039123	179	.06147437
Total	221.122854	180	1.2284603

```
Number of obs = 181  
F( 1, 179) = 3417.99  
Prob > F = 0.0000  
R-squared = 0.9502  
Adj R-squared = 0.9500  
Root MSE = .24794
```

Lbnpicap	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
trend	.0206211	.0003527	58.46	0.000	.0199251 .0213171
_cons	8.833311	.0370118	238.66	0.000	8.760275 8.906346

Some graphs to help evaluate the normality assumption



JB tests of normality assumption I

- ▶ Like many test statistics, the Jarque-Bera test comes in different versions.
- ▶ In this case both the original form of the test, and a modified version rejects, p-values in brackets:
 - ▶ J-B normality test: $\chi^2(2) = 14.687[0.0006] **$
 - ▶ Modified normality test: $\chi^2(2) = 29.899[0.0000] **$
- ▶ The formal tests confirm the graphs: The normality assumption is not realistic!
- ▶ Reconsider the evidence from the regression in the light of this?