Using Eviews

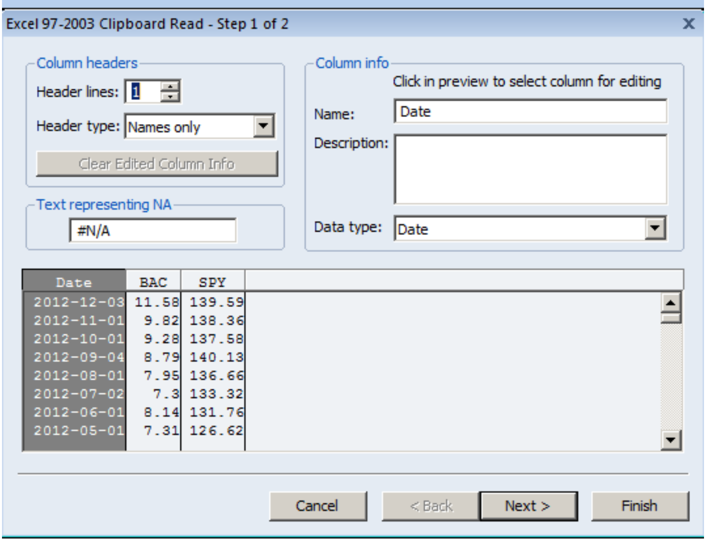
Rob Hayward

March 25, 2014

Outline

1. Import data
2. R^2
3. Confidence intervals on coefficients
4. Durbin-Watson
5. Residuals
6. Further Reading

Import Data

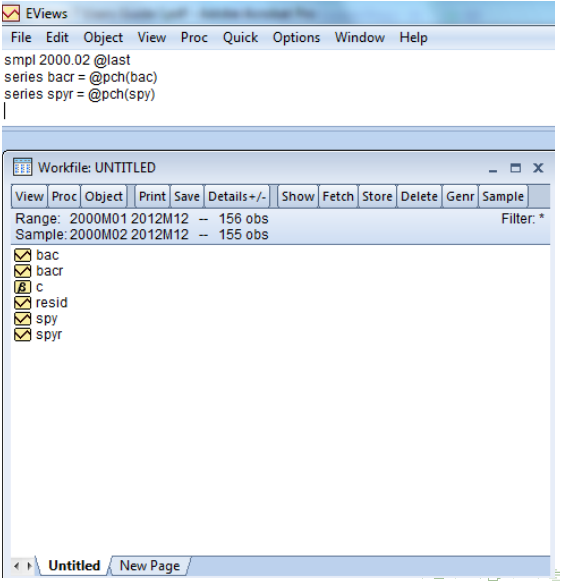

Excel 97-2003 Clipboard Read - Step 1 of 2
Column headers
Header lines: 1
Header type: Names only
Clear Edited Column Info
Text representing NA
#N/A
Column info
Click in preview to select column for editing
Name: Date
Description:
Data type: Date
Date BAC SPY
2012-12-03 11.58 139.59
2012-11-01 9.82 138.36
2012-10-01 9.28 137.58
2012-09-04 8.79 140.13
2012-08-01 7.95 136.66
2012-07-02 7.3 133.32
2012-06-01 8.14 131.76
2012-05-01 7.31 126.62
Cancel
< Back
Next >
Finish

Return Code

"Quick", "Generate Series" or,

```
smpl 2000.02 @last
series bacr = @pch(bac)
series spyr = @pch(spy)
```

Return Series

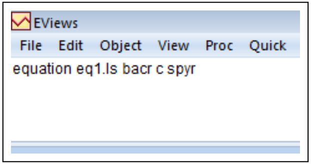


Samples

You can sample from a smaller range of data. This can be used to test the stabilty of the parameters or is necessary to compute lags.

```
smpl 2000.01 2012.12
@first @last
@all
```

Equations



C is the constant
(-1) will lag the variable
No need to specify the error

R Squared (p. 13)

The total variance of the dependent variable is called the total sum of squares (TSS). This can be split into

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$$R^2 = 1 - \frac{RSS}{TSS} = 1 - \frac{RSS}{RSS + ESS}$$

$$R^2 = 1 - \frac{\hat{\varepsilon}'\hat{\varepsilon}}{(y - \bar{y})'(y - \bar{y})}$$

$$u = \hat{\varepsilon} \tag{1}$$

Adjusted R Squared (p. 13)

The R^2 can be considered a measure of *goodness of fit*. However, the more variables that you add the smaller the R^2. The *Adjusted R Squared* ($\bar{R}^2$) will make a penalty for adding variables.

$$\bar{R}^2 = 1 - (1 - R^2) \times \frac{(T-1)}{(T-K)} \tag{2}$$

where T is the total number of observations and K is the number of variables.

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Remember that the estimates of the coefficients will depend on the sample

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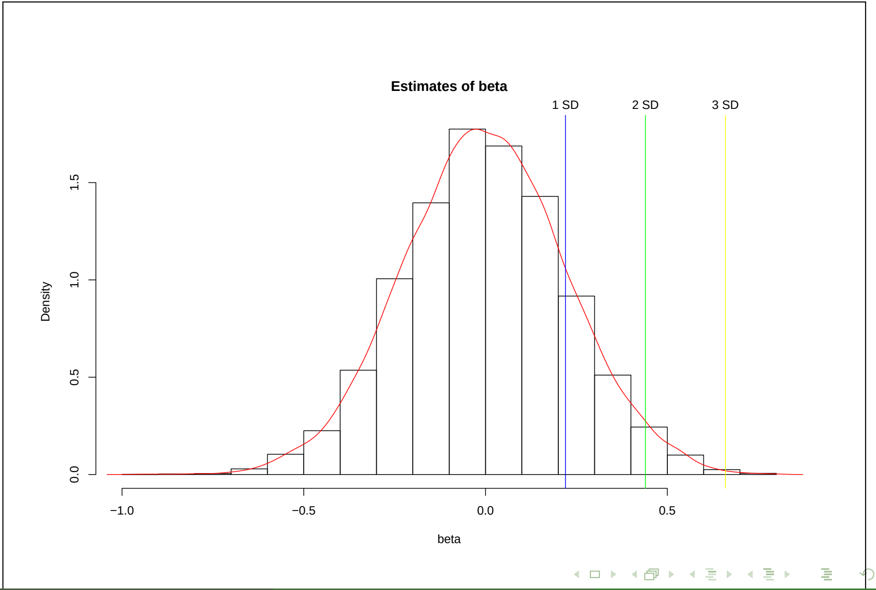
  If we assume a normal distribution we can carry out hypothese tests about coefficients like β_1

Variance of Coefficient estimates



Hypothesis tests of Coefficients p.14

Hypothese tests are conducted using the t-statistic

$$\text{t-stat} = \frac{\text{estimator} - \text{hypothesised value}}{\text{standard error of the estimator}}$$

$$t = \frac{\hat{\beta}_1 - \beta_{1,0}}{SE(\hat{\beta}_1)}$$

Need to estimate the standard deviation of the coefficient estimate

Standard Errors

Equation: EQ1 Workfile: UNTITLED::Untitled\

View | Proc | Object | Print | Name | Freeze | Estimate | Forecast | Stats | Resids

Dependent Variable: BACR
Method: Least Squares
Date: 01/12/14 Time: 18:32
Sample (adjusted): 2000M02 2012M12
Included observations: 155 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.002538	0.008828	0.287470	0.7741
SPYR	1.565524	0.192469	8.133894	0.0000

R-squared	0.301881	Mean dependent var	0.006798
Adjusted R-squared	0.297318	S.D. dependent var	0.130876
S.E. of regression	0.109709	Akaike info criterion	-1.569157
Sum squared resid	1.841508	Schwarz criterion	-1.529887
Log likelihood	123.6097	Hannan-Quinn criter.	-1.553206
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Durbin Watson

This is a test of *first order autocorrelation*
If $Y_t = a + bX_t + u_t$
and
$u_t = \rho u_{t-1} + v_t$
DW tests

$$H0 : \rho = 0$$
$$H1 : \rho > 0$$

H0 - There is no first order autocorrelation

Durbin Watson test

The test is

$$
\begin{aligned}
DW &= 2 - 2\frac{\sum_{t=2}^{T} \hat{u}_t \hat{u}_{t-1}}{\sum_{t=1}^{T} \hat{u}_t{}^2} \\
DW &= 2(1 - \hat{\rho})
\end{aligned}
$$

DW statistics close to two suggest no autocorrlation of the residuals.

Durbin-Watson Output

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- Tests for hetroskedsasticity
- Tests for normal distribution

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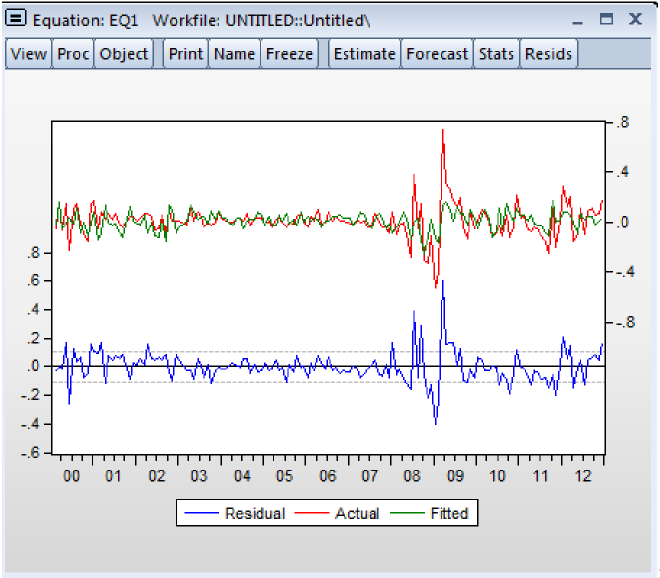

Eviews documentation

- Eviews Website

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- Tutorials

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- User Guide 2 Chapter 18 (p. 1 to 22)