Ελάχιστοι μισθοί και ανεργία
(10.3, 10.9, 12.2, 12.7, 18.4)

$$y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + u_t$$

y_t = log(*% Απασχόληση Πόρτο Ρίκο*)
x_{1t} = log((*Μεσος Ελάχιστος Μισθός / Μέσος Μισθός)* ×*%Κάλυψης*)
x_{2t} = log(USA ΑΕΠ)

Dependent Variable:
LOG(PRICO_EMPLOYMENT_RATE)
Method: Least Squares
Sample: 1959-1995

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-1.05	0.77	-1.38	0.18
LOG(RELATIVE_MINIMUM_WAGE)	-0.15	0.06	-2.38	0.02
LOG(US_GNP)	-0.01	0.09	-0.14	0.89

R-squared	0.66	Mean dependent var	-0.94
Adjusted R-squared	0.64	S.D. dependent var	0.09
S.E. of regression	0.06	Akaike info criterion	-2.86
Sum squared resid	0.11	Schwarz criterion	-2.73
Log likelihood	57.38	Hannan-Quinn criter.	-2.82
F-statistic	34.04	Durbin-Watson stat	0.34
Prob(F-statistic)	0.00		

Command Window:

LS LOG(PRICO_EMPLOYMENT_RATE) C LOG(RELATIVE_MINIMUM_WAGE) LOG(US_GNP)

$$y_t = \beta_0 + \beta_1 x_{1t} + \beta_2 x_{2t} + \beta_3 t + u_t$$

y_t = log(*% Απασχόληση Πόρτο Ρίκο*)
x_{1t} = log((*Μεσος Ελάχιστος Μισθός / Μέσος Μισθός)*×*%Κάλυψης*)
x_{2t} = log(USA ΑΕΠ)

Dependent Variable:
LOG(PRICO_EMPLOYMENT_RATE)
Method: Least Squares
Sample: 1950-1987

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-8.73	1.30	-6.71	0.00
LOG(RELATIVE_MINIMUM_WAGE)	-0.17	0.04	-3.81	0.00
LOG(US_GNP)	1.06	0.18	5.99	0.00
@TREND	-0.03	0.01	-6.44	0.00

R-squared	0.85	Mean dependent var	-0.94
Adjusted R-squared	0.83	S.D. dependent var	0.09
S.E. of regression	0.04	Akaike info criterion	-3.61
Sum squared resid	0.05	Schwarz criterion	-3.43
Log likelihood	72.53	Hannan-Quinn criter.	-3.55
F-statistic	62.78	Durbin-Watson stat	0.91
Prob(F-statistic)	0.00		

Command Window:

```
LS LOG(PRICO_EMPLOYMENT_RATE) C LOG(RELATIVE_MINIMUM_WAGE) LOG(US_GNP) @TREND
Series epsilon_hat = resid
```

Dependent Variable: EPSILON_HAT
Method: Least Squares
Sample: 1960-1995

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-0.85	1.10	-0.78	0.44
EPSILON_HAT(-1)	0.48	0.17	2.89	0.01
LOG(RELATIVE_MINIMUM_WAGE)	0.04	0.04	1.06	0.30
LOG(US_GNP)	0.20	0.20	1.04	0.30
LOG(PRICO_GNP)	-0.08	0.07	-1.11	0.27
@TREND	-0.00	0.00	-0.85	0.40

R-squared	0.24	Mean dependent var	-0.00
Adjusted R-squared	0.12	S.D. dependent var	0.03
S.E. of regression	0.03	Akaike info criterion	-4.20
Sum squared resid	0.02	Schwarz criterion	-3.94
Log likelihood	83.67	Hannan-Quinn criter.	-4.11
F-statistic	1.98	Durbin-Watson stat	1.69
Prob(F-statistic)	0.11		

Command Window:

```
LS EPSILON_HAT C EPSILON_HAT(-1) LOG(RELATIVE_MINIMUM_WAGE) LOG(US_GNP) LOG(PRICO_GNP) @TREND
```

$x_t \sim AEП^{PR}{}_t$, $AEП^{US}{}_t$, μεταβλητή ελάχιστου μισθού

$$\hat{u}_t = \beta_0 + \beta x_t + \ldots + .48\hat{u}_{t-1}$$

$$t_{\hat{\rho}} = 2.89$$

$$n = 37$$

$$p = 0.007$$

$\rightarrow$ Απορρίπτουμε H_0: $\rho = 0$

- Προηγούμενες επαγωγές **λάθος**
- Εκτιμήσεις συνεπείς

Dependent Variable:
LOG(PRICO_EMPLOYMENT_RATE)
Method: Least Squares
Sample: 1960-1995

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	-5.54	1.37	-4.03	0.00
LOG(RELATIVE_MINIMUM_WAGE)	-0.11	0.05	-2.36	0.03
LOG(US_GNP)	0.37	0.22	1.64	0.11
LOG(PRICO_GNP)	0.27	0.12	2.32	0.03
@TREND	-0.02	0.01	-4.00	0.00
AR(1)	0.64	0.16	4.02	0.00

R-squared	0.92	Mean dependent var	-0.95
Adjusted R-squared	0.91	S.D. dependent var	0.09
S.E. of regression	0.03	Akaike info criterion	-4.25
Sum squared resid	0.02	Schwarz criterion	-3.98
Log likelihood	84.55	Hannan-Quinn criter.	-4.15
F-statistic	72.07	Durbin-Watson stat	1.63
Prob(F-statistic)	0.00		

Inverted AR Roots	.64

Command Window:

LS LOG(PRICO_EMPLOYMENT_RATE) C LOG(RELATIVE_MINIMUM_WAGE) LOG(US_GNP) LOG(PRICO_GNP) @TREND AR(1)

$x_t \sim ΑΕΠ^{PR}{}_t$, $ΑΕΠ^{US}{}_t$, μεταβλητή ελάχιστου μισθού

$$\hat{u}_t = \beta_0 + \beta_1 x_{t1} + \ldots + .481\hat{u}_{t-1}$$

$$n = 37,\ p = 0.007,\ t_{\hat{\rho}} = 2.89$$

$$NEWEY - WEST$$

$$\hat{\beta}_1 = -.2123, \hat{\sigma}_{\hat{\beta}_1} = 0.0402, \hat{\sigma} = 0.0328$$

$$g = 2 \Rightarrow \hat{v} = 2$$

$$COCHRANE - ORCUTT$$

$$\hat{\sigma}_{\hat{\beta}_1}{}^{*} = 0.0426, t_{\hat{\beta}_1}{}^{*} = -4.98$$

$$\hat{\beta}_1{}^{CO} = -0.1111, \hat{\sigma}_{\hat{\beta}_1}{}^{CO} = 0.0446$$

Παραβιάζεται ΑΕ ή αποτέλεσμα μικρού δείγματος;

Dependent Variable: GGDP
Method: Least Squares
Sample: 1962-1995 (35)

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
C	1.65	0.67	2.48	0.02
LOG(GDP(-1))	-0.21	0.09	-2.42	0.02
T	0.01	0.00	2.18	0.04
GGDP(-1)	0.26	0.16	1.60	0.12

R-squared	0.27	Mean dependent var	0.03
Adjusted R-squared	0.20	S.D. dependent var	0.02
S.E. of regression	0.02	Akaike info criterion	-4.87
Sum squared resid	0.01	Schwarz criterion	-4.69
Log likelihood	89.18	Hannan-Quinn criter.	-4.81
F-statistic	3.78	Durbin-Watson stat	1.98
Prob(F-statistic)	0.02		

Command Window:

```
LS GGDP C LOG(GDP(-1)) T  GGDP(-1)
```

$$gGDP_t = \beta_0 + \beta_1 t + \beta_2 \, log(GDP_{t-1}) + \beta_3 \, gGDP_{t-1} + u_t$$

Όπου

$gGDP_t = log(GDP_t) - log(GDP_{t-1})$

$$t_{\hat{\theta}} = -0.210 / 0.087 = -2.41$$

- Δεν απορρίπτουμε
- Όμως $\hat{\rho} = 0.79 << 1$
- Πιθανώς λόγω μικρού δείγματος