

ECONOMETRIC ESTIMATIONS

ANA CECÍLIA CAMPOS

Professor, Instituto Superior de Economia e Gestão, Technical University of Lisbon
Rua Miguel Lupi, 20, 1249-078 LISBON, PORTUGAL

CIEF – Centro de Investigação sobre Economia Financeira
Rua Miguel Lupi, 20, 1249-078 LISBON, PORTUGAL

Financial support granted by the Fundação para a Ciência e a Tecnologia (FCT) and the Programa Praxis XXI is gratefully acknowledged. The usual disclaimer applies.

Maio-2001

“Output_Md” – econometric estimations by Ana Cecília Campos

Contents:

1. Cointegration
2. Unit Roots
3. Regressions

1. COINTEGRATION

TSP Version 4.5
(02/18/00) DOS/Win - 4MB RAM
Copyright (C) 2000 TSP International
ALL RIGHTS RESERVED

05/29/01 10:00PM

In case of questions or problems, see your local TSP
consultant or send a description of the problem
and the associated TSP output to:
TSP International
P. O. Box 61015, Station A
Palo Alto, CA 94306 USA

PROGRAM COMMAND

```
1 options crt double;
2 freq A;
3 smpl 1954 1993;
4 load (file='c:\dados\slongas.wk1') m1 m2 y p i i2 r2 d1 d2;
5 ?
6 title 'Cointegração';
7 ?
8 regopt(stars, star1=.05) T AUTO;
9 regopt(lmlags=4 qlags=4);
10 ?
11 lm1=log(m1);
12 lm2=log(m2);
13 ly=log(y);
14 lp=log(p);
15 lr=log(r2);
16 trend t;
17 ?
18 title 'Variavel Dependente m2';
19 ?
20 olsq lm2 c ly lp lr d1 d2;
21 u=@res;
22 du=u-u(-1);
23 olsq du u(-1);
24 cdf(DICKEYF, NVAR=4)@T(1);
25
```

EXECUTION

Current sample: 1954 to 1993

Cointegração

=====

Variavel Dependente m2

=====

Equation 1

=====

Method of estimation = Ordinary Least Squares

Dependent variable: LM2

Current sample: 1954 to 1993

Number of observations: 40

Mean of dep. var. = 9.68367
 Std. dev. of dep. var. = 1.05771
 Sum of squared residuals = .184099
 Variance of residuals = .541467E-02
 Std. error of regression = .073584
 R-squared = .995781
 Adjusted R-squared = .995160
 LM het. test = 2.33230 [.127]
 Durbin-Watson = 2.18574 [.369, .940]
 Breusch/Godfrey LM AR/MA1 = .401112 [.527]
 Breusch/Godfrey LM AR/MA2 = 1.46103 [.482]
 Breusch/Godfrey LM AR/MA3 = 4.19952 [.241]
 Breusch/Godfrey LM AR/MA4 = 6.46304 [.167]
 Ljung-Box Q-statistic1 = .499282 [.480]
 Ljung-Box Q-statistic2 = 1.62383 [.444]
 Ljung-Box Q-statistic3 = 6.54191 [.088]
 Ljung-Box Q-statistic4 = 7.13624 [.129]
 Wald nonlin. AR1 vs. lags = 6.39799 [.269]
 ARCH test = .892144 [.345]
 CuSum test = .375955 [.994]
 CuSumSq test = .180669 [.357]
 Chow test = .660466 [.682]
 LR het. test (w/ Chow) = .639610 [.424]
 Jarque-Bera test = .934419 [.627]
 Ramsey's RESET2 = .023496 [.879]
 F (zero slopes) = 1604.78 [.000]
 Schwarz B.I.C. = -39.7991
 Log likelihood = 50.8657

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
C	-5.59111	1.13503	-4.92598	*	[.000]
LY	1.43480	.101415	14.1478	*	[.000]
LP	-1.40064	.048324	-28.9843	*	[.000]
LR	-.395952	.307532	-1.28752		[.207]
D1	-.184744	.051834	-3.56411	*	[.001]
D2	-.188413	.040937	-4.60250	*	[.000]

*** WARNING in command 17 Procedure GENR: Missing values for series
 =====> U(-1): 1

*** WARNING in command 17 Procedure GENR: Some elements of a series set
 to missing values due to missing values. Number =====> 1

Equation 2

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 18 Procedure OLSQ: Missing values for series
====> DU: 1, U(-1): 1

Dependent variable: DU
Current sample: 1955 to 1993
Number of observations: 39

Mean of dep. var. = .264944E-02
Std. dev. of dep. var. = .102869
Sum of squared residuals = .179959
Variance of residuals = .473577E-02
Std. error of regression = .068817
R-squared = .552563
Adjusted R-squared = .552563
LM het. test = .599675 [.439]
Durbin-Watson = 1.95475 [.443, .443]
Breusch/Godfrey LM AR/MA1 = .844794 [.358]
Breusch/Godfrey LM AR/MA2 = 4.50646 [.105]
Breusch/Godfrey LM AR/MA3 = 6.98303 [.072]
Breusch/Godfrey LM AR/MA4 = 8.12099 [.087]
Ljung-Box Q-statistic1 = .136266E-07 [1.00]
Ljung-Box Q-statistic2 = .381298 [.826]
Ljung-Box Q-statistic3 = 4.48243 [.214]
Ljung-Box Q-statistic4 = 6.02221 [.197]
ARCH test = .341817 [.559]
CuSum test = .733621 [.206]
CuSumSq test = .183634 [.319]
Chow test = 2.10402 [.155]
LR het. test (w/ Chow) = 2.83235 [.092]
Jarque-Bera test = 1.12705 [.569]
Ramsey's RESET2 = .325090 [.572]
Schwarz B. I. C. = -47.7121
Log likelihood = 49.5438

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
U(-1)	-1.10973	.161925	-6.85336	* [.000]

ENGLE-GRANGER(CT, ASY., 4) Test Statistic: -6.853364, Lower tail area:
.00000

END OF OUTPUT.

TOTAL NUMBER OF WARNING MESSAGES: 3

MEMORY USAGE:	ITEM	DATA ARRAY	TOTAL MEMORY
	UNITS:	(4-BYTE WORDS)	(MEGABYTES)
MEMORY ALLOCATED	:	500000	4.0
MEMORY ACTUALLY REQUIRED	:	4466	2.1
CURRENT VARIABLE STORAGE	:	2456	

4. UNIT ROOTS

TSP Version 4.5
(02/18/00) DOS/Win 4MB
Copyright (C) 2000 TSP International
ALL RIGHTS RESERVED
05/29/01 9:57 PM

In case of questions or problems, see your local TSP
consultant or send a description of the problem and the
associated TSP output to:

TSP International
P. O. Box 61015, Station A
Palo Alto, CA 94306
USA

```
PROGRAM
COMMAND *****
1 options crt double;
2 freq a;
3 smpl 1954 1993;
4 load (file='c:\dados\slongas.wk1') m1 m2 y p i i2 r2 d1 d2;
5 trend t;
6 ?
6 dm2=m2- m2(-1);
7 dy=y- y(-1);
8 dr=r2- r2(-1);
9 dp=p- p(-1);
10 trend t;
11 ?
11 regopt (stars, star1=.05) t auto;
12 regopt (lmlags=4 qlags=4);
13 ?
13 TITLE' RAIZES UNITARIAS DE m2' ;
14 ?
14 do lag=1, 2;
15 set mlag=-lag;
16 ?
16 olsq dm2 m2(-1) c t dm2(-1)- dm2(mlag);
17 cdf(DICKEYF) @T(1);
18 enddo;
19 olsq dm2 m2(-1) c t dm2(-2);
20 cdf(DICKEYF) @T(1);
21 ?
21 TITLE' RAIZES UNITARIAS DE y' ;
22 ?
22 olsq dy y(-1) c t dy(-1);
23 cdf(DICKEYF) @T(1);
24 ?
24 TITLE' RAIZES UNITARIAS DE r2' ;
25 ?
25 do lag=1, 3;
26 set mlag=-lag;
27 ?
27 olsq dr r2(-1) c dr(-1)- dr(mlag);
28 cdf(DICKEYF) @T(1);
29 enddo;
30 ?
30 olsq dr r2(-1) c dr(-2) dr(-3);
31 cdf(DICKEYF) @T(1);
32 olsq dr r2(-1) c dr(-1) dr(-3);
33 cdf(DICKEYF) @T(1);
34 olsq dr r2(-1) c dr(-3);
35 cdf(DICKEYF) @T(1);
36 ?
36 TITLE' RAIZES UNITARIAS DE p' ;
37 ?
37 do lag=1, 2;
38 set mlag=-lag;
39 ?
39 olsq dp p(-1) c dp(-1)- dp(mlag);
40 cdf(DICKEYF) @T(1);
41 enddo;
42 ?
```

EXECUTION

Current sample: 1954 to 1993

*** WARNING in command 6 Procedure GENR: Missing values for series
====> M2(-1): 1

*** WARNING in command 6 Procedure GENR: Some elements of a series set to
missing values due to missing values. Number ====> 1

*** WARNING in command 7 Procedure GENR: Missing values for series
====> Y(-1): 1

*** WARNING in command 7 Procedure GENR: Some elements of a series set to
missing values due to missing values. Number ====> 1

*** WARNING in command 8 Procedure GENR: Missing values for series
====> R2(-1): 1

*** WARNING in command 8 Procedure GENR: Some elements of a series set to
missing values due to missing values. Number ====> 1

*** WARNING in command 9 Procedure GENR: Missing values for series
====> P(-1): 1

*** WARNING in command 9 Procedure GENR: Some elements of a series set to
missing values due to missing values. Number ====> 1

RAIZES UNITARIAS DE m2

=====

Equation 1

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 16 Procedure OLSQ: Missing values for series
 =====> DM2: 1, M2(-1): 1, DM2(-1): 2

Dependent variable: DM2
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = -630.003
 Std. dev. of dep. var. = 3851.58
 Sum of squared residuals = .421422E+09
 Variance of residuals = .123948E+08
 Std. error of regression = 3520.62
 R-squared = .232217
 Adjusted R-squared = .164472
 LM het. test = .049476 [.824]
 Durbin-Watson = 1.70296 [.068, .351]
 Durbin's h = 2.70136 * [.007]
 Durbin's h alt. = 3.62175 * [.000]
 Breusch/Godfrey LM AR/MA1 = 13.1171 * [.000]
 Breusch/Godfrey LM AR/MA2 = 16.9463 * [.000]
 Breusch/Godfrey LM AR/MA3 = 17.7030 * [.001]
 Breusch/Godfrey LM AR/MA4 = 16.8837 * [.002]
 Ljung-Box Q-statistic1 = .646922 [.421]
 Ljung-Box Q-statistic2 = 12.1908 * [.002]
 Ljung-Box Q-statistic3 = 12.2082 * [.007]
 Ljung-Box Q-statistic4 = 12.9046 * [.012]
 ARCH test = 9.76218 * [.002]
 CuSum test = .894994 [.073]
 CuSumSq test = .216518 [.209]
 Chow test = 18.4812 * [.000]
 LR het. test (w/ Chow) = 71.2147 * [.000]
 Jarque-Bera test = 2.02290 [.364]
 Ramsey's RESET2 = 4.83925 [.035]
 F (zero slopes) = 3.42779 [.028]
 Schwarz B. I. C. = 369.404
 Log likelihood = -362.129

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
M2(-1)	-.125490	.059509	-2.10875	* [.042]
C	7553.31	3170.42	2.38244	* [.023]
T	-245.984	86.0864	-2.85741	* [.007]
DM2(-1)	-.272965	.155206	-1.75873	[.088]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -2.108754, Lower tail area:
 .54119

Equation 2

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 16 Procedure OLSQ: Missing values for series
 =====> DM2(-1): 1, M2(-1): 1, DM2(-1): 2, DM2(-2): 3

Dependent variable: DM2
 Current sample: 1957 to 1993
 Number of observations: 37

Mean of dep. var. = -642.785
 Std. dev. of dep. var. = 3903.89
 Sum of squared residuals = .287462E+09
 Variance of residuals = .898318E+07
 Std. error of regression = 2997.19
 R-squared = .476058
 Adjusted R-squared = .410565
 LM het. test = .070455 [.791]
 Durbin-Watson = 2.09435 [.316, .857]
 Durbin's h alt. = -1.36693 [.172]
 Breusch/Godfrey LM AR/MA1 = 1.86850 [.172]
 Breusch/Godfrey LM AR/MA2 = 1.69398 [.429]
 Breusch/Godfrey LM AR/MA3 = 2.91355 [.405]
 Breusch/Godfrey LM AR/MA4 = 2.92493 [.570]
 Ljung-Box Q-statistic1 = .250576 [.617]
 Ljung-Box Q-statistic2 = .740666 [.691]
 Ljung-Box Q-statistic3 = .741506 [.863]
 Ljung-Box Q-statistic4 = 2.31657 [.678]
 ARCH test = .749299 [.387]
 CuSum test = .594641 [.426]
 CuSumSq test = .343952 * [.014]
 Chow test = 13.2989 * [.000]
 LR het. test (w/ Chow) = 62.4321 * [.000]
 Jarque-Bera test = .488074 [.783]
 Ramsey's RESET2 = .872866 [.357]
 F (zero slopes) = 7.26887 [.000]
 Schwarz B.I.C. = 355.043
 Log likelihood = -346.016

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
M2(-1)	-.139395	.053896	-2.58638	*	[.014]
C	7792.94	3011.61	2.58763	*	[.014]
T	-218.076	83.5674	-2.60958	*	[.014]
DM2(-1)	-.125414	.138531	-.905313		[.372]
DM2(-2)	.504615	.139329	3.62175	*	[.001]
DICKY-FULLER(CT, ASY., 0) Test Statistic: -2.586383, Lower tail area:					
.28620					

Equation 3

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 19 Procedure OLSQ: Missing values for series
 =====> DM2: 1, M2(-1): 1, DM2(-2): 3

Dependent variable: DM2
 Current sample: 1957 to 1993
 Number of observations: 37

Mean of dep. var. = -642.785
 Std. dev. of dep. var. = 3903.89
 Sum of squared residuals = .294824E+09
 Variance of residuals = .893407E+07
 Std. error of regression = 2988.99
 R-squared = .462639
 Adjusted R-squared = .413788
 LM het. test = .158292 [.691]
 Durbin-Watson = 2.34366 [.694, .950]
 Durbin's h alt. = -1.51675 [.129]
 Breusch/Godfrey LM AR/MA1 = 2.30054 [.129]
 Breusch/Godfrey LM AR/MA2 = 1.41511 [.493]
 Breusch/Godfrey LM AR/MA3 = 1.25103 [.741]
 Breusch/Godfrey LM AR/MA4 = 1.43314 [.838]
 Ljung-Box Q-statistic1 = 1.66056 [.198]
 Ljung-Box Q-statistic2 = 2.10355 [.349]
 Ljung-Box Q-statistic3 = 2.16205 [.539]
 Ljung-Box Q-statistic4 = 3.78646 [.436]
 ARCH test = 1.66131 [.197]
 CuSum test = 1.09829 * [.015]
 CuSumSq test = .446747 * [.000]
 Chow test = 8.06457 * [.000]
 LR het. test (w/ Chow) = 54.6530 * [.000]
 Jarque-Bera test = .358273 [.836]
 Ramsey's RESET2 = 1.05366 [.312]
 F (zero slopes) = 9.47040 [.000]
 Schwarz B. I. C. = 353.706
 Log likelihood = -346.484

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
M2(-1)	-.140696	.053729	-2.61861	* [.013]
C	7641.24	2998.71	2.54817	* [.016]
T	-204.960	82.0766	-2.49717	* [.018]
DM2(-2)	.542458	.132547	4.09258	* [.000]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -2.618612, Lower tail area:
 .27140

RAIZES UNITARIAS DE y
=====

Equation 4
=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 22 Procedure OLSQ: Missing values for series
=====> DY: 1, Y(-1): 1, DY(-1): 2

Dependent variable: DY
Current sample: 1956 to 1993
Number of observations: 38

Mean of dep. var. = 8225.31
Std. dev. of dep. var. = 6884.96
Sum of squared residuals = .967130E+09
Variance of residuals = .284450E+08
Std. error of regression = 5333.38
R-squared = .448583
Adjusted R-squared = .399929
LM het. test = .286877 [.592]
Durbin-Watson = 1.99429 [.284, .704]
Durbin's h alt. = -.271841 [.786]
Breusch/Godfrey LM AR/MA1 = .073898 [.786]
Breusch/Godfrey LM AR/MA2 = 3.02019 [.221]
Breusch/Godfrey LM AR/MA3 = 6.83863 [.077]
Breusch/Godfrey LM AR/MA4 = 6.21083 [.184]
Ljung-Box Q-statistic1 = .033501 [.855]
Ljung-Box Q-statistic2 = 1.18347 [.553]
Ljung-Box Q-statistic3 = 1.23630 [.744]
Ljung-Box Q-statistic4 = 4.33933 [.362]
ARCH test = .616309E-03 [.980]
CuSum test = .702987 [.245]
CuSumSq test = .335395 * [.014]
Chow test = 2.16920 [.097]
LR het. test (w/ Chow) = 13.0254 * [.000]
Jarque-Bera test = 3.73392 [.155]
Ramsey's RESET2 = 4.61602 [.039]
F (zero slopes) = 9.21978 [.000]
Schwarz B. I. C. = 385.188
Log likelihood = -377.913

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
Y(-1)	-.133918	.054844	-2.44182	* [.020]
C	3092.90	1975.86	1.56534	[.127]
T	1143.96	434.559	2.63245	* [.013]
DY(-1)	.619002	.163060	3.79616	* [.001]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -2.441816, Lower tail area:
.35764

RAIZES UNITARIAS DE r2
=====

Equation 5
=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 27 Procedure OLSQ: Missing values for series
=====> DR: 1, R2(-1): 1, DR(-1): 2

Dependent variable: DR
Current sample: 1956 to 1993
Number of observations: 38

Mean of dep. var. = .290697E-03
Std. dev. of dep. var. = .055564
Sum of squared residuals = .069784
Variance of residuals = .199384E-02
Std. error of regression = .044652
R-squared = .389103
Adjusted R-squared = .354195
LM het. test = 6.36250 [.012]
Durbin-Watson = 2.16215 [.559, .807]
Durbin's h alt. = -2.60323 * [.009]
Breusch/Godfrey LM AR/MA1 = 6.77681 * [.009]
Breusch/Godfrey LM AR/MA2 = 16.0450 * [.000]
Breusch/Godfrey LM AR/MA3 = 15.5870 * [.001]
Breusch/Godfrey LM AR/MA4 = 14.5747 * [.006]
Ljung-Box Q-statistic1 = .283923 [.594]
Ljung-Box Q-statistic2 = .302194 [.860]
Ljung-Box Q-statistic3 = 10.9425 * [.012]
Ljung-Box Q-statistic4 = 15.7960 * [.003]
ARCH test = 12.0562 * [.001]
CuSum test = .295757 [1.00]
CuSumSq test = .381146 * [.003]
Chow test = .364889 [.779]
LR het. test (w/ Chow) = 10.2252 * [.001]
Jarque-Bera test = 1.01232 [.603]
Ramsey's RESET2 = .622771 [.435]
F (zero slopes) = 11.1464 [.000]
Schwarz B. I. C. = -60.3227
Log likelihood = 65.7791

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
R2(-1)	-.577072	.200678	-2.87561	* [.007]
C	.579635	.201564	2.87568	* [.007]
DR(-1)	-.205196	.166071	-1.23559	[.225]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -2.875607, Lower tail area:
.17056

Equation 6

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 27 Procedure OLSQ: Missing values for series
 =====> DR: 1, R2(-1): 1, DR(-1): 2, DR(-2): 3

Dependent variable: DR
 Current sample: 1957 to 1993
 Number of observations: 37

Mean of dep. var. = .757609E-03
 Std. dev. of dep. var. = .056255
 Sum of squared residuals = .057772
 Variance of residuals = .175066E-02
 Std. error of regression = .041841
 R-squared = .492901
 Adjusted R-squared = .446801
 LM het. test = 2.47186 [.116]
 Durbin-Watson = 1.62579 [.041, .273]
 Durbin's h alt. = 2.84294 * [.004]
 Breusch/Godfrey LM AR/MA1 = 8.08231 * [.004]
 Breusch/Godfrey LM AR/MA2 = 8.10766 * [.017]
 Breusch/Godfrey LM AR/MA3 = 7.59490 [.055]
 Breusch/Godfrey LM AR/MA4 = 9.49579 * [.050]
 Ljung-Box Q-statistic1 = 1.40284 [.236]
 Ljung-Box Q-statistic2 = 2.21339 [.331]
 Ljung-Box Q-statistic3 = 3.13433 [.371]
 Ljung-Box Q-statistic4 = 9.21950 [.056]
 ARCH test = 3.99937 * [.046]
 CuSum test = .536055 [.554]
 CuSumSq test = .324949 * [.021]
 Chow test = .737320 [.574]
 LR het. test (w/ Chow) = 6.73744 * [.009]
 Jarque-Bera test = .908717 [.635]
 Ramsey's RESET2 = .174259E-02 [.967]
 F (zero slopes) = 10.6920 [.000]
 Schwarz B. I. C. = -59.8276
 Log likelihood = 67.0495

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
R2(-1)	-.328117	.210721	-1.55711	[.129]
C	.330298	.211514	1.56159	[.128]
DR(-1)	-.536251	.200512	-2.67441	* [.012]
DR(-2)	-.414363	.159173	-2.60323	* [.014]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -1.557113, Lower tail area:
 .80878

Equation 7
=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 27 Procedure OLSQ: Missing values for series
=====> DR: 1, R2(-1): 1, DR(-1): 2, DR(-2): 3, DR(-3): 4

Dependent variable: DR
Current sample: 1958 to 1993
Number of observations: 36

Mean of dep. var. = .313411E-03
Std. dev. of dep. var. = .056987
Sum of squared residuals = .045822
Variance of residuals = .147812E-02
Std. error of regression = .038446
R-squared = .596864
Adjusted R-squared = .544847
LM het. test = .120745 [.728]
Durbin-Watson = 2.06703 [.281, .840]
Durbin's h alt. = -.478207 [.633]
Breusch/Godfrey LM AR/MA1 = .228682 [.633]
Breusch/Godfrey LM AR/MA2 = .236330 [.889]
Breusch/Godfrey LM AR/MA3 = 2.18729 [.534]
Breusch/Godfrey LM AR/MA4 = 2.05090 [.726]
Ljung-Box Q-statistic1 = .063106 [.802]
Ljung-Box Q-statistic2 = .092938 [.955]
Ljung-Box Q-statistic3 = .875995 [.831]
Ljung-Box Q-statistic4 = .964071 [.915]
ARCH test = 6.32046 * [.012]
CuSum test = .601401 [.413]
CuSumSq test = .257935 [.113]
Chow test = 1.26307 [.309]
LR het. test (w/ Chow) = 5.48870 * [.019]
Jarque-Bera test = .138180 [.933]
Ramsey's RESET2 = .024202 [.877]
F (zero slopes) = 11.4743 [.000]
Schwarz B. I. C. = -59.9567
Log likelihood = 68.9155

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
R2(-1)	-.498625	.202884	-2.45769	* [.020]
C	.500704	.203527	2.46013	* [.020]
DR(-1)	-.178649	.223519	-.799255	[.430]
DR(-2)	-.905779E-02	.204404	-.044313	[.965]
DR(-3)	.458792	.161379	2.84294	* [.008]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -2.457687, Lower tail area:
.34943

Equation 8

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 30 Procedure OLSQ: Missing values for series
 =====> DR: 1, R2(-1): 1, DR(-2): 3, DR(-3): 4

Dependent variable: DR
 Current sample: 1958 to 1993
 Number of observations: 36

Mean of dep. var. = .313411E-03
 Std. dev. of dep. var. = .056987
 Sum of squared residuals = .046766
 Variance of residuals = .146144E-02
 Std. error of regression = .038229
 R-squared = .588557
 Adjusted R-squared = .549984
 LM het. test = .028547 [.866]
 Durbin-Watson = 2.17340 [.483, .866]
 Durbin's h alt. = -.827491 [.408]
 Breusch/Godfrey LM AR/MA1 = .684741 [.408]
 Breusch/Godfrey LM AR/MA2 = .666208 [.717]
 Breusch/Godfrey LM AR/MA3 = 2.63777 [.451]
 Breusch/Godfrey LM AR/MA4 = 2.30824 [.679]
 Ljung-Box Q-statistic1 = .355449 [.551]
 Ljung-Box Q-statistic2 = .510497 [.775]
 Ljung-Box Q-statistic3 = 2.07760 [.556]
 Ljung-Box Q-statistic4 = 2.10939 [.716]
 Wald nonlin. AR1 vs. lags = .088026 [.957]
 ARCH test = 1.37332 [.241]
 CuSum test = .534429 [.558]
 CuSumSq test = .268875 [.085]
 Chow test = 1.45213 [.243]
 LR het. test (w/ Chow) = 6.26064 * [.012]
 Jarque-Bera test = 1.36560 [.505]
 Ramsey's RESET2 = .679377E-02 [.935]
 F (zero slopes) = 15.2583 [.000]
 Schwarz B.I.C. = -61.3813
 Log likelihood = 68.5484

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
R2(-1)	-.615798	.139454	-4.41578	*	[.000]
C	.618071	.140127	4.41079	*	[.000]
DR(-2)	.116045	.130713	.887786		[.381]
DR(-3)	.531219	.132779	4.00078	*	[.000]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -4.415781, Lower tail area:
 .00207

Equation 9

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 32 Procedure OLSQ: Missing values for series
 =====> DR: 1, R2(-1): 1, DR(-1): 2, DR(-3): 4

Dependent variable: DR
 Current sample: 1958 to 1993
 Number of observations: 36

Mean of dep. var. = .313411E-03
 Std. dev. of dep. var. = .056987
 Sum of squared residuals = .045825
 Variance of residuals = .143202E-02
 Std. error of regression = .037842
 R-squared = .596839
 Adjusted R-squared = .559042
 LM het. test = .125712 [.723]
 Durbin-Watson = 2.07368 [.364, .788]
 Durbin's h alt. = -.374423 [.708]
 Breusch/Godfrey LM AR/MA1 = .140192 [.708]
 Breusch/Godfrey LM AR/MA2 = .167857 [.919]
 Breusch/Godfrey LM AR/MA3 = 2.26188 [.520]
 Breusch/Godfrey LM AR/MA4 = 2.12771 [.712]
 Ljung-Box Q-statistic1 = .074431 [.785]
 Ljung-Box Q-statistic2 = .098297 [.952]
 Ljung-Box Q-statistic3 = .925137 [.819]
 Ljung-Box Q-statistic4 = .994736 [.911]
 ARCH test = 6.12949 * [.013]
 CuSum test = .453208 [.767]
 CuSumSq test = .264911 [.092]
 Chow test = 1.42611 [.251]
 LR het. test (w/ Chow) = 5.93993 * [.015]
 Jarque-Bera test = .166976 [.920]
 Ramsey's RESET2 = .021251 [.885]
 F (zero slopes) = 15.7909 [.000]
 Schwarz B. I. C. = -61.7473
 Log likelihood = 68.9144

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
R2(-1)	-.503235	.171443	-2.93529	* [.006]
C	.505319	.172117	2.93590	* [.006]
DR(-1)	-.171064	.141491	-1.20901	[.236]
DR(-3)	.463773	.113968	4.06934	* [.000]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -2.935287, Lower tail area:
 .15108

Equation 10

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 34 Procedure OLSQ: Missing values for series
 =====> DR: 1, R2(-1): 1, DR(-3): 4

Dependent variable: DR
 Current sample: 1958 to 1993
 Number of observations: 36

Mean of dep. var. = .313411E-03
 Std. dev. of dep. var. = .056987
 Sum of squared residuals = .047918
 Variance of residuals = .145205E-02
 Std. error of regression = .038106
 R-squared = .578423
 Adjusted R-squared = .552873
 LM het. test = .256341 [.613]
 Durbin-Watson = 2.17145 [.560, .815]
 Durbin's h alt. = -.909712 [.363]
 Breusch/Godfrey LM AR/MA1 = .827575 [.363]
 Breusch/Godfrey LM AR/MA2 = 1.25160 [.535]
 Breusch/Godfrey LM AR/MA3 = 3.16809 [.366]
 Breusch/Godfrey LM AR/MA4 = 2.86887 [.580]
 Ljung-Box Q-statistic1 = .334657 [.563]
 Ljung-Box Q-statistic2 = 1.59324 [.451]
 Ljung-Box Q-statistic3 = 2.75521 [.431]
 Ljung-Box Q-statistic4 = 2.82104 [.588]
 Wald nonlin. AR1 vs. lags = .479685 [.787]
 ARCH test = 1.39368 [.238]
 CuSum test = .508351 [.621]
 CuSumSq test = .245383 [.128]
 Chow test = 1.58832 [.213]
 LR het. test (w/ Chow) = 4.49015 * [.034]
 Jarque-Bera test = 1.01917 [.601]
 Ramsey's RESET2 = .267672E-02 [.959]
 F (zero slopes) = 22.6388 [.000]
 Schwarz B.I.C. = -62.7351
 Log likelihood = 68.1104

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
R2(-1)	-.627094	.138426	-4.53019	* [.000]
C	.629475	.139089	4.52571	* [.000]
DR(-3)	.472169	.114549	4.12199	* [.000]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -4.530187, Lower tail area:
 .00135

RAIZES UNITARIAS DE p

=====

Equation 11

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 39 Procedure OLSQ: Missing values for series
 =====> DP: 1, P(-1): 1, DP(-1): 2

Dependent variable: DP
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = .919803
 Std. dev. of dep. var. = 1.08879
 Sum of squared residuals = 4.65017
 Variance of residuals = .132862
 Std. error of regression = .364502
 R-squared = .893981
 Adjusted R-squared = .887923
 LM het. test = 7.28376 [.007]
 Durbin-Watson = 2.29634 [.716, .902]
 Durbin's h = -3.55540 * [.000]
 Durbin's h alt. = -1.62564 [.104]
 Breusch/Godfrey LM AR/MA1 = 2.64271 [.104]
 Breusch/Godfrey LM AR/MA2 = 2.61947 [.270]
 Breusch/Godfrey LM AR/MA3 = 2.79054 [.425]
 Breusch/Godfrey LM AR/MA4 = 11.6862 * [.020]
 Ljung-Box Q-statistic1 = 1.85715 [.173]
 Ljung-Box Q-statistic2 = 2.11529 [.347]
 Ljung-Box Q-statistic3 = 2.22100 [.528]
 Ljung-Box Q-statistic4 = 4.54066 [.338]
 ARCH test = 4.36986 * [.037]
 CuSum test = .497844 [.648]
 CuSumSq test = .673391 * [.000]
 Chow test = 1.23804 [.312]
 LR het. test (w/ Chow) = 77.4614 * [.000]
 Jarque-Bera test = 20.8015 [.000]
 Ramsey's RESET2 = 13.7566 [.001]
 F (zero slopes) = 147.565 [.000]
 Schwarz B.I.C. = 19.4631
 Log likelihood = -14.0067

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
P(-1)	-.015542	.016261	-.955805	[.346]
C	.099013	.076425	1.29556	[.204]
DP(-1)	1.07198	.147014	7.29168	* [.000]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -0.9558046, Lower tail area:
 .94978

Equation 12

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 39 Procedure OLSQ: Missing values for series
 =====> DP: 1, P(-1): 1, DP(-1): 2, DP(-2): 3

Dependent variable: DP
 Current sample: 1957 to 1993
 Number of observations: 37

Mean of dep. var. = .943792
 Std. dev. of dep. var. = 1.09358
 Sum of squared residuals = 4.30107
 Variance of residuals = .130335
 Std. error of regression = .361020
 R-squared = .900098
 Adjusted R-squared = .891016
 LM het. test = 10.2900 [.001]
 Durbin-Watson = 1.89073 [.183, .589]
 Durbin's h alt. = -.372246 [.710]
 Breusch/Godfrey LM AR/MA1 = .138567 [.710]
 Breusch/Godfrey LM AR/MA2 = .443395 [.801]
 Breusch/Godfrey LM AR/MA3 = 8.83588 * [.032]
 Breusch/Godfrey LM AR/MA4 = 18.9094 * [.001]
 Ljung-Box Q-statistic1 = .014690 [.904]
 Ljung-Box Q-statistic2 = .259488 [.878]
 Ljung-Box Q-statistic3 = 1.38633 [.709]
 Ljung-Box Q-statistic4 = 6.60727 [.158]
 ARCH test = .590641 [.442]
 CuSum test = .412166 [.885]
 CuSumSq test = .689483 * [.000]
 Chow test = .664389 [.622]
 LR het. test (w/ Chow) = 71.3531 * [.000]
 Jarque-Bera test = 33.8910 [.000]
 Ramsey's RESET2 = 12.7704 [.001]
 F (zero slopes) = 99.1076 [.000]
 Schwarz B. I. C. = 19.9096
 Log likelihood = -12.6877

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
P(-1)	-.033167	.019447	-1.70551	[.097]
C	.109581	.077489	1.41414	[.167]
DP(-1)	.869697	.191027	4.55274	* [.000]
DP(-2)	.376166	.231395	1.62564	[.114]

DICKEY-FULLER(CT, ASY., 0) Test Statistic: -1.705507, Lower tail area:
 .74845

END OF OUTPUT.

TOTAL NUMBER OF WARNING MESSAGES: 20

*** NOTE: The printing of warning messages can be controlled with
 OPTIONS
 LIMWARN and LIMNUMC

MEMORY USAGE:	ITEM	DATA ARRAY	TOTAL MEMORY
	UNITS:	(4-BYTE WORDS)	(MEGABYTES)
MEMORY ALLOCATED	:	500000	4.0
MEMORY ACTUALLY REQUIRED	:	4940	2.1
CURRENT VARIABLE STORAGE	:	2852	

3. REGRESSIONS

TSP Version 4.5

(02/18/00) DOS/Win 4MB
Copyright (C) 2000 TSP International
ALL RIGHTS RESERVED
03/20/01 11:55AM

In case of questions or problems, see your local TSP
consultant or send a description of the problem and the
associated TSP output to:

TSP International
P. O. Box 61015, Station A
Palo Alto, CA 94306
USA

PROGRAM

```
COMMAND *****
1 options crt double;
2 freq a;
3 smpl 1954 1993;
4 load (file='c:\dados\slongas.wk1') m1 m2 y p i i2 r2 d1 d2;
5 trend t;
6 ?
6 title 'M2d Regression';
7 ?
7 lm2=log(m2);
8 ly=log(y);
9 lp=log(p);
10 lr=log(r2);
11 ?
11 dlm2=lm2-lm2(-1);
12 dly=ly-ly(-1);
13 dlp=lp-lp(-1);
14 dlr=lr-lr(-1);
15 ?
15 regopt(stars, star1=0.05) T AUTO;
16 regopt (qlags=4 lmlags=4);
17 ?
17 title 'Cointegration regression';
18 ?
18 olsq lm2 c ly lp lr d1 d2;
19 U=@res;
20 ?
20 title 'Engle Granger One-Step Method';
21 ?
21 olsq dlm2 c lm2(-1) ly(-1) lp(-1) lr(-1) dlm2(-1) dly dly(-1) dlp
  dlp(-1) dlr dlr(-1) d1 d2;
22 olsq dlm2 c lm2(-1) ly(-1) lp(-1) lr(-1) dlm2(-1) dly dlp dlp(-1)
  dlr dlr(-1) d1 d2;
23 olsq dlm2 c lm2(-1) ly(-1) lp(-1) lr(-1) dlm2(-1) dlp dlp(-1) dlr
  dlr(-1) d1 d2;
24 olsq dlm2 c lm2(-1) ly(-1) lp(-1) lr(-1) dlm2(-1) dlp dlr dlr(-1)
  d1 d2;
25 olsq dlm2 c lm2(-1) ly(-1) lp(-1) lr(-1) dlm2(-1) dlp dlr(-1) d1 d2;
26 olsq dlm2 c lm2(-1) ly(-1) lp(-1) lr(-1) dlp dlr(-1) d1 d2;
EXECUTION
*****
```

Current sample: 1954 to 1993

M2d Regression =====

*** WARNING in command 11 Procedure GENR: Missing values for series
=====> LM2(-1): 1

*** WARNING in command 11 Procedure GENR: Some elements of a series set
to
missing values due to missing values. Number =====> 1

*** WARNING in command 12 Procedure GENR: Missing values for series
 =====> LY(-1): 1

*** WARNING in command 12 Procedure GENR: Some elements of a series set
 to missing values due to missing values. Number =====> 1

*** WARNING in command 13 Procedure GENR: Missing values for series
 =====> LP(-1): 1

*** WARNING in command 13 Procedure GENR: Some elements of a series set
 to missing values due to missing values. Number =====> 1

*** WARNING in command 14 Procedure GENR: Missing values for series
 =====> LR(-1): 1

*** WARNING in command 14 Procedure GENR: Some elements of a series set
 to missing values due to missing values. Number =====> 1

Cointegration regression
 =====

Equation 1
 =====

Method of estimation = Ordinary Least Squares

Dependent variable: LM2
 Current sample: 1954 to 1993
 Number of observations: 40

Mean of dep. var. = 9.68367
 Std. dev. of dep. var. = 1.05771
 Sum of squared residuals = .184099
 Variance of residuals = .541467E-02
 Std. error of regression = .073584
 R-squared = .995781
 Adjusted R-squared = .995160
 LM het. test = 2.33230 [.127]
 Durbin-Watson = 2.18574 [.369, .940]
 Breusch/Godfrey LM AR/MA1 = .401112 [.527]
 Breusch/Godfrey LM AR/MA2 = 1.46103 [.482]
 Breusch/Godfrey LM AR/MA3 = 4.19952 [.241]
 Breusch/Godfrey LM AR/MA4 = 6.46304 [.167]
 Ljung-Box Q-statistic1 = .499282 [.480]
 Ljung-Box Q-statistic2 = 1.62383 [.444]
 Ljung-Box Q-statistic3 = 6.54191 [.088]
 Ljung-Box Q-statistic4 = 7.13624 [.129]
 Wald nonlin. AR1 vs. lags = 6.39799 [.269]
 ARCH test = .892144 [.345]
 CuSum test = .375955 [.994]
 CuSumSq test = .180669 [.357]
 Chow test = .660466 [.682]
 LR het. test (w/ Chow) = .639610 [.424]
 Jarque-Bera test = .934419 [.627]
 Ramsey's RESET2 = .023496 [.879]
 F (zero slopes) = 1604.78 [.000]
 Schwarz B.I.C. = -39.7991
 Log likelihood = 50.8657

Estimated Standard

Variable	Coefficient	Error	t-statistic		P-value
C	-5.59111	1.13503	-4.92598	*	[.000]
LY	1.43480	.101415	14.1478	*	[.000]
LP	-1.40064	.048324	-28.9843	*	[.000]
LR	-.395952	.307532	-1.28752		[.207]
D1	-.184744	.051834	-3.56411	*	[.001]
D2	-.188413	.040937	-4.60250	*	[.000]

Engle Granger One-Step Method

Equation 2

Method of estimation = Ordinary Least Squares

*** WARNING in command 21 Procedure OLSQ: Missing values for series
 =====> DLM2: 1, LM2(-1): 1, LY(-1): 1, LP(-1): 1, LR(-1): 1,
 DLM2(-1): 2, DLY: 1, DLY(-1): 2, DLP: 1, DLP(-1): 2, DLR: 1,
 DLR(-1): 2

Dependent variable: DLM2
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = -.061210
 Std. dev. of dep. var. = .145245
 Sum of squared residuals = .103426
 Variance of residuals = .430941E-02
 Std. error of regression = .065646
 R-squared = .867498
 Adjusted R-squared = .795726
 LM het. test = .136190 [.712]
 Durbin-Watson = 2.14192 [.003, 1.00]
 Durbin's h = -4.23200 * [.000]
 Durbin's h alt. = -.515378 [.606]
 Breusch/Godfrey LM AR/MA1 = .265614 [.606]
 Breusch/Godfrey LM AR/MA2 = 1.44426 [.486]
 Breusch/Godfrey LM AR/MA3 = 23.4526 * [.000]
 Breusch/Godfrey LM AR/MA4 = 18.1327 * [.001]
 Ljung-Box Q-statistic1 = .547037 [.460]
 Ljung-Box Q-statistic2 = 1.43205 [.489]
 Ljung-Box Q-statistic3 = 7.34023 [.062]
 Ljung-Box Q-statistic4 = 8.99256 [.061]
 ARCH test = 5.65674 * [.017]
 CuSum test = 1.37888 * [.001]
 CuSumSq test = .375552 * [.016]
 Chow test = 1.05146 [.480]
 LR het. test (w/ Chow) = 8.66455 * [.003]
 Jarque-Bera test = .538054 [.764]
 Ramsey's RESET2 = 4.00113 [.057]
 F (zero slopes) = 12.0868 [.000]
 Schwarz B.I.C. = -32.8405
 Log likelihood = 58.3036

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
C	-4.96058	1.65032	-3.00583	*	[.006]
LM2(-1)	-.909976	.244283	-3.72509	*	[.001]
LY(-1)	1.30210	.330406	3.94091	*	[.001]
LP(-1)	-1.27802	.314508	-4.06356	*	[.000]
LR(-1)	-.992853	.695252	-1.42805		[.166]
DLM2(-1)	-.160212	.159913	-1.00187		[.326]
DLY	.243913	.518653	.470281		[.642]
DLY(-1)	-.118143	.569228	-.207550		[.837]
DLP	-1.75105	.674477	-2.59616	*	[.016]
DLP(-1)	.338496	.678915	.498583		[.623]
DLR	-.383068	.446388	-.858149		[.399]

DLR(- 1)	. 706012	. 307000	2. 29972	*	[. 030]
D1	-. 155124	. 056312	-2. 75471	*	[. 011]
D2	-. 257459	. 083201	-3. 09443	*	[. 005]

Equation 3

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 22 Procedure OLSQ: Missing values for series
 =====> DLM2: 1, LM2(-1): 1, LY(-1): 1, LP(-1): 1, LR(-1): 1,
 DLM2(-1): 2, DLY: 1, DLP: 1, DLP(-1): 2, DLR: 1, DLR(-1): 2

Dependent variable: DLM2
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = -. 061210
 Std. dev. of dep. var. = . 145245
 Sum of squared residuals = . 103611
 Variance of residuals = . 414446E- 02
 Std. error of regression = . 064377
 R-squared = . 867260
 Adjusted R-squared = . 803545
 LM het. test = . 261124 [. 609]
 Durbin-Watson = 2. 20331 [. 015, 1. 00]
 Durbin's h = -3. 44375 * [. 001]
 Durbin's h alt. = -. 781797 [. 434]
 Breusch/Godfrey LM AR/MA1 = . 611206 [. 434]
 Breusch/Godfrey LM AR/MA2 = 1. 67102 [. 434]
 Breusch/Godfrey LM AR/MA3 = 21. 7898 * [. 000]
 Breusch/Godfrey LM AR/MA4 = 16. 3760 * [. 003]
 Ljung-Box Q-statistic1 = . 863153 [. 353]
 Ljung-Box Q-statistic2 = 1. 66823 [. 434]
 Ljung-Box Q-statistic3 = 6. 85931 [. 077]
 Ljung-Box Q-statistic4 = 8. 49647 [. 075]
 ARCH test = 5. 48659 * [. 019]
 CuSum test = . 394834 [. 937]
 CuSumSq test = . 237738 [. 218]
 Chow test = 1. 05324 [. 467]
 LR het. test (w/ Chow) = 10. 6186 * [. 001]
 Jarque-Bera test = . 498845 [. 779]
 Ramsey's RESET2 = 3. 32740 [. 081]
 F (zero slopes) = 13. 6115 [. 000]
 Schwarz B. I. C. = -34. 6252
 Log likelihood = 58. 2695

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
C	-4. 78080	1. 37756	-3. 47049	*	[. 002]
LM2(- 1)	-. 896952	. 231523	-3. 87413	*	[. 001]
LY(- 1)	1. 27353	. 294569	4. 32338	*	[. 000]
LP(- 1)	-1. 25613	. 290563	-4. 32307	*	[. 000]
LR(- 1)	-1. 02225	. 667518	-1. 53142		[. 138]
DLM2(- 1)	-. 158722	. 156664	-1. 01313		[. 321]
DLY	. 203376	. 471188	. 431624		[. 670]
DLP	-1. 77807	. 649007	-2. 73968	*	[. 011]
DLP(- 1)	. 393584	. 612805	. 642267		[. 527]
DLR	-. 409356	. 419769	-. 975193		[. 339]
DLR(- 1)	. 717240	. 296356	2. 42020	*	[. 023]
D1	-. 151193	. 052008	-2. 90714	*	[. 008]
D2	-. 254129	. 080062	-3. 17416	*	[. 004]

Equation 4

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 23 Procedure OLSQ: Missing values for series
 =====> DLM2: 1, LM2(-1): 1, LY(-1): 1, LP(-1): 1, LR(-1): 1,
 DLM2(-1): 2, DLP: 1, DLP(-1): 2, DLR: 1, DLR(-1): 2

Dependent variable: DLM2
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = -.061210
 Std. dev. of dep. var. = .145245
 Sum of squared residuals = .104383
 Variance of residuals = .401475E-02
 Std. error of regression = .063362
 R-squared = .866271
 Adjusted R-squared = .809693
 LM het. test = .251833 [.616]
 Durbin-Watson = 2.24493 [.043, 1.00]
 Durbin's h = -3.26933 * [.001]
 Durbin's h alt. = -.939657 [.347]
 Breusch/Godfrey LM AR/MA1 = .882955 [.347]
 Breusch/Godfrey LM AR/MA2 = 2.51650 [.284]
 Breusch/Godfrey LM AR/MA3 = 22.5553 * [.000]
 Breusch/Godfrey LM AR/MA4 = 16.9685 * [.002]
 Ljung-Box Q-statistic1 = 1.12123 [.290]
 Ljung-Box Q-statistic2 = 2.27850 [.320]
 Ljung-Box Q-statistic3 = 6.73174 [.081]
 Ljung-Box Q-statistic4 = 8.50367 [.075]
 ARCH test = 5.92386 * [.015]
 CuSum test = .580475 [.455]
 CuSumSq test = .315381 * [.049]
 Chow test = 1.26493 [.334]
 LR het. test (w/ Chow) = 13.5875 * [.000]
 Jarque-Bera test = .428120 [.807]
 Ramsey's RESET2 = 3.59706 [.069]
 F (zero slopes) = 15.3112 [.000]
 Schwarz B.I.C. = -36.3029
 Log likelihood = 58.1285

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
C	-4.67782	1.33534	-3.50309	*	[.002]
LM2(-1)	-.864407	.215449	-4.01213	*	[.000]
LY(-1)	1.23455	.275962	4.47364	*	[.000]
LP(-1)	-1.21723	.271881	-4.47708	*	[.000]
LR(-1)	-.947431	.634451	-1.49331		[.147]
DLM2(-1)	-.156902	.154137	-1.01794		[.318]
DLP	-1.71393	.621801	-2.75640	*	[.011]
DLP(-1)	.436164	.595273	.732713		[.470]
DLR	-.344485	.385759	-.893006		[.380]
DLR(-1)	.736892	.288218	2.55671	*	[.017]
D1	-.146141	.049874	-2.93020	*	[.007]
D2	-.264791	.074955	-3.53269	*	[.002]

Equation 5

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 24 Procedure OLSQ: Missing values for series
 =====> DLM2: 1, LM2(-1): 1, LY(-1): 1, LP(-1): 1, LR(-1): 1,
 DLM2(-1): 2, DLP: 1, DLR: 1, DLR(-1): 2

Dependent variable: DLM2
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = -.061210
 Std. dev. of dep. var. = .145245
 Sum of squared residuals = .106539

Variance of residuals = .394588E-02
 Std. error of regression = .062816
 R-squared = .863509
 Adjusted R-squared = .812957
 LM het. test = .524291E-02 [.942]
 Durbin-Watson = 2.19808 [.057, .999]
 Durbin's h = -2.64909 * [.008]
 Durbin's h alt. = -.815094 [.415]
 Breusch/Godfrey LM AR/MA1 = .664378 [.415]
 Breusch/Godfrey LM AR/MA2 = 1.86132 [.394]
 Breusch/Godfrey LM AR/MA3 = 22.0849 * [.000]
 Breusch/Godfrey LM AR/MA4 = 17.0383 * [.002]
 Ljung-Box Q-statistic1 = .877387 [.349]
 Ljung-Box Q-statistic2 = 1.84686 [.397]
 Ljung-Box Q-statistic3 = 6.97113 [.073]
 Ljung-Box Q-statistic4 = 9.12275 [.058]
 ARCH test = 5.38634 * [.020]
 CuSum test = .605963 [.404]
 CuSumSq test = .374327 * [.011]
 Chow test = 1.41948 [.255]
 LR het. test (w/ Chow) = 12.8676 * [.000]
 Jarque-Bera test = .564351 [.754]
 Ramsey's RESET2 = 4.62368 [.041]
 F (zero slopes) = 17.0816 [.000]
 Schwarz B.I.C. = -37.7334
 Log likelihood = 57.7401

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
C	-4.49893	1.30152	-3.45666	*	[.002]
LM2(-1)	-.875501	.213065	-4.10908	*	[.000]
LY(-1)	1.22925	.273491	4.49469	*	[.000]
LP(-1)	-1.21445	.269513	-4.50611	*	[.000]
LR(-1)	-1.04984	.613534	-1.71114		[.099]
DLM2(-1)	-.163892	.152517	-1.07458		[.292]
DLP	-1.49251	.538748	-2.77032	*	[.010]
DLR	-.276422	.371183	-.744705		[.463]
DLR(-1)	.712637	.283845	2.51066	*	[.018]
D1	-.139442	.048606	-2.86879	*	[.008]
D2	-.244443	.069020	-3.54161	*	[.001]

Equation 6

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 25 Procedure OLSQ: Missing values for series
 =====> DLM2: 1, LM2(-1): 1, LY(-1): 1, LP(-1): 1, LR(-1): 1,
 DLM2(-1): 2, DLP: 1, DLR(-1): 2

Dependent variable: DLM2
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = -.061210
 Std. dev. of dep. var. = .145245
 Sum of squared residuals = .108727
 Variance of residuals = .388312E-02
 Std. error of regression = .062315
 R-squared = .860706
 Adjusted R-squared = .815933
 LM het. test = .040721 [.840]
 Durbin-Watson = 2.25890 [.135, .998]
 Durbin's h = -2.87533 * [.004]
 Durbin's h alt. = -1.09294 [.274]
 Breusch/Godfrey LM AR/MA1 = 1.19452 [.274]
 Breusch/Godfrey LM AR/MA2 = 2.52546 [.283]
 Breusch/Godfrey LM AR/MA3 = 21.6550 * [.000]
 Breusch/Godfrey LM AR/MA4 = 16.4360 * [.002]
 Ljung-Box Q-statistic1 = 1.19535 [.274]

Ljung-Box Q-statistic2 = 2.29029 [.318]
 Ljung-Box Q-statistic3 = 7.34488 [.062]
 Ljung-Box Q-statistic4 = 8.69766 [.069]
 ARCH test = 4.08892 * [.043]
 CuSum test = .771564 [.165]
 CuSumSq test = .350816 * [.017]
 Chow test = 1.62583 [.177]
 LR het. test (w/ Chow) = 15.1559 * [.000]
 Jarque-Bera test = .339872 [.844]
 Ramsey's RESET2 = 4.41960 [.045]
 F (zero slopes) = 19.2237 [.000]
 Schwarz B. I. C. = -39.1659
 Log likelihood = 57.3538

Variable	Estimated Coefficient	Standard Error	t-statistic		P-value
C	-4.61584	1.28170	-3.60133	*	[.001]
LM2(-1)	-.826089	.200853	-4.11290	*	[.000]
LY(-1)	1.19310	.266997	4.46858	*	[.000]
LP(-1)	-1.17031	.260814	-4.48715	*	[.000]
LR(-1)	-.752509	.462130	-1.62835		[.115]
DLM2(-1)	-.171216	.150984	-1.13400		[.266]
DLP	-1.23387	.408579	-3.01992	*	[.005]
DLR(-1)	.707852	.281506	2.51452	*	[.018]
D1	-.147968	.046861	-3.15758	*	[.004]
D2	-.271704	.058045	-4.68092	*	[.000]

Equation 7

=====

Method of estimation = Ordinary Least Squares

*** WARNING in command 26 Procedure OLSQ: Missing values for series
 =====> DLM2: 1, LM2(-1): 1, LY(-1): 1, LP(-1): 1, LR(-1): 1, DLP:
 1, DLR(-1): 2

Dependent variable: DLM2
 Current sample: 1956 to 1993
 Number of observations: 38

Mean of dep. var. = -.061210
 Std. dev. of dep. var. = .145245
 Sum of squared residuals = .113721
 Variance of residuals = .392141E-02
 Std. error of regression = .062621
 R-squared = .854308
 Adjusted R-squared = .814118
 LM het. test = .853511E-02 [.926]
 Durbin-Watson = 2.42243 [.383, .999]
 Breusch/Godfrey LM AR/MA1 = 3.64873 [.056]
 Breusch/Godfrey LM AR/MA2 = 5.90282 [.052]
 Breusch/Godfrey LM AR/MA3 = 15.6989 * [.001]
 Breusch/Godfrey LM AR/MA4 = 12.8786 * [.012]
 Ljung-Box Q-statistic1 = 2.69000 [.101]
 Ljung-Box Q-statistic2 = 5.16515 [.076]
 Ljung-Box Q-statistic3 = 10.2939 * [.016]
 Ljung-Box Q-statistic4 = 10.5283 * [.032]
 Wald nonlin. AR1 vs. lags = 7.82384 [.251]
 ARCH test = 7.69405 * [.006]
 CuSum test = .605466 [.405]
 CuSumSq test = .249879 [.141]
 Chow test = 1.66083 [.165]
 LR het. test (w/ Chow) = 13.8827 * [.000]
 Jarque-Bera test = .266027 [.875]
 Ramsey's RESET2 = 5.41499 [.027]
 F (zero slopes) = 21.2563 [.000]
 Schwarz B. I. C. = -40.1315
 Log likelihood = 56.5006

Estimated Standard

Variable	Coefficient	Error	t-statistic		P-value
C	-5.07884	1.22091	-4.15989	*	[.000]
LM2(-1)	-.997008	.133411	-7.47319	*	[.000]
LY(-1)	1.39368	.200985	6.93427	*	[.000]
LP(-1)	-1.38122	.183743	-7.51715	*	[.000]
LR(-1)	-1.00188	.408455	-2.45286	*	[.020]
DLP	-1.29380	.407139	-3.17778	*	[.004]
DLR(-1)	.783160	.274906	2.84883	*	[.008]
D1	-.155343	.046636	-3.33095	*	[.002]
D2	-.255091	.056442	-4.51952	*	[.000]

END OF OUTPUT.

TOTAL NUMBER OF WARNING MESSAGES: 14

*** NOTE: The printing of warning messages can be controlled with
 OPTIONS
 LIMWARN and LIMNUMC

MEMORY USAGE:	ITEM	DATA ARRAY	TOTAL MEMORY
	UNITS:	(4-BYTE WORDS)	(MEGABYTES)
MEMORY ALLOCATED	:	500000	4.0
MEMORY ACTUALLY REQUIRED	:	7937	2.1
CURRENT VARIABLE STORAGE	:	3474	