

EXERCICES DU CHAPITRE VI

On reprend l'exercice du chapitre IV sur le taux de salaire.

On étudie l'évolution du salaire horaire dans le secteur marchand.

TW le taux de croissance trimestrielle du salaire horaire

TP le taux de croissance trimestriel de l'indice des prix à la consommation

TCHO le taux de chômage

TSMIC le taux de croissance du SMIC

DU821 une variable muette au premier trimestre 1982

1 La méthode de Engel et Granger pour l'équation de TW

Commençons par la construction d'E.G. dans le cas d'une équation où comme nous l'avons vu dans le chapitre précédent toutes les variables sont I(1) avec un trend pour TCHO.

On construit le modèle

$$TW = a_0 + a_1TCHO + a_2TP + a_3TSMIC + \epsilon$$

et on récupère les résidus de ce modèle RES ils vont estimer ϵ_{t-1} dans l'équation (9) du cours

On construit ainsi l'équation de court terme corrigée par le résidus de long terme précédent:

$$\Delta TW = b_0 + \gamma RES_{t-1} + b_1\Delta TCHO + b_2\Delta TP + a_3\Delta TSMIC + \epsilon$$

en ajoutant éventuellement des retards sur les Δ des variables qui ne servent qu'à obtenir un BB pour l'erreur.

Linear Regression - Estimation by Least Squares

Dependent Variable DTW

Quarterly Data From 71:02 To 90:02

Usable Observations	77	Degrees of Freedom	72
Centered R**2	0.349865	R Bar **2	0.313747
Uncentered R**2	0.351326	T x R**2	27.052
Mean of Dependent Variable		-0.022190736	
Std Error of Dependent Variable		0.470659901	
Standard Error of Estimate		0.389896544	
Sum of Squared Residuals		10.945390699	
Regression F(4,72)		9.6866	
Significance Level of F		0.00000252	
Log Likelihood		-34.14912	
Durbin-Watson Statistic		1.753941	
statistique Q(17)	17.45366	niveau de significativité	0.4241

Variable	Coeff	Std Error	T-Stat	Signif

1. Constant	0.012112781	0.053530691	0.22628	0.82162688
2. RES{1}	-0.522767853	0.117592015	-4.44561	0.00003117
3. DTCHO	-0.269440636	0.274855633	-0.98030	0.33022122
4. DTP	0.234175006	0.081658232	2.86775	0.00541954
5. DTSMIC	0.094799083	0.030836793	3.07422	0.00298080

1.1 Les erreurs du modèle sont-elles des Bruits Blancs?

1.2 Modèle à correction d'erreur

- Le résidu en t-1 du modèle de long terme est-il significatif ?
- Toutes les variables sont-elles significatives
- A-t-on construit un modèle à correction d'erreur ?

2 Modèles VAR à correction d'erreur :La méthode de Engel et Granger

On va essayer de reprendre les méthodes exposées dans le cours pour construire des modèles VAR à Correction d'Erreur

On aborde tout d'abord l'étude équation par équation de Engel et Granger puis des modèles à correction d'erreur conditionnels et enfin la méthode globale de Johansen.

Vous trouverez ci-dessous les quatre équations de E. G. correspondant aux quatre variables I(1). Le résidu en t-1 est le même pour les quatre équations c'est celui que nous avons construit dans la partie I.

Pour la première équation voir la partie I

Equation 2 TP

```
Linear Regression - Estimation by Least Squares
Dependent Variable DTP
Quarterly Data From 71:02 To 90:02
Usable Observations      76      Degrees of Freedom    55
  Total Observations     77      Skipped/Missing      1
Centered R**2            0.534187    R Bar **2            0.364800
Uncentered R**2         0.534314    T x R**2             40.608
Mean of Dependent Variable -0.009250438
Std Error of Dependent Variable 0.564061220
Standard Error of Estimate 0.449553582
Sum of Squared Residuals 11.115413294
Regression F(20,55)      3.1537
Significance Level of F  0.00039094
Log Likelihood           -34.78811
Durbin-Watson Statistic 2.038024
statistique Q( 17 - 4 ) 14.69750  niveau de significativit\U{e9} 0.3266
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Variable	Coeff	Std Error	T-Stat	Signif

1. Constant	0.132000114	0.079637092	1.65752	0.10310820

2.	RES{1}	0.920637412	0.330028629	2.78957	0.00723760
3.	DTP{1}	-0.198811684	0.201886120	-0.98477	0.32904878
4.	DTP{2}	-0.167240324	0.183452658	-0.91163	0.36594379
5.	DTP{3}	-0.135050950	0.163273192	-0.82715	0.41172805
6.	DTP{4}	0.056334941	0.141122505	0.39919	0.69129776
7.	DTCHO	0.187586528	0.561240377	0.33424	0.73947294
8.	DTCHO{1}	-0.504713953	0.736286701	-0.68549	0.49591674
9.	DTCHO{2}	-0.344359387	0.732382245	-0.47019	0.64007788
10.	DTCHO{3}	0.140156446	0.718320051	0.19512	0.84602037
11.	DTCHO{4}	-0.815142031	0.552920538	-1.47425	0.14611603
12.	DTW	0.499849723	0.184365831	2.71118	0.00892707
13.	DTW{1}	-0.345201376	0.270142730	-1.27785	0.20667016
14.	DTW{2}	-0.518962547	0.214179846	-2.42302	0.01871144
15.	DTW{3}	-0.188438716	0.189453962	-0.99464	0.32426675
16.	DTW{4}	-0.230484009	0.158595965	-1.45328	0.15182887
17.	DTSMIC	0.104795609	0.059435819	1.76317	0.08342630
18.	DTSMIC{1}	0.260481885	0.096755612	2.69216	0.00938830
19.	DTSMIC{2}	0.316267597	0.099342049	3.18362	0.00239453
20.	DTSMIC{3}	0.145791692	0.090363805	1.61339	0.11238433
21.	DTSMIC{4}	0.028691340	0.063973152	0.44849	0.65556134

Equation3 TSMIC

Linear Regression - Estimation by Least Squares

Dependent Variable DTSMIC

Quarterly Data From 71:02 To 90:02

Usable Observations	76	Degrees of Freedom	55
Total Observations	77	Skipped/Missing	1
Centered R**2	0.656595	R Bar **2	0.531720
Uncentered R**2	0.656600	T x R**2	49.902
Mean of Dependent Variable	-0.005569116		
Std Error of Dependent Variable	1.449737393		
Standard Error of Estimate	0.992069772		
Sum of Squared Residuals	54.131133751		
Regression F(20,55)	5.2580		
Significance Level of F	0.00000050		
Log Likelihood	-94.94502		
Durbin-Watson Statistic	2.018308		
Statistique Q(17 - 4)	18.51092	niveau de significativit\U{e9}	0.1391

Variable	Coeff	Std Error	T-Stat	Signif

1. Constant	-0.003328747	0.175508380	-0.01897	0.98493662
2. DTSMIC{1}	-0.992961137	0.146682211	-6.76947	0.00000001
3. DTSMIC{2}	-0.974361346	0.176762363	-5.51227	0.00000097
4. DTSMIC{3}	-0.633855125	0.182074014	-3.48130	0.00098513
5. DTSMIC{4}	-0.332885716	0.132590520	-2.51063	0.01502118
6. RES{1}	0.136235778	0.538633023	0.25293	0.80126624
7. DTCHO	0.402078440	1.242899761	0.32350	0.74754326
8. DTCHO{1}	0.415722702	1.633632647	0.25448	0.80007578
9. DTCHO{2}	-0.532013577	1.614799307	-0.32946	0.74305862
10. DTCHO{3}	-0.539266828	1.589797889	-0.33920	0.73574735
11. DTCHO{4}	0.151714348	1.234373009	0.12291	0.90262796
12. DTP	0.487164891	0.270668004	1.79986	0.07736820
13. DTP{1}	1.132052307	0.376334621	3.00810	0.00395968
14. DTP{2}	0.711445555	0.367153558	1.93773	0.05779683
15. DTP{3}	0.215093167	0.348453026	0.61728	0.53959717
16. DTP{4}	0.359154249	0.295579107	1.21509	0.22952358
17. DTW	1.029282997	0.351239657	2.93043	0.00492112
18. DTW{1}	0.427976326	0.435228075	0.98334	0.32974716
19. DTW{2}	0.528472556	0.439424644	1.20265	0.23426502
20. DTW{3}	0.107086942	0.375255884	0.28537	0.77643228
21. DTW{4}	0.018950154	0.327337511	0.05789	0.95404464

Equation 4 TCHO

Linear Regression - Estimation by Least Squares

Dependent Variable DTCHO

Quarterly Data From 71:02 To 90:02

Usable Observations	76	Degrees of Freedom	55
Total Observations	77	Skipped/Missing	1
Centered R**2	0.687236	R Bar **2	0.573503
Uncentered R**2	0.783834	T x R**2	59.571
Mean of Dependent Variable	0.1093370834		
Std Error of Dependent Variable	0.1646471113		
Standard Error of Estimate	0.1075256257		
Sum of Squared Residuals	0.6358968104		
Regression F(20,55)	6.0426		
Significance Level of F	0.00000006		
Log Likelihood	73.93186		
Durbin-Watson Statistic	1.839282		
Statistique Q(17 - 4)	21.45373	niveau de significativit\U{e9}	0.0644

Variable	Coeff	Std Error	T-Stat	Signif

1. Constant	0.047848486	0.017895001	2.67385	0.00985298
2. DTCHO{1}	0.930271107	0.125112221	7.43549	0.00000000
3. DTCHO{2}	-0.345061534	0.168901394	-2.04298	0.04585845
4. DTCHO{3}	0.313181342	0.167241423	1.87263	0.06643879
5. DTCHO{4}	-0.323710988	0.126486415	-2.55925	0.01327000
6. RES{1}	0.036092705	0.058210671	0.62004	0.53779473
7. DTW	-0.066441059	0.039940945	-1.66348	0.10190449
8. DTW{1}	-0.025526342	0.047460471	-0.53784	0.59285438
9. DTW{2}	-0.012228369	0.048221093	-0.25359	0.80075817
10. DTW{3}	0.061814880	0.039839679	1.55159	0.12649592
11. DTW{4}	0.006848312	0.035467585	0.19309	0.84760250
12. DTP	0.009879586	0.030158580	0.32759	0.74446697
13. DTP{1}	0.053012827	0.043432406	1.22058	0.22745147
14. DTP{2}	0.022584153	0.041017031	0.55060	0.58413455
15. DTP{3}	0.004399936	0.037893085	0.11611	0.90798475
16. DTP{4}	0.045484307	0.031878928	1.42678	0.15929498
17. DTSMIC	0.004723352	0.014600766	0.32350	0.74754326
18. DTSMIC{1}	0.006897476	0.021505316	0.32073	0.74962783
19. DTSMIC{2}	0.005876896	0.023857767	0.24633	0.80634342
20. DTSMIC{3}	-0.016758546	0.021682777	-0.77290	0.44289255
21. DTSMIC{4}	-0.009265716	0.015120465	-0.61279	0.54253882

2.1 Etude de chaque équation

Pour chaque équation étudier la méthode de Engel et Granger, c'est-à-dire regarder si le RES en t-1 est significatif.

- Remarquez que pour certaines équations on a du ajouter des retards sur les variables pour que l'erreur du modèle soit un BB

2.2 Conclusion

Conclure sur le rôle des variables.

Combien de modèles de Engel et Granger peut-on construire ?

3 MCE conditionnels

Pour chaque variable on construit l'équation (16) du cours en enlevant le trend s'il n'est pas significatif.

Equation 1 TW

Linear Regression - Estimation by Least Squares

Dependent Variable DTW

Quarterly Data From 71:01 To 90:02

Usable Observations 78 Degrees of Freedom 70
 Centered R**2 0.510611 R Bar **2 0.461672
 Uncentered R**2 0.511923 T x R**2 39.930
 Mean of Dependent Variable -0.024098542
 Std Error of Dependent Variable 0.467897156
 Standard Error of Estimate 0.343299972
 Sum of Squared Residuals 8.2498409770
 Regression F(7,70) 10.4337
 Significance Level of F 0.00000001
 Log Likelihood -23.06312
 Durbin-Watson Statistic 1.813194
 statistique Q(17) 19.10855 niveau de significativit\U{e9} 0.3223

Variable	Coeff	Std Error	T-Stat	Signif
1. TW{1}	-0.600757865	0.088788971	-6.76613	0.00000000
2. TCHO{1}	-0.062373931	0.020262254	-3.07833	0.00297177
3. TP{1}	0.390569585	0.098991130	3.94550	0.00018695
4. TSMIC{1}	0.173081806	0.061883387	2.79690	0.00665681
5. DTCHO	-0.549995245	0.279943895	-1.96466	0.05342374
6. DTP	0.288023223	0.080014337	3.59965	0.00059076
7. DTSMIC	0.122796694	0.040765103	3.01230	0.00360641
8. Constant	0.822675238	0.253801495	3.24141	0.00182239

EQUATION 2 TP

Linear Regression - Estimation by Least Squares

Dependent Variable DTP

Quarterly Data From 71:01 To 90:02

Usable Observations 78 Degrees of Freedom 68
 Centered R**2 0.460237 R Bar **2 0.388798
 Uncentered R**2 0.460260 T x R**2 35.900
 Mean of Dependent Variable -0.003574923
 Std Error of Dependent Variable 0.557800531
 Standard Error of Estimate 0.436085140
 Sum of Squared Residuals 12.931576930
 Regression F(9,68) 6.4424
 Significance Level of F 0.00000144
 Log Likelihood -40.59277
 Durbin-Watson Statistic 1.985635
 Statistique Q(17) 13.82445 niveau de significativit\U{e9} 0.6795

Variable	Coeff	Std Error	T-Stat	Signif
1. TP{1}	-0.846647516	0.131582014	-6.43437	0.00000001
2. TCHO{1}	-0.225723788	0.104400369	-2.16210	0.03413250
3. TW{1}	0.330561889	0.139834391	2.36395	0.02094433
4. TSMIC{1}	0.093251159	0.083875806	1.11178	0.27014954
5. DTCHO	0.237772718	0.370340213	0.64204	0.52300671
6. DTW	0.454160191	0.141852035	3.20165	0.00207879
7. DTSMIC	0.085266967	0.055199227	1.54471	0.12705714
8. Constant	-0.361657337	0.343607167	-1.05253	0.29628166
9. TREND	0.093958871	0.027145299	3.46133	0.00093340
10. TREND2	-0.000741213	0.000200888	-3.68969	0.00044817

EQUATION 3 TSMIC

Linear Regression - Estimation by Least Squares

Dependent Variable DTSMIC

Quarterly Data From 71:01 To 90:02

Usable Observations 78 Degrees of Freedom 70
 Centered R**2 0.646128 R Bar **2 0.610741
 Uncentered R**2 0.646130 T x R**2 50.398
 Mean of Dependent Variable 0.0038833151
 Std Error of Dependent Variable 1.5179202018
 Standard Error of Estimate 0.9470404239

Sum of Squared Residuals 62.781989516
Regression F(7,70) 18.2588
Significance Level of F 0.00000000
Log Likelihood -102.21262
Durbin-Watson Statistic 1.874964
Statistique Q(17) 14.65852 niveau de significativit\U{e9} 0.6201

Variable	Coeff	Std Error	T-Stat	Signif
1. TSMIC{1}	-1.170953832	0.113192046	-10.34484	0.00000000
2. TCHO{1}	-0.089826553	0.058583941	-1.53330	0.12971028
3. TP{1}	0.645308098	0.291904343	2.21068	0.03032742
4. TW{1}	0.674246161	0.304525985	2.21408	0.03008198
5. DTCHO	0.538360808	0.790656045	0.68090	0.49817854
6. DTP	0.231127477	0.238699838	0.96828	0.33623991
7. DTW	0.934493256	0.310225889	3.01230	0.00360641
8. Constant	0.748797776	0.745501984	1.00442	0.31863529

EQUATION 4 TCHO

Linear Regression - Estimation by Least Squares

Dependent Variable DTCHO

Quarterly Data From 71:01 To 90:02

Usable Observations 76 Degrees of Freedom 52
Total Observations 78 Skipped/Missing 2
Centered R**2 0.768102 R Bar **2 0.665532
Uncentered R**2 0.839724 T x R**2 63.819
Mean of Dependent Variable 0.1093370834
Std Error of Dependent Variable 0.1646471113
Standard Error of Estimate 0.0952207007
Sum of Squared Residuals 0.4714830553
Regression F(23,52) 7.4886
Significance Level of F 0.00000000
Log Likelihood 85.29968
Durbin-Watson Statistic 1.807167
Statistique Q(17 - 4) 19.20495 niveau de significativit\U{e9} 0.1169

Variable	Coeff	Std Error	T-Stat	Signif
1. TCHO{1}	-0.010181516	0.011353677	-0.89676	0.37398036
2. TW{1}	-0.096141314	0.083319888	-1.15388	0.25382448
3. TP{1}	0.129879586	0.055799249	2.32762	0.02385875
4. TSMIC{1}	0.027819312	0.037787146	0.73621	0.46491063
5. DTW	-0.079474234	0.041573179	-1.91167	0.06143619
6. DTW{1}	0.056245565	0.062385508	0.90158	0.37143675
7. DTW{2}	0.029417767	0.048579937	0.60555	0.54744510
8. DTW{3}	0.087474300	0.040179681	2.17708	0.03403655
9. DTW{4}	0.013921125	0.034222363	0.40678	0.68583584
10. DTP	0.008734632	0.028898604	0.30225	0.76366640
11. DTP{1}	-0.081969929	0.052699412	-1.55542	0.12591095
12. DTP{2}	-0.084367639	0.046228547	-1.82501	0.07374566
13. DTP{3}	-0.083261622	0.040197785	-2.07130	0.04330957
14. DTP{4}	-0.008684085	0.032204571	-0.26965	0.78849381
15. DTSMIC	0.008451432	0.013641731	0.61953	0.53827387
16. DTSMIC{1}	-0.016834177	0.033392041	-0.50414	0.61629429
17. DTSMIC{2}	-0.006430232	0.028804763	-0.22324	0.82422723
18. DTSMIC{3}	-0.020021027	0.021771577	-0.91959	0.36203091
19. DTSMIC{4}	-0.012880233	0.014047492	-0.91691	0.36342485
20. DTCHO{1}	0.693202035	0.123742395	5.60198	0.00000081
21. DTCHO{2}	-0.326880121	0.150413189	-2.17321	0.03434178
22. DTCHO{3}	0.259100369	0.148280188	1.74737	0.08647668
23. DTCHO{4}	-0.400532052	0.116254587	-3.44530	0.00113636
24. Constant	0.079972345	0.148171474	0.53973	0.59168828

3.1 Etude de chaque équation

On reprend la page 8 du cours pour tester si la variable en t-1 est significative ou non avec pour chaque équation le trend seulement s'il est significatif et des retards si nécessaire pour avoir un BB.

On donne les bornes des tables d'Ericsson et MacKinnon :
pour un modèle sans trend : La borne $K_\alpha = -3,79$ avec $\alpha = 0,05$
pour un modèle avec trend : la borne $K_\alpha = -4,5$

3.2 Conclusion

Toutes les équations sont-elles des MCE conditionnels?
Comparer les resultats à la question 1.

4 Méthode générale de Johanson

4.1 Etude du VAR à correction d'erreur avec constante

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```
MODEL SUMMARY
Sample:                70:02 to 90:02 (81 observations)
Effective Sample:     71:02 to 90:02 (77 observations)
Obs. - No. of variables: 59
System variables:     TW TP TSMIC TCHO
Dummy-series:        DUS21{0}
Constant/Trend:      Restricted Constant
Lags in VAR:         4
```

I(2) analysis not available for the specified model.

The unrestricted estimates:

```
Matrice B(transposed)
      TW      TP      TSMIC      TCHO      CONSTANT
Beta(1)  5.160 -3.020 -1.282  0.651   -8.641
Beta(2)  0.002 -1.338  0.054  0.003    1.166
Beta(3) -0.807 -1.681  2.431  0.302   -3.225
Beta(4)  0.374  1.232 -0.626  0.303   -3.800
```

Matrice A

```
      Alpha(1) Alpha(2) Alpha(3) Alpha(4)
DTW      -0.177   0.045  -0.037  -0.040
          (-5.313) (1.355) (-1.124) (-1.188)
DTP       0.037  -0.024  -0.047  -0.108
          (0.739) (-0.472) (-0.931) (-2.168)
DTSMIC   -0.077   0.015  -0.400  -0.037
          (-0.719) (0.142) (-3.745) (-0.342)
DTCHO    -0.009  -0.052  -0.003   0.001
          (-0.902) (-5.005) (-0.254) (0.100)
```

produit A par B transpose

```
      TP      TSMIC      TCHO      CONSTANT
DTW      -0.898   0.488   0.163  -0.138   1.854
          (-5.146) (3.752) (1.736) (-5.333) (5.539)
DTP       0.188  -0.135  -0.094  -0.023   0.215
          (0.717) (-0.693) (-0.666) (-0.587) (0.429)
DTSMIC   -0.087   0.839  -0.851  -0.182   2.111
          (-0.156) (2.012) (-2.824) (-2.185) (1.967)
DTCHO    -0.046   0.103   0.002  -0.007   0.025
```

(-0.844) (2.553) (0.073) (-0.834) (0.239)

Log-Likelihood = 370.734

TEST DU RANG c

I(1)-ANALYSIS

k-c	c	Eig.Value	Trace	Trace*	Frac95	P-Value	P-Value*
4	0	0.394	78.882	65.548	53.945	0.000	0.003
3	1	0.250	40.373	34.145	35.070	0.011	0.063
2	2	0.159	18.248	7.954	20.164	0.092	0.825
1	3	0.062	4.944	2.574	9.142	0.300	0.667

WARNING: Critical/P-values correspond to the 'Basic Model'.

WARNING: The Bartlett Corrections correspond to the 'Basic Model'.

TEST OF WEAK EXOGENEITY

LR-Test, Chi-Square(r), P-values in brackets.

c	DGF	5% C.V.	TW	TP	TSMIC	TCHO
1	1	3.841	13.669	0.442	0.310	0.298
			[0.000]	[0.506]	[0.578]	[0.585]
2	2	5.991	18.826	0.603	0.318	9.081
			[0.000]	[0.740]	[0.853]	[0.011]
3	3	7.815	22.334	1.145	8.494	17.410
			[0.000]	[0.766]	[0.037]	[0.001]

- Tester le rang c_0 nombre de relations de Cointégration
- En déduire les variables faiblement exogènes

4.2 Etude du VAR à correction d'erreur avec Tendance

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MODEL SUMMARY

Sample: 70:02 to 90:02 (81 observations)
Effective Sample: 71:02 to 90:02 (77 observations)
Obs. - No. of variables: 58
System variables: TW TP TSMIC TCHO
Dummy-series: DU821{0}
Constant/Trend: Restricted Trend
Lags in VAR: 4

The unrestricted estimates:

Matrice B(transposed)

	TW	TP	TSMIC	TCHO	TREND
Beta(1)	4.827	-2.656	-1.277	1.490	-0.129
Beta(2)	0.493	-1.682	-0.292	-0.259	0.036
Beta(3)	-0.805	-1.977	2.442	0.277	0.002
Beta(4)	1.029	-1.308	0.185	-1.123	0.153

Matrice A

	Alpha(1)	Alpha(2)	Alpha(3)	Alpha(4)
DTW	-0.212	0.050	-0.029	0.028
	(-6.892)	(1.635)	(-0.935)	(0.925)
DTP	-0.004	0.031	-0.039	0.127
	(-0.082)	(0.630)	(-0.797)	(2.573)
DTSMIC	-0.107	0.093	-0.389	0.039
	(-1.005)	(0.873)	(-3.649)	(0.363)
DTCHO	-0.007	-0.043	-0.008	0.004
	(-0.714)	(-4.157)	(-0.815)	(0.405)

Produit A par B transpose

		TP	TSMIC	TCHO	TREND
DTW	-0.945	0.497	0.191	-0.368	0.033
	(-6.122)	(4.113)	(2.237)	(-6.297)	(5.340)
DTP	0.158	-0.130	-0.076	-0.168	0.021
	(0.637)	(-0.668)	(-0.558)	(-1.784)	(2.093)
DTSMIC	-0.118	0.845	-0.832	-0.334	0.022
	(-0.221)	(2.017)	(-2.814)	(-1.650)	(1.023)
DTCHO	-0.046	0.103	0.002	-0.007	0.000
	(-0.880)	(2.533)	(0.075)	(-0.351)	(0.014)

Log-Likelihood = 377.853

TEST DU RANG c

I(1)-ANALYSIS

k-c	c	Eig.Value	Trace	Trace*	Frac95	P-Value	P-Value*
4	0	0.477	86.667	76.354	63.659	0.000	0.002
3	1	0.196	36.710	33.368	42.770	0.183	0.323
2	2	0.157	19.957	10.782	25.731	0.232	0.882
1	3	0.084	6.778	3.782	12.448	0.379	0.770

WARNING: Critical/P-values correspond to the 'Basic Model'.

WARNING: The Bartlett Corrections correspond to the 'Basic Model'.

TEST OF WEAK EXOGENEITY

LR-Test, Chi-Square(r), P-values in brackets.

c	DGF	5% C.V.	TW	TP	TSMIC	TCHO
1	1	3.841	26.035	0.005	0.673	0.304
			[0.000]	[0.941]	[0.412]	[0.581]
2	2	5.991	28.656	0.212	0.826	3.710
			[0.000]	[0.899]	[0.662]	[0.156]
3	3	7.815	32.899	0.525	7.110	9.899
			[0.000]	[0.913]	[0.068]	[0.019]

- Tester le rang c_0 nombre de relations de Cointégration
- En déduire les variables faiblement exogènes

4.3 Conclusion

Comparez les trois méthodes.