ملحق رقم (1) بيانات الدراسة:

EX	G	POP	INF	GDP	UE	السنة
0.045	778.28	23079	67.4	110.1	16.4	1990
0.81	947.13	230780	122.5	192.7	15.9	1991
1.133	4388.24	24494	119.2	421.8	15.4	1992
0.216	5573.6	25222	101.2	948.4	17.5	1993
0.4	10254.4	25961	115.9	1881.3	18.5	1994
0.838	25576.04	26688	69.0	4049.7	14.6	1995
1.46	77051.4	27875	130.4	10478.1	18.5	1996
1.712	91258.1	28627	47.2	16137.4	14.6	1997
2.37	104125.5	29496	17.0	21935.9	18.5	1998
2.58	112801.4	30326	16.2	27058.8	18.1	1999
2.5735	184512	31081	8.0	33662.7	18.6	2000
2.6143	261514	31913	4.9	40658.6	18.7	2001
2.6168	291560.3	32769	8.3	47756.1	19.1	2002
2.6082	333404.9	33648	7.7	55733.8	17.5	2003
2.5826	573691.5	34512	8.5	68721.4	19.3	2004
2.4358	612175	35397	8.5	85707.1	15.8	2005
2.1715	766014.5	36297	7.2	98718.8	19.5	2006
2.0159	963515.2	37270	8.1	114077.5	17.1	2007
2.0913	1081077.6	38269	14.3	124609.2	19.5	2008
2.3259	1976520	39294	11.2	139386.5	19.4	2009
2.498	2054670	40347	13.0	160646.5	20.7	2010
2.6769	2105680	42246.8	18.1	186556.3	17.3	2011

المصدر.بنك السودان المركزي, ووزارة العمل,ووزارة المالية,والجهاز المركزي للاحصاء.

نتائج اختبار سكون السلسلة:

ملحق رقم (2) استقرار معدل البطاله

ADF Test Statistic	-5.320933	1% Critical Value*	-3.8304
		5% Critical Value	-3.0294
		10% Critical Value	-2.6552

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(UEF,2)
Method: Least Squares
Date: 07/20/15 Time: 12:47
Sample(adjusted): 1993 2011
Included observations: 19 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UEF(-1))	-1.947820	0.366067	-5.320933	0.0001
D(UEF(-1),2)	0.423859	0.221654	1.912255	0.0739
C	0.469817	0.343477	1.367828	0.1903

R-squared	0.747625	Mean dependent var	0.052632
Adjusted R-squared	0.716078	S.D. dependent var	2.741526
S.E. of regression	1.460804	Akaike info criterion	3.739791
Sum squared resid	34.14319	Schwarz criterion	3.888913
Log likelihood	-32.52801	F-statistic	23.69883
Durbin-Watson stat	1.745515	Prob(F-statistic)	0.000016

ملحق رقم (3) استقرار الانفاق الحكومى

ADF Test Statistic	-5.947108	1% Critical Value*	-3.8572
		5% Critical Value	-3.0400
		10% Critical Value	-2.6608

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(G,3)
Method: Least Squares
Date: 07/18/15 Time: 04:31
Sample(adjusted): 1994 2011
Included observations: 18 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(G(-1),2)	-3.534076	0.594251	-5.947108	0.0000
D(G(-1),3)	1.254584	0.369406	3.396221	0.0040
C	75645.55	47674.73	1.586701	0.1334

R-squared	0.883160	Mean dependent var	3784.764
Adjusted R-squared	0.867581	S.D. dependent var	508619.3
S.E. of regression	185083.4	Akaike info criterion	27.24601
Sum squared resid	5.14E+11	Schwarz criterion	27.39441
Log likelihood	-242.2141	F-statistic	56.69035
Durbin-Watson stat	1.830129	Prob(F-statistic)	0.000000

ملحق رقم (4) استقرار الناتج المحلى الاجمالى

PP Test Statistic	8.722037	1% Critical Value*	-3.7856
		5% Critical Value	-3.0114
		10% Critical Value	-2.6457

*MacKinnon critical values for rejection of hypothesis of a unit root.

Lag truncation for Bartlett kernel: 2	(Newey-West suggests: 2)
Residual variance with no correction	6891381.
Residual variance with correction	10120525

Phillips-Perron Test Equation
Dependent Variable: D(GDP)
Method: Least Squares
Date: 07/18/15 Time: 04:36
Sample(adjusted): 1991 2011
Included observations: 21 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP(-1)	0.127905	0.012037	10.62612	0.0000
C	2465.907	852.5687	2.892326	0.0093

R-squared	0.855967	Mean dependent var	8878.390
Adjusted R-squared	0.848387	S.D. dependent var	7087.893
S.E. of regression	2759.853	Akaike info criterion	18.77414
Sum squared resid	1.45E+08	Schwarz criterion	18.87361
Log likelihood	-195.1284	F-statistic	112.9144
Durbin-Watson stat	1.109053	Prob(F-statistic)	0.000000

ملحق رقم (5) استقرار معدلات التضخم

ADF Test Statistic	-4.034218	1% Critical Value*	-3.8304
		5% Critical Value	-3.0294
		10% Critical Value	-2.6552

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INF,2)
Method: Least Squares
Date: 07/18/15 Time: 04:37

Sample(adjusted): 1993 2011
Included observations: 19 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INF(-1))	-1.572628	0.389822	-4.034218	0.0010
D(INF(-1),2)	0.049229	0.216548	0.227334	0.8230
C	-8.483097	6.135997	-1.382513	0.1858

R-squared	0.748402	Mean dependent var	0.442105
Adjusted R-squared	0.716952	S.D. dependent var	48.12326
S.E. of regression	25.60265	Akaike info criterion	9.467208
Sum squared resid	10487.93	Schwarz criterion	9.616330
Log likelihood	-86.93847	F-statistic	23.79676
Durbin-Watson stat	1.902604	Prob(F-statistic)	0.000016

ملحق رقم (6) استقرار حجم السكان

ADF Test Statistic	-4.330451	1% Critical Value*	-3.8572
		5% Critical Value	-3.0400
		10% Critical Value	-2.6608

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(pop,3)
Method: Least Squares
Date: 07/18/15 Time: 04:39
Sample(adjusted): 1994 2011
Included observations: 18 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(pop(-1),2)	-2.791918	0.644718	-4.330451	0.0006
D(pop(-1),3)	0.746027	0.384641	1.939542	0.0715
C	45886.11	111300.6	0.412272	0.6860

R-squared	0.667609	Mean dependent var	-96555.56
Adjusted R-squared	0.623290	S.D. dependent var	740571.7
S.E. of regression	454538.5	Akaike info criterion	29.04296
Sum squared resid	3.10E+12	Schwarz criterion	29.19136
Log likelihood	-258.3867	F-statistic	15.06378
Durbin-Watson stat	1.970673	Prob(F-statistic)	0.000258

ملحق رقم (7) استقرار سعر الصرف

ADF Test Statistic	-3.224251	1% Critical Value*	-3.8572
		5% Critical Value	-3.0400
		10% Critical Value	-2.6608

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(EX,3)
Method: Least Squares
Date: 07/20/15 Time: 03:40
Sample(adjusted): 1994 2011
Included observations: 18 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EX(-1),2)	-1.103543	0.342263	-3.224251	0.0057
D(EX(-1),3)	0.008736	0.147636	0.059173	0.9536
C	0.009533	0.054381	0.175290	0.8632

R-squared	0.668818	Mean dependent var	-0.041867
Adjusted R-squared	0.624661	S.D. dependent var	0.370798
S.E. of regression	0.227169	Akaike info criterion	0.024769
Sum squared resid	0.774088	Schwarz criterion	0.173165
Log likelihood	2.777077	F-statistic	15.14617
Durbin-Watson stat	2.213613	Prob(F-statistic)	0.000251

ملحق رقم (8) تقدير النموذج المقترح

Dependent Variable: UE
Method: Least Squares
Date: 07/20/15 Time: 03:22
Sample: 1990 2011
Included observations: 22

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.405050	7.078999	0.763533	0.4563
GDP	1.52E-06	3.50E-05	0.043553	0.9658
INF	0.023497	0.010863	2.162902	0.0460
POP	3.72E-07	2.81E-07	1.322904	0.2045
EX	-0.658691	0.619819	-1.062714	0.3037
G	2.62E-07	1.49E-06	0.175770	0.8627

R-squared	0.764444	Mean dependent var	17.33636
Adjusted R-squared	0.690832	S.D. dependent var	1.897503
S.E. of regression	1.055066	Akaike info criterion	3.172084
Sum squared resid	17.81062	Schwarz criterion	3.469641
Log likelihood	-28.89293	F-statistic	10.38487
Durbin-Watson stat	1.863343	Prob(F-statistic)	0.000141

ملحق رقم (9) الارتباط الخطى بين متغيرات النموذج

	GDP	INF	G	N	EX
GDP	1	-0.63247	0.962027	0.968872	0.617286
INF	-0.63247	1	-0.49193	-0.74771	-0.86202
G	0.962027	-0.49193	1	0.895394	0.492207
POP	0.968872	-0.74771	0.895394	1	0.757456

EX	0.617286	-0.86202	0.492207	0.757456	1

ملحق رقم (10) اختبار اختلاف التباين للنموذج المقترح

Dependent Variable: E*E
Method: Least Squares
Date: 07/20/15 Time: 03:28
Sample: 1990 2011
Included observations: 22

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.160999	7.930024	-0.650818	0.5244
GDP	-2.63E-05	3.92E-05	-0.669937	0.5125
G	-1.61E-07	1.67E-06	-0.096295	0.9245
INF	-0.004119	0.012169	-0.338496	0.7394
POP	3.07E-07	3.15E-07	0.976358	0.3434
EX	-1.182206	0.694333	-1.702650	0.1080

R-squared	0.264387	Mean dependent var	0.809574
Adjusted R-squared	0.034507	S.D. dependent var	1.202840
S.E. of regression	1.181904	Akaike info criterion	3.399131
Sum squared resid	22.35035	Schwarz criterion	3.696688
Log likelihood	-31.39044	F-statistic	1.150111
Durbin-Watson stat	2.544888	Prob(F-statistic)	0.375101

ملحق رقم(11) اختبار التكامل المشترك

Date: 07/20/15 Time: 03:33
Sample: 1990 2011
Included observations: 20
Test assumption: Linear deterministic trend in the data
Series: UE INF G EX POP
Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.963014	133.7529	68.52	76.07	None **
0.818082	67.80855	47.21	54.46	At most 1 **
0.607680	33.72460	29.68	35.65	At most 2 *
0.442544	15.01106	15.41	20.04	At most 3
0.153108	3.323631	3.76	6.65	At most 4

*(**) denotes rejection of the hypothesis at 5%(1%) significance level
L.R. test indicates 3 cointegrating equation(s) at 5% significance level

ملحق رقم (12) تقدير النموذج المصحح

Dependent Variable: UE
Method: Least Squares
Date: 07/20/15 Time: 03:50
Sample: 1990 2011
Included observations: 22

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.781995	1.532737	5.077189	0.0001
POP	3.86E-07	6.20E-08	6.236624	0.0000
EX	-1.564950	0.399626	-3.916035	0.0009

R-squared	0.680279	Mean dependent var	17.33636
Adjusted R-squared	0.646624	S.D. dependent var	1.897503
S.E. of regression	1.127979	Akaike info criterion	3.204856
Sum squared resid	24.17439	Schwarz criterion	3.353634
Log likelihood	-32.25341	F-statistic	20.21342
Durbin-Watson stat	2.064210	Prob(F-statistic)	0.000020

ملحق رقم (13) اختبار اختلاف التباين للنموذج المصحح

Dependent Variable: E2*E2
Method: Least Squares
Date: 07/20/15 Time: 03:47
Sample: 1990 2011
Included observations: 22

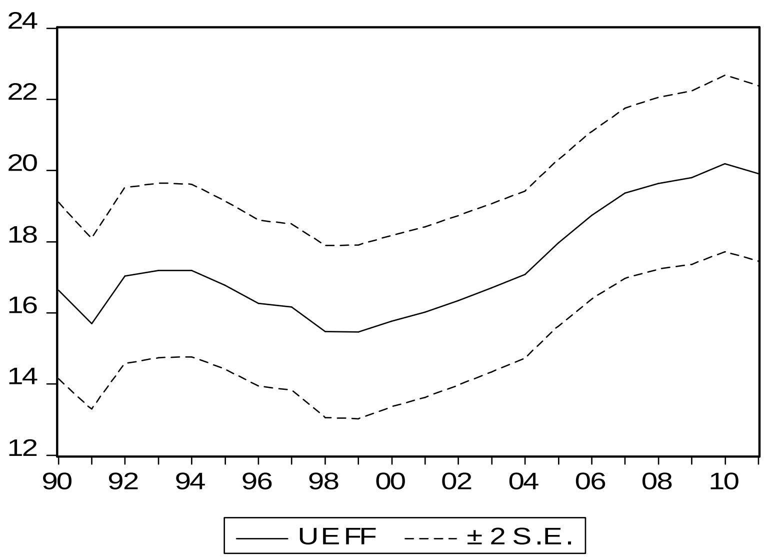
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.913182	2.101529	1.386220	0.1817
POP	-3.27E-08	8.49E-08	-0.385042	0.7045
EX	-0.423724	0.547926	-0.773324	0.4488

R-squared	0.128800	Mean dependent var	1.098836
Adjusted R-squared	0.037095	S.D. dependent var	1.576076
S.E. of regression	1.546567	Akaike info criterion	3.836076
Sum squared resid	45.44551	Schwarz criterion	3.984854
Log likelihood	-39.19684	F-statistic	1.404504
Durbin-Watson stat	1.042238	Prob(F-statistic)	0.269847

ملحق رقم (14) اختبار الارتباط الخطى للنموذج المصحح

	POP	EX
POP	1	0.757456
EX	0.757456	1

ملحق رقم (15) اختبار مقدره النموذج على التنبؤ



Forecast: UEFF
Actual: UEF
Forecast sample: 1990 2011
Included observations: 22

Root Mean Squared Error	1.048254
Mean Absolute Error	0.795564
Mean Abs. Percent Error	4.669081
Theil Inequality Coefficient	0.030089
Bias Proportion	0.000000
Variance Proportion	0.096016
Covariance Proportion	0.903984

Dependent Variable: UE(-1)
Method: Least Squares
Date: 10/02/14 Time: 19:46
Sample(adjusted): 1992 2011
Included observations: 20 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.17706	2.566591	5.134071	0.0002
GDP	3.75E-06	2.39E-05	0.157176	0.8774
INF(-1)	0.028648	0.020185	1.419315	0.1777
POP(-2)	-1.15E-05	8.17E-06	-1.407990	0.1810
G(-2)	1.30E-06	2.33E-06	0.557195	0.5862
EX(-2)	1.807085	0.984291	1.835926	0.0877

R-squared	0.483709	Mean dependent var	17.84000
Adjusted R-squared	0.299319	S.D. dependent var	1.750008
S.E. of regression	1.464873	Akaike info criterion	3.844740
Sum squared resid	30.04196	Schwarz criterion	4.143460
Log likelihood	-32.44740	F-statistic	2.623295
Durbin-Watson stat	2.972640	Prob(F-statistic)	0.070956