

**APPENDICES**

**TABLE 1 Panel DOLS Pooled Cointegration Regression**

<b>Regressor</b>	<b>Coefficient</b>	<b>t-statistic</b>	<b>HAC1 t-stat</b>	<b>HAC2 t-stat</b>
<b>i<sub>1</sub></b>	3.7160	108.52	37.120	37.569
<b>i<sub>2</sub></b>	4.6468	133.37	45.619	48.386
<b>i<sub>3</sub></b>	1.0164	29.048	9.9356	10.222
<b>i<sub>4</sub></b>	1.6683	48.990	16.757	15.561
<b>i<sub>5</sub></b>	1.6699	49.058	16.780	17.422
<b>i<sub>6</sub></b>	5.8677	157.33	53.813	52.781
<b>i<sub>7</sub></b>	2.5289	70.509	24.117	25.594
<b>i<sub>8</sub></b>	2.7875	78.022	26.687	28.698
<b>i<sub>9</sub></b>	0.45781	12.674	4.3350	4.6751
<b>i<sub>10</sub></b>	5.4883	145.35	49.716	50.953
<b>i<sub>11</sub></b>	0.70875	19.233	6.5786	7.0832
<b>i<sub>12</sub></b>	8.2066	221.32	75.702	80.738
<b>i<sub>13</sub></b>	6.4465	185.39	63.410	52.749
<b>i<sub>14</sub></b>	4.6049	132.68	45.383	49.261
<b>i<sub>15</sub></b>	2.9035	82.138	28.095	28.201
<b>i<sub>16</sub></b>	2.7444	77.247	26.422	27.986
<b>i<sub>17</sub></b>	5.8659	148.57	50.816	51.405
<b>i<sub>18</sub></b>	4.4946	94.021	32.159	32.782
<b>i<sub>19</sub></b>	3.0394	85.143	29.123	28.673
<b>P<sub>t</sub></b>	1.0548	135.52	46.354	49.7
<b>P<sub>t</sub><sup>*</sup></b>	-1.2718	-93.223	-31.886	-32.678
<b>D P<sub>t-1</sub></b>	-0.15222	-6.6800	-2.2849	-2.8023
<b>D P<sub>t-2</sub></b>	-0.10378	-4.5709	-1.5634	-2.4335
<b>D P<sub>t-3</sub></b>	-0.050042	-2.2242	-0.76077	-1.4597
<b>D P<sub>t</sub></b>	-0.24138	-10.547	-3.6075	-3.7043
<b>D P<sub>t+1</sub></b>	0.086649	3.8252	1.3084	2.2695
<b>D P<sub>t+2</sub></b>	0.078513	3.4762	1.1890	2.1963
<b>D P<sub>t+3</sub></b>	0.065758	2.9331	1.0032	2.0468
<b>D P<sub>t-1</sub><sup>*</sup></b>	0.13238	2.8622	0.97900	1.5970
<b>D P<sub>t-2</sub><sup>*</sup></b>	0.060708	1.3156	0.44999	0.90354
<b>D P<sub>t-3</sub><sup>*</sup></b>	-0.012088	-0.26339	-0.090092	-0.21970
<b>D P<sub>t</sub><sup>*</sup></b>	0.25609	5.5231	1.8891	2.6229
<b>D P<sub>t+1</sub><sup>*</sup></b>	-0.18241	-3.9546	-1.3527	-2.6882
<b>D P<sub>t+2</sub><sup>*</sup></b>	-0.13807	-2.9973	-1.0252	-2.1662
<b>D P<sub>t+3</sub><sup>*</sup></b>	-0.048884	-1.0647	-0.36417	-0.83617
<b>R<sup>2</sup> = 0.99675</b>				

**TABLE 2 Individual Country DOLS Estimates**

Country	$P_t$	t/HAC stat	$P_t^*$	t/HAC stat	(lags,leads)	$R^2$
AUSTRIA	0.52192	(2.8603) (1.1139)	-0.85886	(-5.5939) (-2.1785)	$\Delta P_t$ - $\Delta P_t^*$ (0,2)	0.99868
BELGIUM	0.46999	(1.8547) (0.73529)	-0.54864	(-2.2131) (-0.8774)	$\Delta P_t$ - $\Delta P_t^*$ (0,3)	0.99904
CANADA	0.89659	(4.1169) (1.4400)	-0.81818	(-3.4611) (-1.2106)	$\Delta P_t$ - $\Delta P_t^*$ -	0.83257
FINLAND	0.64372	(3.9891) (1.4973)	-0.65293	(-2.8172) (-1.0574)	$\Delta P_t$ (0,2) $\Delta P_t^*$ (0,1)	0.99212
GERMANY	0.50605	(2.2037) (0.88683)	-0.80345	(-5.3162) (-2.1394)	$\Delta P_t$ - $\Delta P_t^*$ (0,3)	0.99057
SWITZERL	0.57905	(3.5845) (1.4843)	-1.0845	(-9.4549) (-3.9151)	(0, $\Delta P_t$ , 1) $\Delta P_t^*$ (0,3)	0.99056
FRANCE	1.5503	(8.5233) (-3.0966)	-1.7500	(-7.3412) (-3.0966)	$\Delta P_t$ (0,1) $\Delta P_t^*$ (0,3)	0.99638
UNITED KINGDOM	0.70500	(3.8163) (1.5253)	-0.65908	(-2.3105) (-0.92346)	$\Delta P_t$ (0,2) $\Delta P_t^*$ (1,1)	0.98567
GREECE	0.66197	(15.302) (6.7076)	-0.20286	(-2.1125) (-0.92600)	$\Delta P_t$ (0,1) $\Delta P_t^*$ (3,3)	0.99965
JAPAN	0.67909	(6.4646) (2.6757)	-1.2690	(-11.206) (-4.6382)	$\Delta P_t$ (2,2) $\Delta P_t^*$ (3,1)	0.99964
LUXEMB	0.93556	(3.2647) (1.2952)	-0.93109	(-3.5900) (-1.4243)	$\Delta P_t$ - $\Delta P_t^*$ (1,3)	0.99909
ITALY	0.71669	(6.4939) (2.7484)	-0.56327	(-2.9002) (-1.2275)	$\Delta P_t$ (0,2) $\Delta P_t^*$ (0,2)	0.99979
SPAIN	0.96718	(6.3793) (2.6274)	-1.2192	(-4.2099) (-1.7339)	$\Delta P_t$ - $\Delta P_t^*$ (0,1)	0.99898
IRELAND	1.5203	(10.790) (4.7366)	-2.0733	(-8.5442) (-3.7506)	$\Delta P_t$ (0,2) $\Delta P_t^*$ (0,2)	0.98907
NORWAY	0.081801	(0.37437) (0.12352)	-0.14878	(-0.53540) (-0.17665)	$\Delta P_t$ - $\Delta P_t^*$ -	0.99456
SWEDEN	0.27681	(0.98773) (0.32726)	-0.17861	(-0.49534) (-0.16412)	$\Delta P_t$ - $\Delta P_t^*$ -	0.99130
PORTUGAL	0.92745	(9.0516) (3.4393)	-0.95854	(-3.7537) (-1.4263)	$\Delta P_t$ - $\Delta P_t^*$ (2,2)	0.99905
ICELAND	-0.027047	(-1.3893) (1.1153)	0.49037	(-1.3893) (1.1153)	(3, $\Delta P_t$ , 0) $\Delta P_t^*$ -	0.98288
DENMARK	0.61494	(3.8488) (1.5165)	-0.71456	(-3.3294) (-1.3118)	$\Delta P_t$ - $\Delta P_t^*$ (0,3)	0.99667

**Notes:**

- i) t-values in parenthesis
- ii) In the third and fifth columns are the t-statistics with ordinary t-statistics on top and those computed using HAC1 standard error estimates on the bottom

**TABLE 3**

**80 % Nominal Confidence Interval**

**POOLED DOLS ESTIMATES      SIMPLE BOOTSTRAP METHOD**

<b>METHOD</b>	<b>Average Lower Bound</b>	<b>Average Upper Bound</b>	<b>Average Length of C.I.</b>	<b>Coverage Probability %</b>
<b>coef of P<sub>t</sub></b>				
<b>Asymptotic</b>	1.04483	1.06476	0.01993	0.7946
<b>Percentile</b>	1.04458	1.06479	0.02021	0.8000
<b>BC</b>	1.04448	1.06460	0.02011	0.7984
<b>BCa</b>	1.04448	1.06460	0.02011	0.7984
<b>Bootstrap-t</b>	1.04476	1.06511	0.02035	0.8022
<b>coef of P<sub>t</sub><sup>*</sup></b>				
<b>Asymptotic</b>	-1.28926	-1.25433	0.03493	0.7992
<b>Percentile</b>	-1.28904	-1.25407	0.03496	0.8002
<b>BC</b>	-1.28940	-1.25438	0.03502	0.7992
<b>BCa</b>	-1.28940	-1.25438	0.03502	0.7992
<b>Bootstrap-t</b>	-1.28965	-1.25449	0.03515	0.8010

**Notes**

- i) 5,000 Bootstrap replications used
- ii) The DGP for the DOLS Panel Cointegration Model is

$$e_{it} = \mathbf{a}_i + \mathbf{b}_1 p_{it} + \mathbf{b}_2 p_{it}^* + \sum_{l=-s}^s \mathbf{b}_l^p \Delta p_{it-l} + \sum_{l=-s}^s \mathbf{b}_l^{p*} \Delta p_{it-l}^* + \mathbf{e}_{it}$$

where  $\mathbf{e}_{it} \sim I(0)$  and  $\{e_{it}, p_{it}, p_{it}^*\}$  are  $I(1)$  variables

- iii) BC means Bias Corrected
- iv) BCa means Bias Corrected and Accelerated
- x) Coverage Probabilities at the 80% Nominal level

**TABLE 4**

**90 % Nominal Confidence Interval**

**POOLED DOLS ESTIMATES    SIMPLE BOOTSTRAP METHOD**

<b>METHOD</b>	<b>Average Lower Bound</b>	<b>Average Upper Bound</b>	<b>Average Length of C.I.</b>	<b>Coverage Probability %</b>
<b>coef of P<sub>t</sub></b>				
<b>Asymptotic</b>	1.04199	1.06760	0.02561	0.9034
<b>Percentile</b>	1.04181	1.06725	0.02544	0.9000
<b>BC</b>	1.04157	1.06715	0.02557	0.9006
<b>BCa</b>	1.04157	1.06715	0.02557	0.9006
<b>Bootstrap-t</b>	1.04229	1.06792	0.02563	0.9016
<b>coef of P<sub>t</sub><sup>*</sup></b>				
<b>Asymptotic</b>	-1.29424	-1.24935	0.04488	0.8992
<b>Percentile</b>	-1.29410	-1.24898	0.04512	0.9000
<b>BC</b>	-1.29468	-1.24932	0.04536	0.9010
<b>BCa</b>	-1.29468	-1.24932	0.04536	0.9010
<b>Bootstrap-t</b>	-1.29468	-1.24923	0.04544	0.9014

**Notes**

- v) 5,000 Bootstrap replications used
- vi) The DGP for the DOLS Panel Cointegration Model is

$$e_{it} = \mathbf{a}_i + \mathbf{b}_1 p_{it} + \mathbf{b}_2 p_{it}^* + \sum_{l=-s}^s \mathbf{b}_l^p \Delta p_{it-l} + \sum_{l=-s}^s \mathbf{b}_l^{p*} \Delta p_{it-l}^* + \mathbf{e}_{it}$$

where  $\mathbf{e}_{it} \sim I(0)$  and  $\{e_{it}, p_{it}, p_{it}^*\}$  are  $I(1)$  variables

- vii) BC means Bias Corrected
- viii) BCa means Bias Corrected and Accelerated
- xi) Coverage Probabilities at the 90% Nominal level

**TABLE 5**

**80 % Nominal Confidence Interval**

**GROUP-MEAN DOLS ESTIMATES BOOTSTRAP PAIRS METHOD**

<b>METHOD</b>	<b>Average Lower Bound</b>	<b>Average Upper Bound</b>	<b>Average Length of C.I.</b>	<b>Coverage Probability %</b>
<b>coef of P<sub>t</sub></b>				
<b>Asymptotic</b>	-0.02332	1.51165	1.53497	0.9652
<b>Percentile</b>	0.29802	1.19997	0.90195	0.8000
<b>BC</b>	0.31911	1.21773	0.89862	0.7988
<b>BCa</b>	0.31911	1.21773	0.89862	0.7988
<b>Bootstrap-t</b>	0.33793	1.25166	0.91373	0.8772
<b>coef of P<sub>t</sub><sup>*</sup></b>				
<b>Asymptotic</b>	-1.59730	-0.06404	1.53326	0.9534
<b>Percentile</b>	-1.32020	-0.34513	0.97507	0.7998
<b>BC</b>	-1.32020	-0.35015	0.97005	0.7978
<b>BCa</b>	-1.32020	-0.35015	0.97005	0.7978
<b>Bootstrap-t</b>	-1.30800	-0.39472	0.91328	0.7704

**Notes**

- ix) 5,000 Bootstrap replications used
- x) The DGP for the DOLS Individual Country Cointegration Model is

$$e_t = \mathbf{a}_t + \mathbf{b}_1 p_t + \mathbf{b}_2 p_t^* + \sum_{l=-s}^s \mathbf{b}_l^p \Delta p_{t-l} + \sum_{l=-s}^s \mathbf{b}_l^{p*} \Delta p_{t-l}^* + \mathbf{e}_t$$

where  $\mathbf{e}_t \sim I(0)$  and  $\{e_t, p_t, p_t^*\}$  are  $I(1)$  variables

- xi) BC means Bias Corrected
- xii) BCa means Bias Corrected and Accelerated
- xii) Coverage Probabilities at the 80% Nominal level
- xiii) Computed using HAC1 standard error estimates

**TABLE 6**

**90 % Nominal Confidence Interval**

**GROUP-MEAN DOLS ESTIMATES BOOTSTRAP PAIRS METHOD**

<b>METHOD</b>	<b>Average Lower Bound</b>	<b>Average Upper Bound</b>	<b>Average Length of C.I.</b>	<b>Coverage Probability %</b>
<b>coef of <math>P_t</math></b>				
<b>Asymptotic</b>	-0.24120	1.72272	1.96392	0.9906
<b>Percentile</b>	0.15895	1.34134	1.18239	0.9000
<b>BC</b>	0.17816	1.36613	1.18797	0.8986
<b>BCa</b>	0.17816	1.36613	1.18797	0.8986
<b>Bootstrap-t</b>	0.20448	1.37428	1.16980	0.9352
<b>coef of <math>P_t^*</math></b>				
<b>Asymptotic</b>	-1.81591	0.15456	1.97047	0.9866
<b>Percentile</b>	-1.46498	-0.20310	1.26188	0.9000
<b>BC</b>	-1.46616	-0.20456	1.26160	0.9000
<b>BCa</b>	-1.46616	-0.20456	1.26160	0.9000
<b>Bootstrap-t</b>	-1.44532	-0.25453	1.19079	0.8784

**Notes**

- xiii) 5,000 Bootstrap replications used
- xiv) The DGP for the DOLS Individual Country Cointegration Model is

$$e_t = \mathbf{a}_t + \mathbf{b}_1 p_t + \mathbf{b}_2 p_t^* + \sum_{l=-s}^s \mathbf{b}_l^p \Delta p_{t-l} + \sum_{l=-s}^s \mathbf{b}_l^{p*} \Delta p_{t-l}^* + \mathbf{e}_t$$

where  $\mathbf{e}_t \sim I(0)$  and  $\{e_t, p_t, p_t^*\}$  are  $I(1)$  variables

- xv) BC means Bias Corrected
- xvi) BCa means Bias Corrected and Accelerated
- xiv) Coverage Probabilities at the 90% Nominal level
- xv) Computed using HAC1 standard error estimates

**TABLE 7**

**80 % Nominal Confidence Interval**

**POOLED DOLS ESTIMATES    BOOTSTRAP PAIRS METHOD**

<b>METHOD</b>	<b>Average Lower Bound</b>	<b>Average Upper Bound</b>	<b>Average Length of C.I.</b>	<b>Coverage Probability %</b>
<b>coef of <math>P_t</math></b>				
<b>Asymptotic</b>	1.02567	1.08392	0.05825	0.6486
<b>Percentile</b>	1.02627	1.12599	0.09929	0.7962
<b>BC</b>	1.01807	1.09885	0.08078	0.7644
<b>BCa</b>	1.01807	1.09885	0.08078	0.7644
<b>Bootstrap-t</b>	0.98669	1.10563	0.11894	0.8360
<b>coef of <math>P_t^*</math></b>				
<b>Asymptotic</b>	-1.32285	-1.22074	0.10211	0.6102
<b>Percentile</b>	-1.37605	-1.21101	0.16503	0.7998
<b>BC</b>	-1.34069	-1.18663	0.15406	0.7640
<b>BCa</b>	-1.34069	-1.18663	0.15406	0.7640
<b>Bootstrap-t</b>	-1.35909	-1.15207	0.20847	0.8448

**Notes**

- xvii) 5,000 Bootstrap replications used
- xviii) The DGP for the DOLS Panel Cointegration Model is

$$e_{it} = a_i + b_1 p_{it} + b_2 p_{it}^* + \sum_{l=-s}^s b_l^p \Delta p_{it-l} + \sum_{l=-s}^s b_l^{p*} \Delta p_{it-l}^* + e_{it}$$

where  $e_{it} \sim I(0)$  and  $\{e_{it}, p_{it}, p_{it}^*\}$  are  $I(1)$  variables

- xix) BC means Bias Corrected
- xx) BCa means Bias Corrected and Accelerated
- xvi) Coverage Probabilities at the 80% Nominal level
- xvii) Computed using HAC1 standard error estimates

**TABLE 8**

**90 % Nominal Confidence Interval**

**POOLED DOLS ESTIMATES    BOOTSTRAP PAIRS METHOD**

<b>METHOD</b>	<b>Average Lower Bound</b>	<b>Average Upper Bound</b>	<b>Average Length of C.I.</b>	<b>Coverage Probability %</b>
<b>coef of P<sub>t</sub></b>				
<b>Asymptotic</b>	1.01725	1.09234	0.07509	0.7370
<b>Percentile</b>	1.01601	1.14984	0.13383	0.9000
<b>BC</b>	1.00352	1.13056	0.12704	0.8858
<b>BCa</b>	1.00352	1.13056	0.12704	0.8858
<b>Bootstrap-t</b>	0.96788	1.12164	0.15376	0.8854
<b>coef of P<sub>t</sub><sup>*</sup></b>				
<b>Asymptotic</b>	-1.33761	-1.20599	0.13162	0.7140
<b>Percentile</b>	-1.41206	-1.18872	0.22334	0.8998
<b>BC</b>	-1.37348	-1.15967	0.21381	0.8742
<b>BCa</b>	-1.37348	-1.15967	0.21381	0.8742
<b>Bootstrap-t</b>	-1.38759	-1.11946	0.26813	0.9154

**Notes**

- xxi) 5,000 Bootstrap replications used
- xxii) The DGP for the DOLS Panel Cointegration Model is

$$e_{it} = \mathbf{a}_i + \mathbf{b}_1 p_{it} + \mathbf{b}_2 p_{it}^* + \sum_{l=-s}^s \mathbf{b}_l^p \Delta p_{it-l} + \sum_{l=-s}^s \mathbf{b}_l^{p*} \Delta p_{it-l}^* + \mathbf{e}_{it}$$

where  $\mathbf{e}_{it} \sim I(0)$  and  $\{e_{it}, p_{it}, p_{it}^*\}$  are  $I(1)$  variables

- xxiii) BC means Bias Corrected
- xxiv) BCa means Bias Corrected and Accelerated
- xviii) Coverage Probabilities at the 90% Nominal level
- xix) Computed using HAC1 standard error estimates

**TABLE 9 Individual Country ADF Estimates**

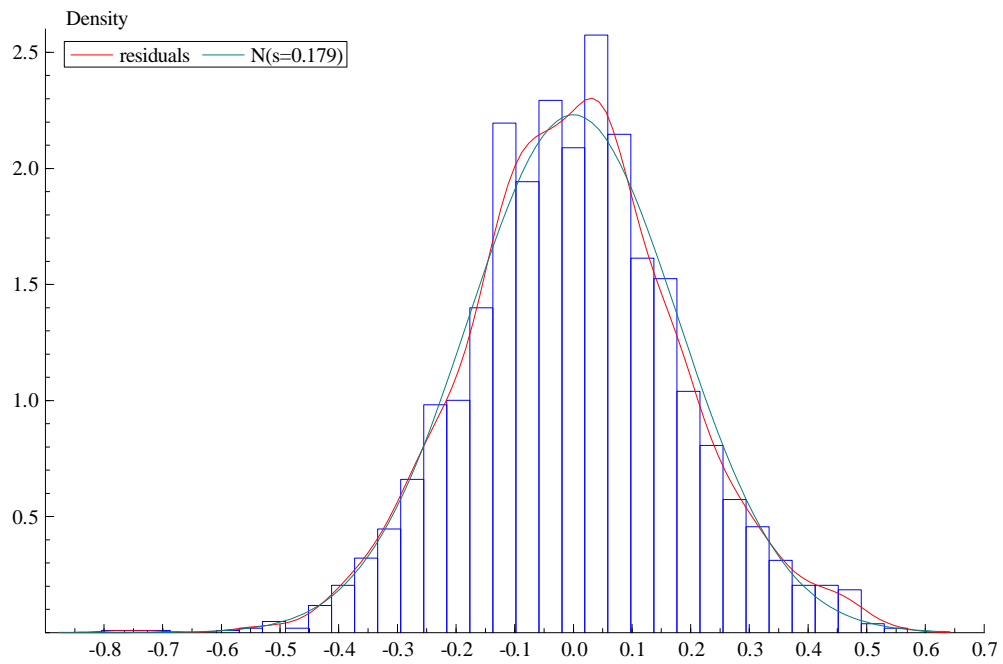
Country	$e_t$ t-statistic	lags	$P_t$ t-statistic	lags
AUSTRIA	-0.9727	3	-0.09301	4
BELGIUM	-2.092	3	0.2676	1
CANADA	-1.524	3	1.427*	1
FINLAND	-1.727	1	-1.008*	1
GERMANY	-0.9844	3	-0.009084	3
SWITZERL	-0.7901	4	0.2282	1
FRANCE	-2.336	4	1.097*	1
UNITED KINGDOM	-1.249	1	1.114*	1
GREECE	0.9721*	4	1.071*	4
JAPAN	-0.1519	1	-1.517	1
LUXEMB	-2.092	3	0.4887*	1
ITALY	-0.5115	1	-1.271*	2
SPAIN	-1.609	3	0.8354	1
IRELAND	-1.117	3	0.7277*	1
NORWAY	-1.844	1	1.865	1
SWEDEN	-1.293	1	1.400*	4
PORTUGAL	0.3121	1	2.634*	1
ICELAND	-0.1408	4	1.038	4
DENMARK	-2.118	1	0.01766	2
UNITED STATES	—	—	0.7579	1

**Notes:**

- iii) \* means the differenced series is nonstationary, ie I(2)
- iv) Lag length chosen by Ng and Perron (1995) method
- v) ADF critical values 5% = -2.883 1% = -3.48

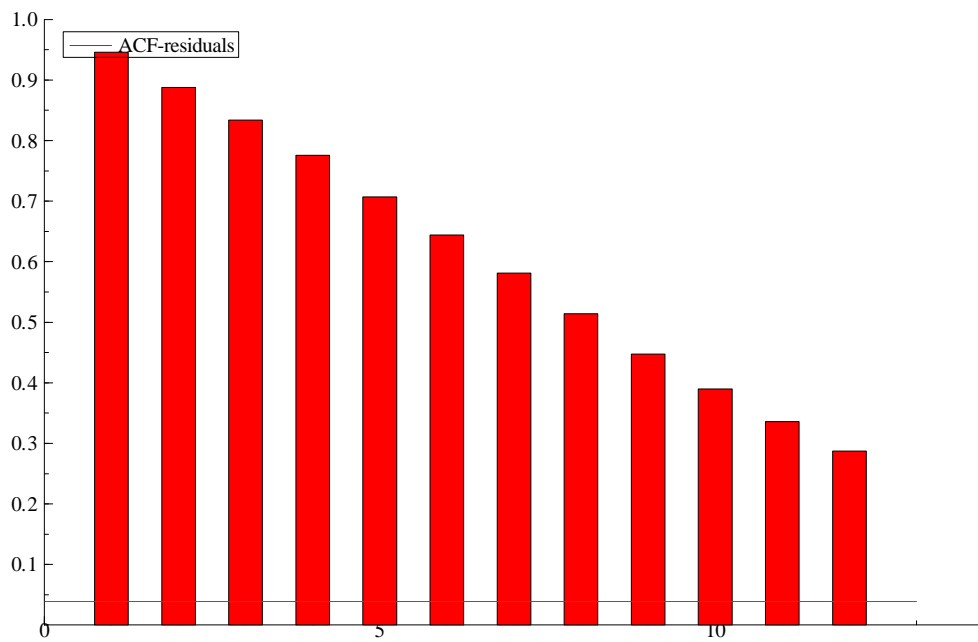
**Figure (1)**

$\hat{u}_{it}$  Density and Histogram



**Figure (2)**

$\hat{u}_{it}$  Sample Autocorrelation Function



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