|  |  |  |
| --- | --- | --- |
| Date: 07/25/18 Time: 10:50 |  |  |
| Sample (adjusted): 6 720 |  |  |
| Included observations: 715 after adjustments |  |
| Trend assumption: Linear deterministic trend |  |
| Series: DOM OS  |  |  |  |
| Lags interval (in first differences): 1 to 4 |  |
|  |  |  |  |  |
| Unrestricted Cointegration Rank Test (Trace) |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Hypothesized |  | Trace | 0.05 |  |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.\*\* |
|  |  |  |  |  |
|  |  |  |  |  |
| None \* |  0.214287 |  301.1760 |  15.49471 |  0.0001 |
| At most 1 \* |  0.164781 |  128.7437 |  3.841466 |  0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  Trace test indicates 2 cointegrating eqn(s) at the 0.05 level |
|  \* denotes rejection of the hypothesis at the 0.05 level |
|  \*\*MacKinnon-Haug-Michelis (1999) p-values |  |
|  |  |  |  |  |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) |
|  |  |  |  |  |
|  |  |  |  |  |
| Hypothesized |  | Max-Eigen | 0.05 |  |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.\*\* |
|  |  |  |  |  |
|  |  |  |  |  |
| None \* |  0.214287 |  172.4324 |  14.26460 |  0.0001 |
| At most 1 \* |  0.164781 |  128.7437 |  3.841466 |  0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level |
|  \* denotes rejection of the hypothesis at the 0.05 level |
|  \*\*MacKinnon-Haug-Michelis (1999) p-values |  |
|  |  |  |  |  |

|  |
| --- |
| Pairwise Granger Causality Tests |
| Date: 07/25/18 Time: 10:50 |
| Sample: 1 720 |  |
| Lags: 8 |  |  |
|  |  |  |  |
|  |  |  |  |
|  Null Hypothesis: | Obs | F-Statistic | Prob.  |
|  |  |  |  |
|  |  |  |  |
|  OS does not Granger Cause DOM |  712 |  4.70930 | 1.E-05 |
|  DOM does not Granger Cause OS |  1.83562 | 0.0675 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| Date: 07/25/18 Time: 10:51 |  |  |
| Sample (adjusted): 6 720 |  |  |
| Included observations: 715 after adjustments |  |
| Trend assumption: Linear deterministic trend |  |
| Series: DOM SA  |  |  |  |
| Lags interval (in first differences): 1 to 4 |  |
|  |  |  |  |  |
| Unrestricted Cointegration Rank Test (Trace) |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Hypothesized |  | Trace | 0.05 |  |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.\*\* |
|  |  |  |  |  |
|  |  |  |  |  |
| None \* |  0.210780 |  310.9472 |  15.49471 |  0.0001 |
| At most 1 \* |  0.179779 |  141.6995 |  3.841466 |  0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  Trace test indicates 2 cointegrating eqn(s) at the 0.05 level |
|  \* denotes rejection of the hypothesis at the 0.05 level |
|  \*\*MacKinnon-Haug-Michelis (1999) p-values |  |
|  |  |  |  |  |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) |
|  |  |  |  |  |
|  |  |  |  |  |
| Hypothesized |  | Max-Eigen | 0.05 |  |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.\*\* |
|  |  |  |  |  |
|  |  |  |  |  |
| None \* |  0.210780 |  169.2477 |  14.26460 |  0.0001 |
| At most 1 \* |  0.179779 |  141.6995 |  3.841466 |  0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level |
|  \* denotes rejection of the hypothesis at the 0.05 level |
|  \*\*MacKinnon-Haug-Michelis (1999) p-values |  |

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| --- |
| Pairwise Granger Causality Tests |
| Date: 07/25/18 Time: 10:51 |
| Sample: 1 720 |  |
| Lags: 8 |  |  |
|  |  |  |  |
|  |  |  |  |
|  Null Hypothesis: | Obs | F-Statistic | Prob.  |
|  |  |  |  |
|  |  |  |  |
|  SA does not Granger Cause DOM |  712 |  2.09835 | 0.0339 |
|  DOM does not Granger Cause SA |  6.72022 | 2.E-08 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |
| --- | --- | --- |
| Date: 07/25/18 Time: 10:52 |  |  |
| Sample (adjusted): 6 720 |  |  |
| Included observations: 715 after adjustments |  |
| Trend assumption: Linear deterministic trend |  |
| Series: DOM TQ  |  |  |  |
| Lags interval (in first differences): 1 to 4 |  |
|  |  |  |  |  |
| Unrestricted Cointegration Rank Test (Trace) |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Hypothesized |  | Trace | 0.05 |  |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.\*\* |
|  |  |  |  |  |
|  |  |  |  |  |
| None \* |  0.230237 |  326.7460 |  15.49471 |  0.0001 |
| At most 1 \* |  0.177425 |  139.6504 |  3.841466 |  0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  Trace test indicates 2 cointegrating eqn(s) at the 0.05 level |
|  \* denotes rejection of the hypothesis at the 0.05 level |
|  \*\*MacKinnon-Haug-Michelis (1999) p-values |  |
|  |  |  |  |  |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) |
|  |  |  |  |  |
|  |  |  |  |  |
| Hypothesized |  | Max-Eigen | 0.05 |  |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.\*\* |
|  |  |  |  |  |
|  |  |  |  |  |
| None \* |  0.230237 |  187.0955 |  14.26460 |  0.0001 |
| At most 1 \* |  0.177425 |  139.6504 |  3.841466 |  0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level |
|  \* denotes rejection of the hypothesis at the 0.05 level |
|  \*\*MacKinnon-Haug-Michelis (1999) p-values |  |

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| --- |
| Pairwise Granger Causality Tests |
| Date: 07/25/18 Time: 10:52 |
| Sample: 1 720 |  |
| Lags: 8 |  |  |
|  |  |  |  |
|  |  |  |  |
|  Null Hypothesis: | Obs | F-Statistic | Prob.  |
|  |  |  |  |
|  |  |  |  |
|  TQ does not Granger Cause DOM |  712 |  2.21798 | 0.0245 |
|  DOM does not Granger Cause TQ |  2.95448 | 0.0030 |
|  |  |  |  |
|  |  |  |  |