1. **Nardl equations for long run relation ship :**

GDP = f ( EXPN , TAX , TB , UM )

1. Nardl estimation:

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| Table 01 : nardl equation |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.938257 | 3.798304 | 0.510295 | 0.6164 |
| GDP(-1) | 1.429057 | 0.262701 | 5.439853 | 0.0000 |
| UM(-1) | -0.181626 | 0.146478 | -1.239951 | 0.2318 |
| TB(-1) | 0.019616 | 0.042995 | 0.456240 | 0.6540 |
| EXPN\_P(-1) | -0.397409 | 0.191455 | -2.075729 | 0.0534 |
| EXPN\_N(-1) | 0.227362 | 0.134056 | 1.696025 | 0.1081 |
| TAXES\_P(-1) | 0.227672 | 0.100020 | 2.276256 | 0.0361 |
| TAXES\_N(-1) | -0.081982 | 0.069340 | -1.182311 | 0.2534 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.661081 | Mean dependent var | | 0.118520 |
| Adjusted R-squared | 0.521526 | S.D. dependent var | | 2.299267 |
| S.E. of regression | 1.590444 | Akaike info criterion | | 4.020242 |
| Sum squared resid | 43.00173 | Schwarz criterion | | 4.410282 |
| Log likelihood | -42.25302 | Hannan-Quinn criter. | | 4.128422 |
| F-statistic | 4.737072 | Durbin-Watson stat | | 2.400275 |
| Prob(F-statistic) | 0.004152 |  |  |  |
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1. Co-integration for non linear equation

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| Wald Test: | |  |  |
| Equation: Nardl | | |  |
|  |  |  |  |
|  |  |  |  |
| Test Statistic | Value | df | Probability |
|  |  |  |  |
|  |  |  |  |
| F-statistic | 4.737072 | (7, 17) | 0.0042 |
| Chi-square | 33.15950 | 7 | 0.0000 |
|  |  |  |  |
|  |  |  |  |

1. Bond test for linear equation  ( shin et al)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Statistic | Value | k |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 2.184939 | 4 |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Critical Value Bounds | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Significance | I0 Bound | I1 Bound |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| 10% | 2.45 | 3.52 |  |  |
| 5% | 2.86 | 4.01 |  |  |
| 2.5% | 3.25 | 4.49 |  |  |
| 1% | 3.74 | 5.06 |  |  |
|  |  |  |  |  |
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1. Assymetric co-integration

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| --- | --- | --- | --- | --- |
| Ramsey RESET Test | | |  |  |
| Equation: NARDL | | |  |  |
| Specification: DGDP(-1) C GDP(-1) UM(-1) TB(-1) EXPN\_P(-1) | | | | |
| EXPN\_N(-1) TAXES\_P(-1) TAXES\_N(-1) | | | | |
| Omitted Variables: Squares of fitted values | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Value | df | Probability |  |
| t-statistic | 2.124515 | 16 | 0.0496 |  |
| F-statistic | 4.513566 | (1, 16) | 0.0496 |  |
| Likelihood ratio | 6.212442 | 1 | 0.0127 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-test summary: | | |  |  |
|  | Sum of Sq. | df | Mean Squares |  |
| Test SSR | 9.461599 | 1 | 9.461599 |  |
| Restricted SSR | 43.00173 | 17 | 2.529513 |  |
| Unrestricted SSR | 33.54013 | 16 | 2.096258 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| LR test summary: | | |  |  |
|  | Value | df |  |  |
| Restricted LogL | -42.25302 | 17 |  |  |
| Unrestricted LogL | -39.14680 | 16 |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
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