7.Appendix



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| **Figure 1**  Summary Statistics, using the observations 1991 – 2015   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | Mean | Median | S.D. | Min | Max | | GDP | 1.24 | 1.34 | 1.53 | -1.42 | 4.24 | | FDI | 1.41 | 0.854 | 1.81 | -0.900 | 6.08 | | EXPORT | 23.5 | 22.9 | 3.71 | 18.5 | 32.1 | | LIFE | 57.0 | 56.4 | 2.11 | 54.3 | 60.6 | | DEBT | 1.47e+009 | 1.43e+009 | 3.68e+008 | 6.48e+008 | 2.19e+009 | | AID | 3.93e+008 | 3.02e+008 | 1.71e+008 | 2.05e+008 | 6.89e+008 | | RESSOUCES | 5.76 | 5.01 | 1.62 | 4.15 | 9.00 | | UNEMPLOYE | 0.984 | 1.00 | 0.172 | 0.700 | 1.50 | | ELECTRICITY | 24.1 | 24.4 | 9.27 | 8.60 | 38.4 | | AGRICULTURE | 28.9 | 27.2 | 4.18 | 24.1 | 36.6 | | POPULATION | 3.01 | 2.96 | 0.231 | 2.77 | 3.50 | |

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| **Figure 2**  Correlation coefficients, using the observations 1991 - 2015  5% critical value (two-tailed) = 0.3961 for n = 25   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | FDI | EXPORT | LIFE | DEBT | AID |  | | 1.0000 | 0.4426 | 0.1308 | 0.2175 | 0.1493 | FDI | |  | 1.0000 | 0.1765 | 0.4425 | 0.0822 | EXPORT | |  |  | 1.0000 | 0.4958 | 0.8793 | LIFE | |  |  |  | 1.0000 | 0.2724 | DEBT | |  |  |  |  | 1.0000 | AID | |  |  |  |  |  |  | | RESSOUCES | UNEMPLOYE | ELECTRICITY | AGRICULTURE | POPULATION |  | | 0.2981 | 0.3348 | -0.0183 | 0.1339 | 0.0918 | FDI | | 0.5105 | 0.1314 | 0.0160 | 0.1886 | -0.0295 | EXPORT | | -0.4689 | 0.1236 | 0.9521 | -0.7272 | -0.8044 | LIFE | | -0.0982 | -0.1263 | 0.4801 | -0.4349 | -0.3731 | DEBT | | -0.4188 | 0.2328 | 0.8256 | -0.5816 | -0.6557 | AID | | 1.0000 | 0.2565 | -0.6158 | 0.7768 | 0.5961 | RESSOUCES | |  | 1.0000 | -0.0303 | 0.1274 | 0.2416 | UNEMPLOYE | |  |  | 1.0000 | -0.8172 | -0.9065 | ELECTRICITY | |  |  |  | 1.0000 | 0.7168 | AGRICULTURE | |  |  |  |  |  |  | |

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| **Figure 3**  Model 1: OLS, using observations 1991-2015 (T = 25)  Dependent variable: GDP  HAC standard errors, bandwidth 2 (Bartlett kernel)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | *Coefficient* | *Std. Error* | *t-ratio* | *p-value* |  | | Const | 117.823 | 43.3410 | 2.719 | 0.0176 | \*\* | | FDI | 0.376166 | 0.124213 | 3.028 | 0.0097 | \*\*\* | | EXPORT | 0.427092 | 0.0731566 | 5.838 | <0.0001 | \*\*\* | | LIFE | −2.90867 | 1.02251 | −2.845 | 0.0138 | \*\* | | DEBT | −2.45024e-09 | 7.19530e-010 | −3.405 | 0.0047 | \*\*\* | | AID | 2.64007e-09 | 2.79254e-09 | 0.9454 | 0.3617 |  | | RESSOUCES | −0.635304 | 0.314910 | −2.017 | 0.0648 | \* | | UNEMPLOYE | −2.33320 | 0.890754 | −2.619 | 0.0212 | \*\* | | ELECTRICITY | 0.301094 | 0.129524 | 2.325 | 0.0369 | \*\* | | AGRICULTURE | 0.108307 | 0.139997 | 0.7736 | 0.4530 |  | | POPULATION | 9.29104 | 3.25315 | 2.856 | 0.0135 | \*\* | | Time | 0.672993 | 0.354287 | 1.900 | 0.0799 | \* |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Mean dependent var | 1.244480 |  | S.D. dependent var | 1.534162 | | Sum squared resid | 24.76766 |  | S.E. of regression | 1.380292 | | R-squared | 0.561538 |  | Adjusted R-squared | 0.190533 | | F(11, 13) | 22.56101 |  | P-value(F) | 1.13e-06 | | Log-likelihood | −35.35675 |  | Akaike criterion | 94.71350 | | Schwarz criterion | 109.3400 |  | Hannan-Quinn | 98.77027 | | Rho | −0.446339 |  | Durbin-Watson | 2.888818 | |

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| **Figure 4**  Breusch-Pagan test for heteroskedasticity  OLS, using observations 1991-2015 (T = 25)  Dependent variable: scaled uhat^2  coefficient std. error t-ratio p-value  ---------------------------------------------------------------  const −99.9561 75.5840 −1.322 0.2088  FDI −0.568181 0.195639 −2.904 0.0123 \*\*  EXPORT 0.319751 0.118912 2.689 0.0186 \*\*  LIFE 1.73016 1.82209 0.9495 0.3597  DEBT −3.96355e-010 1.20201e-09 −0.3297 0.7468  AID −1.99395e-09 4.70341e-09 −0.4239 0.6785  RESSOUCES 0.0935576 0.325395 0.2875 0.7782  UNEMPLOYE −1.05918 1.95021 −0.5431 0.5962  ELECTRICITY 0.404999 0.211776 1.912 0.0781 \*  AGRICULTURE −0.206929 0.173981 −1.189 0.2556  POPULATION 2.34757 6.48972 0.3617 0.7234  time −1.02693 0.672944 −1.526 0.1510  Explained sum of squares = 39.731  Test statistic: LM = 19.865475,  with p-value = P(Chi-square(11) > 19.865475) = 0.047220 |

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| **Figure 5**  Model 2 : Heteroskedasticity-corrected, using observations 1991-2015 (T = 25)  Dependent variable: GDP   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | *Coefficient* | *Std. Error* | *t-ratio* | *p-value* |  | | Const | 114.239 | 45.4594 | 2.513 | 0.0259 | \*\* | | FDI | 0.362216 | 0.125701 | 2.882 | 0.0129 | \*\* | | EXPORT | 0.388693 | 0.0613545 | 6.335 | <0.0001 | \*\*\* | | LIFE | −2.69745 | 0.937113 | −2.878 | 0.0129 | \*\* | | DEBT | −2.52344e-09 | 6.01062e-010 | −4.198 | 0.0010 | \*\*\* | | AID | 2.88035e-09 | 2.01819e-09 | 1.427 | 0.1771 |  | | RESSOUCES | −0.429801 | 0.238023 | −1.806 | 0.0942 | \* | | UNEMPLOYE | −2.44352 | 1.06264 | −2.299 | 0.0387 | \*\* | | ELECTRICITY | 0.277068 | 0.103302 | 2.682 | 0.0188 | \*\* | | AGRICULTURE | 0.0188960 | 0.150264 | 0.1258 | 0.9019 |  | | POPULATION | 7.78815 | 1.98395 | 3.926 | 0.0017 | \*\*\* | | Time | 0.598323 | 0.359538 | 1.664 | 0.1200 |  |   Statistics based on the weighted data:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Sum squared resid | 18.75117 |  | S.E. of regression | 1.200999 | | R-squared | 0.952365 |  | Adjusted R-squared | 0.912058 | | F(11, 13) | 23.62803 |  | P-value(F) | 8.60e-07 | | Log-likelihood | −31.87822 |  | Akaike criterion | 87.75643 | | Schwarz criterion | 102.3829 |  | Hannan-Quinn | 91.81320 | | Rho | −0.426152 |  | Durbin-Watson | 2.852282 |   Statistics based on the original data:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Mean dependent var | 1.244480 |  | S.D. dependent var | 1.534162 | | Sum squared resid | 25.89613 |  | S.E. of regression | 1.411386 | |

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| Figure 6  Model 3: Heteroskedasticity-corrected, using observations 1991-2015 (T = 25)  Dependent variable: GDP   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | *Coefficient* | *Std. Error* | *t-ratio* | *p-value* |  | | Const | 71.5367 | 23.9693 | 2.985 | 0.0093 | \*\*\* | | FDI | 0.313645 | 0.0850797 | 3.686 | 0.0022 | \*\*\* | | EXPORT | 0.419784 | 0.0329249 | 12.75 | <0.0001 | \*\*\* | | LIFE | −1.75324 | 0.477253 | −3.674 | 0.0023 | \*\*\* | | DEBT | −2.52861e-09 | 5.03010e-010 | −5.027 | 0.0002 | \*\*\* | | RESSOUCES | −0.526696 | 0.123777 | −4.255 | 0.0007 | \*\*\* | | UNEMPLOYE | −2.27341 | 0.764532 | −2.974 | 0.0095 | \*\*\* | | ELECTRICITY | 0.364951 | 0.0536154 | 6.807 | <0.0001 | \*\*\* | | POPULATION | 5.63340 | 2.62577 | 2.145 | 0.0487 | \*\* | | Time | 0.194430 | 0.161780 | 1.202 | 0.2481 |  |   Statistics based on the weighted data:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Sum squared resid | 19.55417 |  | S.E. of regression | 1.141758 | | R-squared | 0.983941 |  | Adjusted R-squared | 0.974306 | | F(9, 15) | 102.1200 |  | P-value(F) | 8.12e-12 | | Log-likelihood | −32.40237 |  | Akaike criterion | 84.80474 | | Schwarz criterion | 96.99350 |  | Hannan-Quinn | 88.18539 | | Rho | −0.407879 |  | Durbin-Watson | 2.815726 |   Statistics based on the original data:   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Mean dependent var | 1.244480 |  | S.D. dependent var | 1.534162 | | Sum squared resid | 26.15602 |  | S.E. of regression | 1.320505 | |

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| **Figure 7**  Variance Inflation Factors  Minimum possible value = 1.0  Values > 10.0 may indicate a collinearity problem  FDI 2.081  EXPORT 3.235  LIFE 245.190  DEBT 3.263  AID 10.719  RESSOUCES 4.650  UNEMPLOYE 1.883  ELECTRICITY 64.218  AGRICULTURE 8.789  POPULATION 37.336  time 408.495  VIF(j) = 1/(1 - R(j)^2), where R(j) is the multiple correlation coefficient  between variable j and the other independent variables  Belsley-Kuh-Welsch collinearity diagnostics:  --- variance proportions ---  lambda cond const FDI EXPORT LIFE DEBT AID RESSOUCES UNEMPLOYE ELECTRIC~ AGRICULT~ POPULATI~ time  10.981 1.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  0.643 4.132 0.000 0.017 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000  0.292 6.132 0.000 0.054 0.000 0.000 0.000 0.001 0.000 0.000 0.000 0.000 0.000 0.000  0.053 14.372 0.000 0.000 0.002 0.000 0.027 0.027 0.000 0.009 0.000 0.000 0.000 0.000  0.014 27.825 0.000 0.106 0.002 0.000 0.028 0.007 0.023 0.096 0.002 0.001 0.000 0.000  0.007 38.413 0.000 0.065 0.048 0.000 0.068 0.001 0.044 0.093 0.002 0.002 0.000 0.001  0.005 48.111 0.000 0.017 0.025 0.000 0.081 0.209 0.008 0.469 0.000 0.001 0.000 0.003  0.003 60.960 0.000 0.123 0.157 0.000 0.019 0.233 0.089 0.024 0.023 0.002 0.000 0.003  0.001 122.276 0.000 0.000 0.063 0.000 0.056 0.006 0.009 0.065 0.215 0.030 0.014 0.048  0.000 253.714 0.000 0.000 0.295 0.000 0.452 0.005 0.667 0.228 0.319 0.878 0.007 0.082  0.000 430.464 0.014 0.000 0.347 0.003 0.050 0.180 0.059 0.002 0.391 0.038 0.329 0.001  0.000 3655.779 0.986 0.618 0.060 0.997 0.220 0.332 0.102 0.014 0.047 0.048 0.649 0.863  lambda = eigenvalues of X'X, largest to smallest  cond = condition index  note: variance proportions columns sum to 1.0 |

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| **Figure 8**  Model : OLS, using observations 1991-2015 (T = 25)  Dependent variable: GDP  HAC standard errors, bandwidth 2 (Bartlett kernel)   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | *Coefficient* | *Std. Error* | *t-ratio* | *p-value* |  | | Const | 40.0371 | 19.2375 | 2.081 | 0.0550 | \* | | EXPORT | 0.438376 | 0.120104 | 3.650 | 0.0024 | \*\*\* | | LIFE | −1.01210 | 0.487913 | −2.074 | 0.0557 | \* | | DEBT | −1.63980e-09 | 9.52833e-010 | −1.721 | 0.1058 |  | | AID | 3.45352e-010 | 3.30648e-09 | 0.1044 | 0.9182 |  | | RESSOUCES | −0.698112 | 0.239556 | −2.914 | 0.0107 | \*\* | | UNEMPLOYE | −1.59426 | 1.03401 | −1.542 | 0.1439 |  | | ELECTRICITY | 0.257625 | 0.172951 | 1.490 | 0.1571 |  | | AGRICULTURE | 0.0100538 | 0.105260 | 0.09551 | 0.9252 |  | | POPULATION | 3.30002 | 3.34065 | 0.9878 | 0.3389 |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Mean dependent var | 1.244480 |  | S.D. dependent var | 1.534162 | | Sum squared resid | 30.09567 |  | S.E. of regression | 1.416467 | | R-squared | 0.467217 |  | Adjusted R-squared | 0.147547 | | F(9, 15) | 23.10056 |  | P-value(F) | 3.20e-07 | | Log-likelihood | −37.79228 |  | Akaike criterion | 95.58456 | | Schwarz criterion | 107.7733 |  | Hannan-Quinn | 98.96520 | | Rho | −0.150463 |  | Durbin-Watson | 2.266677 | |

