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## APPENDICES

### Appendix A1

#### Appendix A1.1

The objective is to optimise

$$\text{Max } U(C, g_i, g_j) = C^\beta g_i^\gamma g_j^\delta \quad 1$$

subject to

$$Y = C + G, \text{ and } G = g_i + g_j \quad 2$$

forming a Lagrangian expression:

$$L = C^\beta g_i^\gamma g_j^\delta + \lambda(Y - C - g_i - g_j) \quad 3$$

Differentiating equation 3 with respect to  $C$ ,  $g_i$ ,  $g_j$ , and  $\lambda$  and setting them equal to zero yields:

$$L_c = \beta C^{\beta-1} g_i^\gamma g_j^\delta - \lambda = 0 \quad 4$$

$$L_{g_i} = \gamma C^\beta g_i^{\gamma-1} g_j^\delta - \lambda = 0 \quad 5$$

$$L_{g_j} = \delta C^\beta g_i^\gamma g_j^{\delta-1} - \lambda = 0 \quad 6$$

$$L_\lambda = Y - C - g_i - g_j = 0 \quad 7$$

Equating equation 4 to equation 5 yields

$$C = \frac{\beta}{\gamma} g_i \quad 8$$

Substituting 8 into 7 yields

$$L_\lambda = Y - \frac{\beta}{\gamma} g_i - (g_i + g_j) = 0 \quad 9a$$

This is the same as

$$Y - \frac{\beta}{\gamma} g_i - G = 0 \quad 9b$$

But we know  $G=T+D$ , which implies that

$$G = \tau Y + [d_1 + (1+r)d_0] \quad 10$$

Substituting equation 10 into equation 9' yields

$$Y - \frac{\beta}{\gamma} g_i - \tau Y - [d_1 + (1+r)d_0] = 0 \quad 11a$$

Solving for  $g_i$  in equation 11a yields the optimal values

$$g_i = \frac{\beta}{\gamma} (1-\tau)Y - \frac{\beta}{\gamma} [d_1 + (1+r)d_0] \quad 11b$$

Dividing both sides of equation 11 by Y and then by G yields the corruption free solutions

$$\frac{g_i}{Y} = \frac{\gamma}{\beta} (1-\tau) - \frac{\gamma}{\beta} [d_1 + (1+r)d_0] , \text{ and } \frac{g_i}{G} = \frac{\gamma}{\beta} (1-\tau) \frac{Y}{G} - \frac{\gamma}{\beta} \left[ \frac{d_1}{G} + (1+r) \frac{d_0}{G} \right] \quad 12a$$

Repeating the above procedure we can obtain the optimal solutions for  $g_j$  as

$$\frac{g_j}{Y} = \frac{\delta}{\beta} (1-\tau) - \frac{\delta}{\beta} [d_1 + (1+r)d_0] , \text{ and } \frac{g_j}{G} = \frac{\delta}{\beta} (1-\tau) \frac{Y}{G} - \frac{\delta}{\beta} [d_1 + (1+r)d_0] \quad 12b$$



## **Appendix A1.2: Countries included in the study**

|               |       |
|---------------|-------|
| Angola        | Ang   |
| Botswana      | Bots  |
| Burundi       | Bur   |
| Cameroon      | Came  |
| Côte d'Ivoire | CDI   |
| Djibouti      | Dji   |
| Ethiopia      | Eth   |
| Eritrea       | Eri   |
| Ghana         | Gha   |
| Guinea-Bissau | Gunb  |
| Kenya         | Ken   |
| Lesotho       | Les   |
| Madagascar    | Madag |
| Malawi        | Malaw |
| Mali          | Mali  |
| Mauritius     | Maur  |
| Morocco       | Moro  |
| Namibia       | Nam   |
| Niger         | Niger |
| Nigeria       | Nga   |
| Rwanda        | Rwa   |
| Senegal       | Sen   |
| Sierra Leone  | Sleon |
| South Africa  | ZAR   |
| Swaziland     | Swa   |
| The Gambia    | Gam   |
| Uganda        | Uga   |
| Tunisia       | Tun   |

## **Appendix A1.2: 'Most corrupt' countries**

Angola

Burundi

Cameroon

Côte d'Ivoire

Djibouti

Guinea-Bissau

Kenya

Malawi

Mali

Niger

Nigeria

Sierra Leone

The Gambia

Uganda

## **Appendix A1.2: 'Less corrupt' countries**

Botswana

Ethiopia

Eritrea

Ghana

Lesotho

Madagascar

Mauritius

Morocco

Namibia

Rwanda

Senegal

South Africa

Swaziland

Tunisia

### Appendix A1.3: Functional classification of public budget

| Classification of functions of government (COFOG) | Oxley and Martin (1991)      | Bleaney, Kneller and Gemmill (1999) | Functional categories to be used in this study |
|---|------------------------------|-------------------------------------|--|
| General administration                            | Pure public goods            | Productive                          | Public services                                |
| Public order and safety                           |                              |                                     | Defence  |
| Defence   |                              |                                     | Health   |
| Health  | Merit goods                  | Productive                          | Education                                      |
| Education   |                              |                                     | Economic services                              |
| Housing   |                              |                                     |  |
| Transport and communication                       | Economic services and others | Productive                          |  |
| Other economic services                           |                              |                                     |  |
| Recreational, cultural and religious affairs      | Economic services and others | Non-productive                      | Other expenditures                             |
| Other non-classified functions                    |                              |                                     |  |
| Social welfare                                    | Transfers                    |                                     | Social welfare                                 |

## Appendix A1.4: Sources of governance data

| <u>Source</u>                                  | <u>Publication</u>                         | <u>Code</u> | <u>Type</u> | <u>Public</u> | <u>Country Coverage</u> |
|--|--|-------------|-------------|---------------|-------------------------|
| African Development Bank                       | Country Policy & Institutional Assessments | ADB         | Poll        | No            | 50                      |
| Afrobarometer                                  | Afrobarometer Survey                       | AFR         | Survey      | Yes           | 18                      |
| Asian Development Bank                         | Country Policy & Institutional Assessments | ADB         | Poll        | Partial       | 26                      |
| Bertelsmann Foundation                         | Bertelsmann Transformation Index           | BTI         | Poll        | Yes           | 119                     |
| Brown University's Center for Public Policy    | Global E-Governance                        | EGV         | Poll        | Yes           | 192                     |
| Business Environment Risk Intelligence         | Business Risk Service                      | BRI         | Poll        | Yes           | 50                      |
| Business Environment Risk Intelligence         | Qualitative Risk Measure                   | QLM         | Poll        | Yes           | 115                     |
| Columbia University                            | State Capacity Project                     | COU         | Poll        | Yes           | 108                     |
| Economist Intelligence Unit                    | Country Risk Service                       | EIU         | Poll        | Yes           | 120                     |
| European Bank for Reconstruction & Development | Transition Report                          | EBR         | Poll        | Yes           | 27                      |
| Freedom House                                  | Countries at the Crossroads                | CCR         | Poll        | Yes           | 30                      |
| Freedom House                                  | Nations in Transition                      | FHT         | Poll        | Yes           | 27                      |
| Freedom House                                  | Freedom in the World                       | FRH         | Poll        | Yes           | 192                     |
| Gallup International                           | Voice of the People Survey                 | GAL         | Survey      | Yes           | 69                      |
| Global Insight                                 | Global Risk Service                        | DRI         | Poll        | Yes           | 111                     |
| Global Insight                                 | Business Conditions and Risk               | WMO         | Poll        | Yes           | 202                     |
| Heritage Foundation                            | Economic Freedom Index                     | HER         | Poll        | Yes           | 161                     |
| IJET Travel Intelligence                       | Country Security Risk Assessment           | IJT         | Poll        | Yes           | 167                     |
| Institute for Management and Development       | World Competitiveness Yearbook             | WCY         | Survey      | Yes           | 49                      |
| International Research & Exchanges Board       | Media Sustainability Index                 | MSI         | Poll        | Yes           | 19                      |
| Latinobarometro                                | Latinobarometro Surveys                    | LBO         | Survey      | Yes           | 18                      |
| Merchant International Group                   | Grey Area Dynamics                         | MIG         | Poll        | Yes           | 159                     |
| Political & Economic Risk Consultancy          | Corruption Survey                          | PRC         | Survey      | Yes           | 10                      |
| Political Risk Services                        | International Country Risk Guide           | PRG         | Poll        | Yes           | 140                     |
| Reporters Without Borders                      | Reporters Without Borders                  | RBF         | Poll        | Yes           | 165                     |
| State Department                               | Trafficking in People Report               | TPR         | Poll        | Yes           | 149                     |
| State Department / Amnesty International       | Human Rights Dataset                       | HUM         | Poll        | Yes           | 192                     |
| World Bank                                     | Business Enterprise Environment Survey     | BPE         | Survey      | Yes           | 27                      |
| World Bank                                     | World Business Environment Survey          | WBS         | Survey      | Yes           | 80                      |
| World Bank                                     | Country Policy & Institutional Assessments | PIA         | Poll        | Partial       | 136                     |
| World Economic Forum                           | Global Competitiveness Report              | GCR         | Survey      | Yes           | 117                     |

Source: Adopted from Kaufman, *et al.* (2006)

## Appendix 2: Descriptive statistics of the country data

**Table A2.1: General public service spending as percentage of the total public budget**

| T=10          | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 17.61 | 17.55  | 33.19   | 3.57    | 8.76      | 0.17     | 2.53     | 0.14        | 0.933       |
| Burundi       | 36.80 | 37.13  | 44.76   | 29.01   | 4.31      | -0.03    | 2.98     | 0.00        | 0.999       |
| Botswana      | 32.35 | 33.49  | 36.00   | 26.59   | 3.27      | -0.63    | 1.98     | 1.09        | 0.579       |
| Côte d'Ivoire | 9.75  | 9.75   | 12.80   | 6.24    | 2.09      | 0.04     | 2.14     | 0.31        | 0.857       |
| Cameroon      | 12.60 | 11.54  | 16.15   | 9.86    | 2.61      | 0.32     | 1.34     | 1.32        | 0.518       |
| Djibouti      | 38.23 | 38.07  | 41.71   | 35.35   | 1.84      | 0.30     | 2.64     | 0.20        | 0.903       |
| Eritrea       | 12.66 | 12.21  | 16.46   | 10.80   | 1.67      | 1.25     | 3.69     | 2.82        | 0.244       |
| Ethiopia      | 15.58 | 15.01  | 19.52   | 12.70   | 2.50      | 0.49     | 1.73     | 1.06        | 0.588       |
| Ghana         | 8.77  | 8.89   | 9.36    | 7.46    | 0.54      | -1.49    | 4.53     | 4.66        | 0.097       |
| The Gambia    | 27.32 | 28.57  | 32.78   | 16.93   | 4.70      | -1.17    | 3.50     | 2.38        | 0.304       |
| Guinea Bissau | 23.53 | 19.22  | 45.77   | 13.10   | 11.83     | 1.09     | 2.68     | 2.02        | 0.364       |
| Kenya         | 20.50 | 20.27  | 29.46   | 13.32   | 5.66      | 0.11     | 1.80     | 0.62        | 0.734       |
| Lesotho       | 39.66 | 38.06  | 58.91   | 28.17   | 8.40      | 1.00     | 3.98     | 2.06        | 0.358       |
| Morocco       | 24.19 | 23.76  | 27.44   | 21.73   | 2.03      | 0.55     | 2.02     | 0.90        | 0.637       |
| Madagascar    | 18.86 | 18.97  | 28.33   | 9.75    | 6.22      | 0.02     | 1.63     | 0.78        | 0.678       |
| Mali          | 11.28 | 11.85  | 13.46   | 5.35    | 2.43      | -1.48    | 4.56     | 4.69        | 0.096       |
| Mauritius     | 19.88 | 19.62  | 22.75   | 17.79   | 1.53      | 0.49     | 2.30     | 0.60        | 0.740       |
| Malawi        | 23.64 | 23.29  | 35.24   | 18.45   | 4.87      | 1.32     | 4.26     | 3.56        | 0.169       |
| Namibia       | 21.93 | 21.93  | 23.98   | 20.16   | 1.37      | 0.00     | 1.82     | 0.58        | 0.748       |
| Niger         | 29.39 | 28.52  | 36.59   | 25.14   | 3.61      | 0.72     | 2.56     | 0.95        | 0.622       |
| Nigeria       | 10.28 | 9.75   | 16.17   | 5.09    | 3.18      | 0.35     | 2.64     | 0.26        | 0.880       |
| Rwanda        | 38.93 | 37.21  | 48.22   | 28.41   | 6.03      | -0.05    | 2.19     | 0.28        | 0.870       |
| Senegal       | 22.39 | 24.14  | 29.31   | 15.62   | 5.27      | -0.21    | 1.47     | 1.05        | 0.590       |
| Sierra Leon   | 19.54 | 21.09  | 23.35   | 11.96   | 4.06      | -0.88    | 2.26     | 1.52        | 0.468       |
| Swaziland     | 36.51 | 38.09  | 40.07   | 30.04   | 3.05      | -0.91    | 2.87     | 1.38        | 0.501       |
| Tunisia       | 7.69  | 8.05   | 10.28   | 3.28    | 2.30      | -0.85    | 2.58     | 1.27        | 0.529       |
| Uganda        | 26.96 | 25.40  | 35.20   | 21.90   | 5.04      | 0.66     | 1.79     | 1.34        | 0.512       |
| South Africa  | 19.42 | 19.46  | 21.44   | 17.27   | 1.54      | -0.21    | 1.62     | 0.86        | 0.650       |

**Table A2.2: Defence spending as percentage of the total public budget**

| T=10          | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 25.75 | 31.41  | 36.30   | 6.40    | 10.88     | -0.60    | 1.78     | 1.21        | 0.546       |
| Burundi       | 36.66 | 36.79  | 46.62   | 27.88   | 4.60      | 0.36     | 4.35     | 0.97        | 0.615       |
| Botswana      | 10.78 | 10.57  | 11.70   | 9.95    | 0.61      | 0.25     | 1.63     | 0.89        | 0.641       |
| Côte d'Ivoire | 2.51  | 2.28   | 3.81    | 1.53    | 0.77      | 0.46     | 1.94     | 0.81        | 0.665       |
| Cameroon      | 9.95  | 7.27   | 16.03   | 3.79    | 4.64      | 0.30     | 1.41     | 1.20        | 0.549       |
| Djibouti      | 16.48 | 14.62  | 30.15   | 2.82    | 8.73      | 0.11     | 2.09     | 0.37        | 0.832       |
| Eritrea       | 50.53 | 51.51  | 65.84   | 28.64   | 10.87     | -0.44    | 2.97     | 0.32        | 0.852       |
| Ethiopia      | 8.86  | 8.77   | 10.55   | 7.98    | 0.67      | 1.57     | 5.43     | 6.57        | 0.037       |
| Ghana         | 5.86  | 5.80   | 6.17    | 5.67    | 0.18      | 0.65     | 2.03     | 1.09        | 0.579       |
| The Gambia    | 5.03  | 5.08   | 6.06    | 3.68    | 0.69      | -0.42    | 2.65     | 0.35        | 0.841       |
| Guinea Bissau | 14.33 | 15.13  | 16.96   | 6.87    | 3.01      | -1.69    | 4.91     | 6.30        | 0.043       |
| Kenya         | 5.85  | 5.78   | 7.22    | 4.06    | 1.08      | -0.09    | 1.94     | 0.48        | 0.786       |
| Lesotho       | 4.74  | 4.79   | 5.56    | 3.73    | 0.56      | -0.52    | 2.50     | 0.55        | 0.758       |
| Morocco       | 13.94 | 13.63  | 16.08   | 12.87   | 1.10      | 0.70     | 2.26     | 1.04        | 0.595       |
| Madagascar    | 11.57 | 12.37  | 14.84   | 3.68    | 3.42      | -1.39    | 3.88     | 3.54        | 0.170       |
| Mali          | 8.26  | 8.68   | 9.78    | 5.40    | 1.41      | -0.93    | 2.72     | 1.46        | 0.482       |
| Mauritius     | 6.29  | 6.10   | 7.62    | 5.67    | 0.58      | 1.27     | 3.73     | 2.90        | 0.235       |
| Malawi        | 6.58  | 5.88   | 12.19   | 2.75    | 3.33      | 0.49     | 1.80     | 1.00        | 0.606       |
| Namibia       | 7.43  | 7.38   | 9.03    | 5.42    | 1.22      | -0.35    | 1.92     | 0.69        | 0.708       |
| Niger         | 4.73  | 4.81   | 5.02    | 4.20    | 0.26      | -1.02    | 2.89     | 1.76        | 0.416       |
| Nigeria       | 7.84  | 7.17   | 11.42   | 3.57    | 2.47      | -0.07    | 2.02     | 0.41        | 0.815       |
| Rwanda        | 28.99 | 29.17  | 40.50   | 15.21   | 8.03      | -0.27    | 2.01     | 0.53        | 0.767       |
| Senegal       | 11.61 | 11.54  | 13.51   | 9.29    | 1.41      | -0.25    | 1.86     | 0.65        | 0.724       |
| Sierra Leon   | 13.82 | 14.16  | 16.37   | 9.86    | 1.83      | -0.73    | 3.46     | 0.96        | 0.618       |
| Swaziland     | 6.33  | 5.86   | 8.07    | 4.94    | 0.96      | 0.43     | 2.11     | 0.64        | 0.725       |
| Tunisia       | 13.36 | 13.16  | 14.20   | 12.84   | 0.51      | 0.69     | 1.80     | 1.39        | 0.499       |
| Uganda        | 16.85 | 14.33  | 27.30   | 12.24   | 5.42      | 1.17     | 2.72     | 2.32        | 0.314       |
| South Africa  | 5.68  | 5.56   | 6.72    | 4.54    | 0.81      | 0.07     | 1.46     | 1.00        | 0.608       |

**Table A2.3: Education spending as percentage of the total public budget**

| T=10          | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 5.08  | 5.00   | 8.70    | 2.14    | 2.03      | 0.17     | 2.19     | 0.32        | 0.852       |
| Burundi       | 19.00 | 17.02  | 34.73   | 14.94   | 5.72      | 2.35     | 7.11     | 16.27       | 0.000       |
| Botswana      | 19.66 | 19.75  | 20.92   | 18.47   | 0.83      | 0.02     | 1.64     | 0.77        | 0.680       |
| Côte d'Ivoire | 15.60 | 16.89  | 24.14   | 7.27    | 6.39      | -0.09    | 1.42     | 1.06        | 0.589       |
| Cameroon      | 17.35 | 20.25  | 23.70   | 8.24    | 6.52      | -0.37    | 1.33     | 1.39        | 0.498       |
| Djibouti      | 12.24 | 12.10  | 15.03   | 10.32   | 1.49      | 0.69     | 2.45     | 0.91        | 0.635       |
| Eritrea       | 4.82  | 4.39   | 9.11    | 3.63    | 1.60      | 2.12     | 6.41     | 12.36       | 0.002       |
| Ethiopia      | 22.27 | 21.70  | 41.52   | 10.25   | 9.28      | 0.59     | 3.02     | 0.57        | 0.751       |
| Ghana         | 17.55 | 17.02  | 20.62   | 16.13   | 1.52      | 1.04     | 2.78     | 1.82        | 0.402       |
| The Gambia    | 5.05  | 3.75   | 14.44   | 1.19    | 4.08      | 1.35     | 3.82     | 3.32        | 0.190       |
| Guinea Bissau | 17.53 | 17.57  | 19.94   | 14.27   | 1.64      | -0.57    | 2.80     | 0.57        | 0.753       |
| Kenya         | 22.01 | 22.07  | 26.87   | 17.24   | 3.26      | -0.09    | 1.83     | 0.59        | 0.746       |
| Lesotho       | 19.73 | 20.00  | 23.94   | 14.83   | 2.70      | -0.44    | 2.53     | 0.41        | 0.813       |
| Morocco       | 19.85 | 19.30  | 21.90   | 18.61   | 1.22      | 0.80     | 2.07     | 1.42        | 0.493       |
| Madagascar    | 17.79 | 18.20  | 26.17   | 6.93    | 6.80      | -0.19    | 1.53     | 0.97        | 0.617       |
| Mali          | 12.79 | 13.12  | 15.33   | 6.61    | 2.58      | -1.38    | 4.36     | 3.96        | 0.138       |
| Mauritius     | 10.97 | 10.76  | 12.12   | 10.09   | 0.61      | 0.53     | 2.34     | 0.65        | 0.721       |
| Malawi        | 17.17 | 17.04  | 23.84   | 11.40   | 3.73      | 0.26     | 2.38     | 0.27        | 0.872       |
| Namibia       | 23.77 | 23.57  | 26.76   | 21.36   | 1.53      | 0.39     | 2.75     | 0.28        | 0.870       |
| Niger         | 10.38 | 9.86   | 13.05   | 8.87    | 1.41      | 0.86     | 2.44     | 1.35        | 0.509       |
| Nigeria       | 4.56  | 4.34   | 6.24    | 2.94    | 1.20      | 0.06     | 1.53     | 0.91        | 0.634       |
| Rwanda        | 16.55 | 15.03  | 25.03   | 11.83   | 4.73      | 0.80     | 2.18     | 1.33        | 0.513       |
| Senegal       | 25.01 | 25.33  | 27.96   | 21.20   | 1.91      | -0.52    | 2.95     | 0.45        | 0.799       |
| Sierra Leon   | 19.26 | 19.65  | 20.96   | 16.47   | 1.34      | -0.81    | 2.89     | 1.11        | 0.574       |
| Swaziland     | 21.51 | 20.30  | 25.35   | 19.37   | 2.25      | 0.82     | 2.15     | 1.44        | 0.488       |
| Tunisia       | 17.67 | 17.62  | 19.32   | 16.69   | 0.83      | 0.73     | 2.63     | 0.95        | 0.623       |
| Uganda        | 20.79 | 19.53  | 25.12   | 18.03   | 2.68      | 0.72     | 1.88     | 1.39        | 0.499       |
| South Africa  | 20.43 | 20.41  | 21.96   | 18.35   | 1.00      | -0.56    | 3.16     | 0.53        | 0.766       |



**Table A2.4: Health spending as percentage of the total public budget**

| T=10          | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 3.96  | 3.88   | 5.70    | 1.43    | 1.35      | -0.26    | 2.39     | 0.27        | 0.874       |
| Burundi       | 3.28  | 2.95   | 5.83    | 2.50    | 0.94      | 2.21     | 6.71     | 13.91       | 0.001       |
| Botswana      | 4.86  | 4.37   | 6.59    | 4.12    | 0.95      | 0.92     | 2.17     | 1.70        | 0.427       |
| Côte d'Ivoire | 9.49  | 9.71   | 11.04   | 7.04    | 1.27      | -0.56    | 2.47     | 0.65        | 0.724       |
| Cameroon      | 4.23  | 4.31   | 6.55    | 2.42    | 1.39      | 0.38     | 2.06     | 0.61        | 0.737       |
| Djibouti      | 5.56  | 5.52   | 6.14    | 5.20    | 0.28      | 0.84     | 2.90     | 1.19        | 0.552       |
| Eritrea       | 3.00  | 2.73   | 5.30    | 2.25    | 0.88      | 1.97     | 5.99     | 10.20       | 0.006       |
| Ethiopia      | 10.98 | 10.88  | 14.32   | 8.35    | 1.71      | 0.30     | 2.76     | 0.17        | 0.918       |
| Ghana         | 3.76  | 3.36   | 5.87    | 2.57    | 1.17      | 0.76     | 2.14     | 1.26        | 0.532       |
| The Gambia    | 11.79 | 11.66  | 15.78   | 8.06    | 2.94      | 0.05     | 1.42     | 1.05        | 0.592       |
| Guinea Bissau | 4.22  | 4.22   | 5.77    | 2.44    | 0.91      | -0.37    | 3.06     | 0.23        | 0.890       |
| Kenya         | 6.39  | 6.41   | 7.23    | 5.40    | 0.68      | -0.04    | 1.48     | 0.96        | 0.619       |
| Lesotho       | 6.84  | 6.88   | 9.86    | 4.23    | 1.50      | 0.26     | 3.31     | 0.16        | 0.925       |
| Morocco       | 3.89  | 3.90   | 4.51    | 3.37    | 0.39      | 0.17     | 1.74     | 0.72        | 0.699       |
| Madagascar    | 6.55  | 6.58   | 8.77    | 3.92    | 1.53      | -0.20    | 2.06     | 0.43        | 0.806       |
| Mali          | 6.09  | 6.45   | 7.73    | 3.78    | 1.16      | -0.75    | 2.78     | 0.95        | 0.622       |
| Mauritius     | 6.02  | 6.02   | 6.54    | 5.62    | 0.24      | 0.71     | 4.07     | 1.32        | 0.518       |
| Malawi        | 9.35  | 9.00   | 14.34   | 6.08    | 2.61      | 0.52     | 2.36     | 0.63        | 0.732       |
| Namibia       | 10.57 | 10.47  | 11.22   | 9.90    | 0.44      | 0.18     | 1.88     | 0.58        | 0.749       |
| Niger         | 7.11  | 7.32   | 8.80    | 5.86    | 0.86      | 0.22     | 2.78     | 0.10        | 0.952       |
| Nigeria       | 2.33  | 2.05   | 4.42    | 1.00    | 1.14      | 0.52     | 2.11     | 0.77        | 0.679       |
| Rwanda        | 3.61  | 3.71   | 4.54    | 2.34    | 0.70      | -0.73    | 2.53     | 0.99        | 0.610       |
| Senegal       | 5.45  | 5.33   | 6.78    | 4.64    | 0.70      | 0.65     | 2.27     | 0.92        | 0.631       |
| Sierra Leon   | 6.74  | 7.43   | 8.54    | 2.88    | 1.93      | -0.85    | 2.45     | 1.32        | 0.516       |
| Swaziland     | 7.57  | 7.50   | 8.48    | 6.91    | 0.49      | 0.34     | 2.43     | 0.33        | 0.849       |
| Tunisia       | 6.29  | 6.20   | 7.11    | 5.76    | 0.44      | 0.50     | 2.15     | 0.72        | 0.697       |
| Uganda        | 6.66  | 6.92   | 8.33    | 5.10    | 1.01      | -0.03    | 1.94     | 0.47        | 0.792       |
| South Africa  | 9.69  | 9.64   | 10.34   | 8.93    | 0.49      | -0.11    | 1.91     | 0.51        | 0.774       |

**Table A2.5: Social welfare spending as percentage of the total public budget**

|               | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 5.03  | 4.82   | 9.81    | 1.43    | 2.95      | 0.39     | 1.87     | 0.80        | 0.67        |
| Burundi       | 0.65  | 0.58   | 1.17    | 0.35    | 0.29      | 0.66     | 2.00     | 1.14        | 0.57        |
| Botswana      | 8.41  | 8.21   | 9.99    | 7.11    | 1.04      | 0.35     | 1.67     | 0.94        | 0.63        |
| Côte d'Ivoire | 14.45 | 15.55  | 22.80   | 7.51    | 5.49      | 0.02     | 1.53     | 0.91        | 0.64        |
| Cameroon      | 2.35  | 2.30   | 3.06    | 1.65    | 0.48      | 0.12     | 1.71     | 0.72        | 0.70        |
| Djibouti      | 3.11  | 3.16   | 4.33    | 2.07    | 0.70      | 0.11     | 2.28     | 0.23        | 0.89        |
| Eritrea       | 3.72  | 2.21   | 14.57   | 0.55    | 4.13      | 2.02     | 5.98     | 10.47       | 0.01        |
| Ethiopia      | 8.87  | 9.03   | 10.33   | 5.90    | 1.24      | -1.31    | 4.44     | 3.73        | 0.15        |
| Ghana         | 9.78  | 8.37   | 17.59   | 6.11    | 4.12      | 1.12     | 2.75     | 2.13        | 0.34        |
| The Gambia    | 0.26  | 0.27   | 0.31    | 0.17    | 0.04      | -0.78    | 2.99     | 1.01        | 0.60        |
| Guinea Bissau | 11.04 | 11.81  | 14.86   | 5.79    | 2.75      | -0.83    | 2.80     | 1.15        | 0.56        |
| Kenya         | 2.12  | 2.03   | 3.33    | 1.02    | 0.71      | 0.31     | 2.13     | 0.47        | 0.79        |
| Lesotho       | 1.37  | 1.41   | 1.67    | 0.98    | 0.19      | -0.69    | 3.40     | 0.85        | 0.65        |
| Morocco       | 1.43  | 1.55   | 1.88    | 1.00    | 0.30      | -0.19    | 1.66     | 0.80        | 0.67        |
| Madagascar    | 1.36  | 1.14   | 3.22    | 0.73    | 0.77      | 1.54     | 4.45     | 4.85        | 0.09        |
| Mali          | 3.82  | 3.89   | 4.82    | 2.44    | 0.73      | -0.52    | 2.43     | 0.59        | 0.75        |
| Mauritius     | 20.48 | 20.33  | 23.69   | 17.69   | 1.70      | 0.26     | 2.66     | 0.16        | 0.92        |
| Malawi        | 9.34  | 8.06   | 14.80   | 6.48    | 2.91      | 0.93     | 2.33     | 1.64        | 0.44        |
| Namibia       | 16.03 | 16.38  | 18.96   | 13.27   | 2.06      | -0.05    | 1.48     | 0.97        | 0.62        |
| Niger         | 2.55  | 1.88   | 4.84    | 0.99    | 1.48      | 0.52     | 1.59     | 1.28        | 0.53        |
| Nigeria       | 1.82  | 1.79   | 3.38    | 0.23    | 1.09      | -0.01    | 1.55     | 0.88        | 0.65        |
| Rwanda        | 2.51  | 1.47   | 8.04    | 0.78    | 2.28      | 1.55     | 4.45     | 4.87        | 0.09        |
| Senegal       | 3.23  | 2.24   | 9.47    | 0.50    | 2.57      | 1.45     | 4.49     | 4.44        | 0.11        |
| Sierra Leon   | 5.23  | 5.76   | 6.19    | 3.98    | 0.96      | -0.36    | 1.23     | 1.52        | 0.47        |
| Swaziland     | 4.11  | 3.86   | 5.61    | 3.21    | 0.74      | 0.97     | 2.87     | 1.56        | 0.46        |
| Tunisia       | 23.26 | 23.58  | 24.84   | 21.20   | 1.29      | -0.34    | 1.69     | 0.92        | 0.63        |
| Uganda        | 0.94  | 0.77   | 1.66    | 0.56    | 0.42      | 0.79     | 2.07     | 1.41        | 0.50        |
| South Africa  | 15.72 | 15.55  | 18.05   | 14.18   | 1.22      | 0.69     | 2.69     | 0.83        | 0.66        |

**Table A2.6: Economic services spending as a percentage of the total public budget**

|               | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 7.05  | 5.88   | 22.50   | 1.43    | 5.97      | 1.84     | 5.70     | 8.68        | 0.01        |
| Burundi       | 6.04  | 5.41   | 15.18   | 1.38    | 4.23      | 0.96     | 3.15     | 1.54        | 0.46        |
| Botswana      | 16.43 | 16.20  | 20.26   | 12.63   | 2.60      | 0.17     | 1.95     | 0.51        | 0.78        |
| Côte d'Ivoire | 45.43 | 44.81  | 51.73   | 39.56   | 3.50      | 0.28     | 2.68     | 0.17        | 0.92        |
| Cameroon      | 26.93 | 20.61  | 46.48   | 14.85   | 11.91     | 0.71     | 1.95     | 1.30        | 0.52        |
| Djibouti      | 14.49 | 16.07  | 21.34   | 5.59    | 5.37      | -0.51    | 1.89     | 0.94        | 0.62        |
| Eritrea       | 4.05  | 1.96   | 10.14   | 0.68    | 3.79      | 0.74     | 1.75     | 1.56        | 0.46        |
| Ethiopia      | 21.52 | 20.57  | 28.96   | 14.26   | 4.24      | 0.20     | 2.53     | 0.16        | 0.92        |
| Ghana         | 18.23 | 19.00  | 22.64   | 12.81   | 2.67      | -0.55    | 3.17     | 0.51        | 0.77        |
| The Gambia    | 5.88  | 6.07   | 7.79    | 2.97    | 1.50      | -0.69    | 2.58     | 0.87        | 0.65        |
| Guinea Bissau | 21.48 | 20.88  | 32.28   | 12.10   | 7.29      | 0.08     | 1.59     | 0.84        | 0.66        |
| Kenya         | 18.41 | 18.23  | 24.31   | 12.39   | 3.50      | -0.02    | 2.34     | 0.18        | 0.91        |
| Lesotho       | 19.98 | 18.16  | 32.58   | 8.67    | 8.96      | 0.46     | 1.73     | 1.03        | 0.60        |
| Morocco       | 7.85  | 7.36   | 11.30   | 4.27    | 2.43      | 0.28     | 1.92     | 0.62        | 0.73        |
| Madagascar    | 5.92  | 5.60   | 10.18   | 2.58    | 2.11      | 0.44     | 3.01     | 0.32        | 0.85        |
| Mali          | 39.02 | 41.17  | 45.90   | 19.42   | 7.70      | -1.80    | 5.36     | 7.71        | 0.02        |
| Mauritius     | 9.25  | 9.03   | 11.29   | 7.98    | 1.05      | 0.69     | 2.50     | 0.89        | 0.64        |
| Malawi        | 9.78  | 7.92   | 14.71   | 5.80    | 3.31      | 0.43     | 1.49     | 1.25        | 0.54        |
| Namibia       | 13.60 | 13.67  | 17.15   | 10.43   | 2.61      | 0.03     | 1.26     | 1.27        | 0.53        |
| Niger         | 13.83 | 13.46  | 17.07   | 11.91   | 1.46      | 1.07     | 3.58     | 2.03        | 0.36        |
| Nigeria       | 11.45 | 10.50  | 23.09   | 1.78    | 6.72      | 0.09     | 2.28     | 0.23        | 0.89        |
| Rwanda        | 4.18  | 3.73   | 9.32    | 2.03    | 2.09      | 1.49     | 4.76     | 5.02        | 0.08        |
| Senegal       | 6.39  | 3.85   | 22.45   | 2.43    | 6.15      | 2.01     | 5.84     | 10.12       | 0.01        |
| Sierra Leon   | 7.18  | 7.74   | 8.05    | 5.43    | 0.97      | -0.82    | 2.12     | 1.44        | 0.49        |
| Swaziland     | 21.42 | 21.69  | 24.04   | 18.72   | 1.55      | -0.30    | 2.76     | 0.18        | 0.92        |
| Tunisia       | 14.77 | 14.55  | 18.83   | 12.48   | 1.94      | 0.81     | 2.93     | 1.09        | 0.58        |
| Uganda        | 19.16 | 23.28  | 27.71   | 3.38    | 9.66      | -0.76    | 2.01     | 1.37        | 0.50        |
| South Africa  | 10.89 | 10.38  | 15.12   | 9.02    | 1.72      | 1.61     | 4.78     | 5.65        | 0.06        |

**Table A2.7: 'Other' spending as percentage of the total public budget**

|               | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 35.30 | 31.49  | 59.03   | 23.40   | 12.87     | 1.23     | 2.91     | 2.53        | 0.28        |
| Burundi       | 2.23  | 2.33   | 3.50    | 1.31    | 0.61      | 0.49     | 3.18     | 0.42        | 0.81        |
| Botswana      | 7.51  | 7.79   | 9.19    | 4.94    | 1.19      | -0.76    | 3.34     | 1.00        | 0.61        |
| Côte d'Ivoire | 2.77  | 2.88   | 4.65    | 1.27    | 1.25      | 0.11     | 1.46     | 1.01        | 0.60        |
| Cameroon      | 26.60 | 20.92  | 46.55   | 10.89   | 12.85     | 0.33     | 1.69     | 0.90        | 0.64        |
| Djibouti      | 9.89  | 10.48  | 15.16   | 1.64    | 4.16      | -0.63    | 2.56     | 0.74        | 0.69        |
| Eritrea       | 21.21 | 25.40  | 32.17   | 9.43    | 9.19      | -0.31    | 1.34     | 1.31        | 0.52        |
| Ethiopia      | 11.93 | 11.87  | 16.59   | 7.73    | 2.61      | 0.21     | 2.36     | 0.25        | 0.88        |
| Ghana         | 36.06 | 37.79  | 41.15   | 27.32   | 5.09      | -0.71    | 1.94     | 1.31        | 0.52        |
| The Gambia    | 32.19 | 31.00  | 47.85   | 25.18   | 6.57      | 1.37     | 4.28     | 3.81        | 0.15        |
| Guinea Bissau | 20.35 | 21.03  | 40.80   | 3.00    | 11.02     | 0.21     | 2.66     | 0.12        | 0.94        |
| Kenya         | 24.73 | 25.56  | 36.94   | 8.60    | 8.59      | -0.37    | 2.33     | 0.42        | 0.81        |
| Lesotho       | 7.67  | 6.33   | 22.85   | 2.08    | 5.76      | 1.98     | 6.10     | 10.51       | 0.01        |
| Morocco       | 28.84 | 28.99  | 34.87   | 21.89   | 4.25      | -0.13    | 1.80     | 0.63        | 0.73        |
| Madagascar    | 38.27 | 32.50  | 65.87   | 20.99   | 15.37     | 0.58     | 1.96     | 1.01        | 0.60        |
| Mali          | 18.73 | 13.38  | 57.01   | 7.83    | 14.88     | 1.87     | 5.51     | 8.49        | 0.01        |
| Mauritius     | 27.11 | 26.65  | 30.73   | 24.74   | 2.11      | 0.40     | 1.77     | 0.90        | 0.64        |
| Malawi        | 24.15 | 26.10  | 36.83   | 4.01    | 10.85     | -0.54    | 2.12     | 0.80        | 0.67        |
| Namibia       | 6.66  | 6.65   | 9.40    | 3.68    | 1.50      | -0.28    | 3.46     | 0.22        | 0.90        |
| Niger         | 32.00 | 32.46  | 39.79   | 20.31   | 6.44      | -0.60    | 2.27     | 0.83        | 0.66        |
| Nigeria       | 61.72 | 61.28  | 85.39   | 42.97   | 13.17     | 0.32     | 2.10     | 0.51        | 0.78        |
| Rwanda        | 5.24  | 5.32   | 8.64    | 1.88    | 2.11      | -0.21    | 2.27     | 0.30        | 0.86        |
| Senegal       | 25.91 | 25.82  | 32.14   | 19.70   | 3.93      | -0.09    | 1.99     | 0.44        | 0.80        |
| Sierra Leon   | 28.23 | 24.38  | 45.76   | 19.52   | 9.43      | 0.87     | 2.29     | 1.46        | 0.48        |
| Swaziland     | 2.55  | 2.73   | 3.17    | 1.64    | 0.46      | -0.90    | 2.88     | 1.37        | 0.50        |
| Tunisia       | 16.95 | 17.05  | 19.33   | 15.02   | 1.10      | 0.46     | 4.01     | 0.78        | 0.68        |
| Uganda        | 8.64  | 9.08   | 12.92   | 0.85    | 3.23      | -1.28    | 4.66     | 3.88        | 0.14        |
| South Africa  | 16.67 | 17.35  | 18.53   | 13.62   | 1.71      | -0.52    | 1.84     | 1.01        | 0.60        |

**Table A.2.8: Population density (persons per square kilometre)**

|               | Mean   | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|--------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 10.39  | 10.39  | 11.67   | 9.10    | 0.87      | -0.01    | 1.76     | 0.64        | 0.73        |
| Burundi       | 262.77 | 262.56 | 286.20  | 239.72  | 15.62     | 0.03     | 1.78     | 0.62        | 0.73        |
| Botswana      | 2.94   | 2.93   | 3.25    | 2.64    | 0.20      | 0.10     | 1.92     | 0.51        | 0.78        |
| Côte d'Ivoire | 49.65  | 49.68  | 55.61   | 43.65   | 4.02      | -0.01    | 1.78     | 0.62        | 0.73        |
| Cameroon      | 31.64  | 31.62  | 34.78   | 28.52   | 2.10      | 0.01     | 1.78     | 0.62        | 0.73        |
| Djibouti      | 27.23  | 27.00  | 29.97   | 25.02   | 1.71      | 0.30     | 1.78     | 0.77        | 0.68        |
| Eritrea       | 39.98  | 40.04  | 44.55   | 35.39   | 3.11      | -0.02    | 1.75     | 0.66        | 0.72        |
| Ethiopia      | 63.58  | 63.54  | 70.60   | 56.53   | 4.70      | 0.01     | 1.80     | 0.60        | 0.74        |
| Ghana         | 83.89  | 83.88  | 91.92   | 76.02   | 5.40      | 0.02     | 1.74     | 0.66        | 0.72        |
| The Gambia    | 128.17 | 128.29 | 144.88  | 111.50  | 11.32     | -0.01    | 1.74     | 0.66        | 0.72        |
| Guinea Bissau | 42.25  | 42.18  | 46.24   | 38.34   | 2.67      | 0.03     | 1.76     | 0.64        | 0.73        |
| Kenya         | 52.24  | 52.28  | 57.57   | 46.89   | 3.59      | -0.01    | 1.78     | 0.62        | 0.73        |
| Lesotho       | 66.72  | 66.61  | 71.96   | 61.58   | 3.41      | 0.06     | 1.89     | 0.52        | 0.77        |
| Morocco       | 63.80  | 63.79  | 68.48   | 59.12   | 3.15      | 0.00     | 1.77     | 0.63        | 0.73        |
| Madagascar    | 26.17  | 26.29  | 29.30   | 22.87   | 2.18      | -0.10    | 1.73     | 0.68        | 0.71        |
| Mali          | 8.77   | 8.78   | 9.65    | 7.88    | 0.60      | -0.02    | 1.75     | 0.66        | 0.72        |
| Mauritius     | 581.47 | 581.63 | 610.56  | 552.71  | 19.57     | 0.01     | 1.76     | 0.64        | 0.73        |
| Malawi        | 107.98 | 108.46 | 116.97  | 97.90   | 6.41      | -0.17    | 1.79     | 0.66        | 0.72        |
| Namibia       | 2.11   | 2.11   | 2.31    | 1.93    | 0.13      | 0.06     | 1.73     | 0.67        | 0.71        |
| Niger         | 8.38   | 8.41   | 9.52    | 7.19    | 0.79      | -0.07    | 1.75     | 0.67        | 0.72        |
| Nigeria       | 137.63 | 137.69 | 152.94  | 122.17  | 10.30     | -0.01    | 1.80     | 0.60        | 0.74        |
| Rwanda        | 327.26 | 340.86 | 359.19  | 259.42  | 34.45     | -1.14    | 2.82     | 2.18        | 0.34        |
| Senegal       | 48.69  | 48.87  | 54.01   | 43.10   | 3.69      | -0.09    | 1.76     | 0.65        | 0.72        |
| Sierra Leon   | 69.57  | 69.56  | 76.11   | 62.97   | 4.40      | 0.00     | 1.80     | 0.60        | 0.74        |
| Swaziland     | 59.83  | 60.02  | 67.09   | 52.33   | 4.93      | -0.05    | 1.82     | 0.58        | 0.75        |
| Tunisia       | 61.35  | 61.21  | 65.32   | 57.66   | 2.55      | 0.13     | 1.84     | 0.59        | 0.74        |
| Uganda        | 111.12 | 111.19 | 124.59  | 97.51   | 9.10      | -0.02    | 1.78     | 0.62        | 0.73        |
| South Africa  | 34.76  | 34.77  | 37.52   | 32.04   | 1.82      | 0.04     | 1.85     | 0.55        | 0.76        |

**Table A2.9: Government spending as a percentage of the GDP**

|               | Mean  | Median | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|-------|--------|---------|---------|-----------|----------|----------|-------------|-------------|
| Angola        | 57.35 | 54.81  | 82.60   | 42.80   | 12.61     | 0.66     | 2.46     | 0.84        | 0.66        |
| Burundi       | 24.28 | 24.30  | 28.70   | 20.80   | 2.59      | 0.31     | 1.95     | 0.62        | 0.73        |
| Botswana      | 38.54 | 38.80  | 44.07   | 32.80   | 4.03      | -0.11    | 1.69     | 0.74        | 0.69        |
| Côte d'Ivoire | 19.63 | 19.55  | 24.50   | 15.56   | 2.95      | 0.14     | 1.86     | 0.58        | 0.75        |
| Cameroon      | 17.76 | 17.90  | 19.28   | 16.00   | 1.25      | -0.29    | 1.56     | 1.00        | 0.61        |
| Djibouti      | 32.62 | 32.90  | 38.70   | 28.31   | 3.17      | 0.40     | 2.44     | 0.40        | 0.82        |
| Eritrea       | 77.99 | 76.80  | 98.60   | 52.50   | 14.33     | -0.24    | 2.21     | 0.35        | 0.84        |
| Ethiopia      | 29.58 | 29.95  | 35.13   | 24.20   | 4.32      | -0.09    | 1.44     | 1.03        | 0.60        |
| Ghana         | 28.44 | 28.15  | 32.70   | 26.10   | 2.08      | 0.73     | 2.69     | 0.92        | 0.63        |
| The Gambia    | 25.10 | 24.60  | 31.10   | 22.10   | 2.90      | 0.76     | 2.67     | 1.02        | 0.60        |
| Guinea Bissau | 34.50 | 33.70  | 42.10   | 25.10   | 6.24      | -0.21    | 1.77     | 0.70        | 0.70        |
| Kenya         | 25.76 | 26.45  | 29.30   | 22.20   | 2.49      | -0.13    | 1.57     | 0.88        | 0.65        |
| Lesotho       | 48.40 | 47.92  | 56.40   | 44.10   | 3.28      | 1.34     | 4.83     | 4.40        | 0.11        |
| Morocco       | 30.54 | 30.70  | 32.40   | 28.10   | 1.44      | -0.27    | 1.74     | 0.79        | 0.67        |
| Madagascar    | 17.92 | 17.60  | 21.70   | 15.60   | 1.77      | 0.94     | 3.21     | 1.49        | 0.47        |
| Mali          | 24.83 | 24.80  | 26.10   | 23.50   | 1.08      | -0.01    | 1.33     | 1.16        | 0.56        |
| Mauritius     | 24.39 | 24.24  | 27.00   | 23.30   | 1.01      | 1.81     | 5.78     | 8.70        | 0.01        |
| Malawi        | 30.53 | 31.30  | 35.93   | 23.30   | 4.15      | -0.63    | 2.30     | 0.85        | 0.65        |
| Namibia       | 35.65 | 35.90  | 36.40   | 34.30   | 0.76      | -0.93    | 2.43     | 1.58        | 0.45        |
| Niger         | 16.62 | 16.90  | 18.62   | 12.90   | 1.76      | -0.95    | 2.98     | 1.50        | 0.47        |
| Nigeria       | 20.61 | 20.70  | 23.20   | 18.70   | 1.47      | 0.38     | 2.16     | 0.54        | 0.76        |
| Rwanda        | 20.58 | 20.70  | 23.20   | 18.70   | 1.46      | 0.44     | 2.24     | 0.57        | 0.75        |
| Senegal       | 20.82 | 20.95  | 22.10   | 19.00   | 1.10      | -0.30    | 1.71     | 0.84        | 0.66        |
| Sierra Leon   | 25.91 | 25.35  | 41.05   | 13.00   | 9.28      | 0.22     | 1.81     | 0.68        | 0.71        |
| Swaziland     | 30.28 | 30.50  | 31.61   | 27.70   | 1.26      | -0.88    | 2.73     | 1.32        | 0.52        |
| Tunisia       | 32.18 | 31.95  | 35.50   | 30.07   | 1.68      | 0.84     | 2.78     | 1.18        | 0.55        |
| Uganda        | 20.77 | 18.90  | 26.80   | 16.20   | 4.61      | 0.31     | 1.28     | 1.40        | 0.50        |
| South Africa  | 27.10 | 26.20  | 33.30   | 19.44   | 4.67      | -0.01    | 2.05     | 0.37        | 0.83        |

**Table A2.10: GDP per capita (in US dollars)**

|               | Mean    | Median  | Maximum | Minimum | Std. Dev. | Skewness | Kurtosis | Jarque-<br>Bera | Probability |
|---------------|---------|---------|---------|---------|-----------|----------|----------|-----------------|-------------|
| Angola        | 491.23  | 490.60  | 525.08  | 444.44  | 31.14     | -0.14    | 1.43     | 1.05            | 0.59        |
| Burundi       | 135.60  | 141.87  | 162.51  | 103.87  | 18.22     | -0.53    | 2.23     | 0.72            | 0.70        |
| Botswana      | 3732.85 | 3806.13 | 4141.49 | 3192.95 | 360.00    | -0.27    | 1.53     | 1.02            | 0.60        |
| Côte d'Ivoire | 750.59  | 748.47  | 786.41  | 714.62  | 23.19     | -0.02    | 2.10     | 0.33            | 0.85        |
| Cameroon      | 644.17  | 639.01  | 695.90  | 600.11  | 27.99     | 0.33     | 2.55     | 0.26            | 0.88        |
| Djibouti      | 752.93  | 783.58  | 858.14  | 605.99  | 83.11     | -0.71    | 2.12     | 1.15            | 0.56        |
| Eritrea       | 167.35  | 172.02  | 180.98  | 145.94  | 11.34     | -0.68    | 2.22     | 1.03            | 0.60        |
| Ethiopia      | 114.86  | 113.54  | 125.50  | 102.24  | 7.37      | -0.10    | 1.98     | 0.45            | 0.80        |
| Ghana         | 408.72  | 410.50  | 440.38  | 373.33  | 22.31     | -0.17    | 1.83     | 0.61            | 0.74        |
| The Gambia    | 357.43  | 360.48  | 381.65  | 339.51  | 13.08     | 0.29     | 2.32     | 0.33            | 0.85        |
| Guinea Bissau | 218.34  | 207.72  | 268.07  | 188.83  | 26.20     | 0.95     | 2.47     | 1.61            | 0.45        |
| Kenya         | 333.25  | 332.51  | 344.32  | 323.42  | 8.12      | 0.11     | 1.33     | 1.18            | 0.55        |
| Lesotho       | 556.26  | 555.68  | 600.72  | 499.14  | 30.58     | -0.27    | 2.36     | 0.29            | 0.87        |
| Morocco       | 1379.12 | 1391.78 | 1435.71 | 1250.14 | 55.44     | -1.33    | 3.96     | 3.34            | 0.19        |
| Madagascar    | 239.30  | 237.07  | 253.06  | 233.31  | 6.04      | 1.31     | 3.67     | 3.04            | 0.22        |
| Mali          | 283.65  | 291.12  | 303.44  | 256.36  | 16.98     | -0.59    | 1.86     | 1.12            | 0.57        |
| Mauritius     | 4069.32 | 4073.18 | 4687.12 | 3404.71 | 434.37    | -0.12    | 1.77     | 0.65            | 0.72        |
| Malawi        | 167.22  | 167.49  | 176.65  | 155.12  | 6.36      | -0.31    | 2.51     | 0.26            | 0.88        |
| Namibia       | 2373.80 | 2353.76 | 2579.90 | 2210.15 | 123.79    | 0.39     | 1.96     | 0.71            | 0.70        |
| Niger         | 204.38  | 205.35  | 217.96  | 195.12  | 6.81      | 0.48     | 2.65     | 0.43            | 0.81        |
| Nigeria       | 253.29  | 253.11  | 257.48  | 250.29  | 2.54      | 0.31     | 1.79     | 0.77            | 0.68        |
| Rwanda        | 220.85  | 214.77  | 253.03  | 202.10  | 16.97     | 0.76     | 2.27     | 1.17            | 0.56        |
| Senegal       | 590.63  | 599.94  | 628.58  | 539.36  | 30.90     | -0.43    | 1.80     | 0.92            | 0.63        |
| Sierra Leon   | 152.58  | 155.41  | 213.67  | 87.26   | 41.30     | -0.10    | 2.07     | 0.38            | 0.83        |
| Swaziland     | 1533.41 | 1535.23 | 1542.54 | 1516.26 | 7.72      | -1.09    | 3.44     | 2.07            | 0.36        |
| Tunisia       | 2392.16 | 2427.91 | 2697.83 | 2008.04 | 232.55    | -0.30    | 1.80     | 0.75            | 0.69        |
| Uganda        | 346.29  | 346.65  | 392.76  | 299.48  | 29.92     | 0.07     | 1.95     | 0.47            | 0.79        |
| South Africa  | 3975.53 | 3983.12 | 4068.03 | 3862.80 | 54.91     | -0.43    | 3.29     | 0.34            | 0.84        |

**Table A2.11: Corruption control index**

|               | Mean     | Median   | Maximum   | Minimum  | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|----------|----------|-----------|----------|-----------|----------|----------|-------------|-------------|
| Angola        | -1.16264 | -1.14407 | -0.996104 | -1.44082 | 0.136312  | -0.7312  | 2.77667  | 0.91188     | 0.63385     |
| Burundi       | -1.02024 | -1.00513 | -0.796786 | -1.27238 | 0.140539  | -0.2044  | 2.35504  | 0.24298     | 0.8856      |
| Botswana      | 0.72491  | 0.789207 | 1.021934  | 0.398009 | 0.205648  | -0.3163  | 1.87108  | 0.69778     | 0.70547     |
| Côte d'Ivoire | -0.50815 | -0.54174 | 0.406194  | -1.00511 | 0.454268  | 0.76632  | 2.6662   | 1.02517     | 0.59895     |
| Cameroon      | -1.03036 | -1.06198 | -0.775783 | -1.11022 | 0.106725  | 1.60626  | 4.30357  | 5.00812     | 0.08175     |
| Djibouti      | -0.90581 | -0.91223 | -0.722873 | -1.1539  | 0.116624  | -0.5819  | 3.40792  | 0.63369     | 0.72844     |
| Eritrea       | 0.12662  | 0.172886 | 0.635994  | -0.63599 | 0.410163  | -0.5276  | 2.23827  | 0.70577     | 0.70266     |
| Ethiopia      | -0.39385 | -0.28343 | 0.056887  | -0.98283 | 0.345965  | -0.4676  | 1.92938  | 0.84195     | 0.65641     |
| Ghana         | -0.3723  | -0.39122 | -0.171393 | -0.46919 | 0.090758  | 1.08488  | 3.39532  | 2.02672     | 0.363       |
| The Gambia    | -0.79037 | -0.78008 | -0.522285 | -1.23861 | 0.235275  | -0.5936  | 2.32575  | 0.77676     | 0.67815     |
| Guinea Bissau | -0.64798 | -0.57995 | -0.529736 | -0.98283 | 0.141694  | -1.461   | 4.07941  | 4.04289     | 0.13246     |
| Kenya         | -0.99641 | -0.98834 | -0.893503 | -1.08761 | 0.064211  | 0.14217  | 1.85901  | 0.57613     | 0.74971     |
| Lesotho       | 0.040341 | 0.030593 | 0.321541  | -0.18493 | 0.143066  | 0.35805  | 2.88999  | 0.21871     | 0.89641     |
| Morocco       | 0.077312 | 0.039888 | 0.374147  | -0.10088 | 0.146815  | 0.7384   | 2.61051  | 0.97193     | 0.6151      |
| Madagascar    | -0.34659 | -0.28353 | 0.365374  | -0.79814 | 0.416421  | 0.21995  | 1.78009  | 0.7007      | 0.70444     |
| Mali          | -0.42695 | -0.4841  | -0.110887 | -0.57885 | 0.155729  | 0.77111  | 2.49461  | 1.09744     | 0.57769     |
| Mauritius     | 0.408221 | 0.402759 | 0.5874    | 0.20278  | 0.118226  | -0.1249  | 2.12974  | 0.34158     | 0.843       |
| Malawi        | -0.62734 | -0.63741 | -0.20981  | -0.98612 | 0.25597   | 0.18969  | 1.74258  | 0.71877     | 0.69811     |
| Namibia       | 0.4958   | 0.482487 | 1.130656  | 0.164684 | 0.319483  | 0.60894  | 2.45416  | 0.74215     | 0.68999     |
| Niger         | -0.82008 | -0.87158 | -0.308725 | -1.06036 | 0.216011  | 1.45883  | 4.26064  | 4.20916     | 0.1219      |
| Nigeria       | -1.12537 | -1.10862 | -1.005368 | -1.31702 | 0.102145  | -0.4826  | 2.14799  | 0.69056     | 0.70802     |
| Rwanda        | -0.31189 | -0.35115 | 0.058288  | -0.54506 | 0.168874  | 0.97133  | 3.49024  | 1.67261     | 0.43331     |
| Senegal       | -0.36473 | -0.39437 | -0.188215 | -0.45005 | 0.083066  | 1.04886  | 2.93292  | 1.83538     | 0.39944     |
| Sierra Leon   | -0.91504 | -0.79297 | -0.72025  | -1.65692 | 0.292909  | -1.8916  | 5.23761  | 8.04998     | 0.01786     |
| Swaziland     | -0.31293 | -0.19124 | -0.126477 | -0.95422 | 0.267097  | -1.6942  | 4.40934  | 5.61121     | 0.06047     |
| Tunisia       | 0.313236 | 0.323984 | 0.702239  | -0.04759 | 0.235091  | 0.02015  | 2.11636  | 0.32602     | 0.84958     |
| Uganda        | -0.73258 | -0.72644 | -0.519199 | -0.9183  | 0.137837  | 0.11897  | 1.7383   | 0.68688     | 0.70933     |
| South Africa  | 0.479257 | 0.469421 | 0.633449  | 0.350178 | 0.081762  | 0.38434  | 2.62259  | 0.30554     | 0.85833     |



**Table A2.12: Political stability index**

|               | Mean     | Median   | Maximum   | Minimum  | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|----------|----------|-----------|----------|-----------|----------|----------|-------------|-------------|
| Angola        | -1.86677 | -2.09582 | -0.945155 | -2.32332 | 0.464398  | 1.00692  | 2.55246  | 1.77327     | 0.41204     |
| Burundi       | 0.841522 | 0.875012 | 0.903982  | 0.699643 | 0.071074  | -1.0243  | 2.57224  | 1.82487     | 0.40155     |
| Botswana      | -1.98237 | -2.00692 | -1.752666 | -2.13223 | 0.113439  | 0.71565  | 2.73043  | 0.88388     | 0.64279     |
| Côte d'Ivoire | -0.70342 | -0.68963 | -0.460415 | -0.97793 | 0.172313  | -0.1565  | 1.886    | 0.55789     | 0.75658     |
| Cameroon      | -0.90149 | -0.67954 | 0.319201  | -2.27626 | 0.993944  | -0.2306  | 1.47448  | 1.05833     | 0.5891      |
| Djibouti      | -2.06852 | -1.96572 | -1.421737 | -2.78207 | 0.528721  | -0.1662  | 1.36835  | 1.15534     | 0.5612      |
| Eritrea       | -0.08558 | -0.16609 | 0.458996  | -0.25732 | 0.217656  | 1.80396  | 5.02237  | 7.12795     | 0.02833     |
| Ethiopia      | -0.73345 | -0.71851 | -0.253447 | -1.19785 | 0.329238  | 0.01329  | 1.55174  | 0.87424     | 0.64589     |
| Ghana         | 0.450358 | 0.46109  | 0.632263  | 0.202199 | 0.12424   | -0.4986  | 2.77358  | 0.43562     | 0.80428     |
| The Gambia    | -0.00493 | -0.002   | 0.062209  | -0.10358 | 0.04784   | -0.6322  | 2.92715  | 0.66841     | 0.71591     |
| Guinea Bissau | -0.7278  | -0.65727 | -0.412229 | -1.13997 | 0.253768  | -0.3506  | 1.70949  | 0.8988      | 0.63801     |
| Kenya         | -0.88375 | -0.97169 | -0.377129 | -0.98218 | 0.200557  | 1.92818  | 5.19922  | 8.21173     | 0.01648     |
| Lesotho       | 0.515646 | 0.51261  | 1.005738  | -0.02644 | 0.342502  | 0.00758  | 2.02739  | 0.39425     | 0.82109     |
| Morocco       | 0.009825 | 0.017693 | 0.227075  | -0.28063 | 0.170417  | -0.3129  | 1.99775  | 0.58171     | 0.74762     |
| Madagascar    | 0.254038 | 0.238387 | 0.642825  | -0.10426 | 0.23547   | 0.0821   | 2.06686  | 0.37404     | 0.82943     |
| Mali          | 0.056782 | 0.113721 | 0.161719  | -0.32513 | 0.149608  | -1.9449  | 5.38858  | 8.68192     | 0.01302     |
| Mauritius     | 1.146641 | 1.171164 | 1.265672  | 0.914726 | 0.109097  | -1.042   | 3.08191  | 1.81236     | 0.40407     |
| Malawi        | -0.06232 | -0.07772 | 0.163365  | -0.39542 | 0.19484   | -0.2162  | 1.77288  | 0.70535     | 0.70281     |
| Namibia       | 0.293516 | 0.440757 | 0.840807  | -0.56721 | 0.413561  | -0.7937  | 2.91642  | 1.05297     | 0.59068     |
| Niger         | -1.42758 | -1.49403 | -1.033833 | -1.77662 | 0.23741   | 0.2618   | 1.96703  | 0.55883     | 0.75623     |
| Nigeria       | -0.26847 | -0.24441 | -0.055338 | -0.56067 | 0.154126  | -0.4108  | 2.41445  | 0.42419     | 0.80889     |
| Rwanda        | -1.52527 | -1.52609 | -0.92283  | -2.0639  | 0.35663   | 0.10336  | 2.10157  | 0.35413     | 0.83772     |
| Senegal       | -0.64307 | -0.69404 | -0.210198 | -1.08428 | 0.328657  | 0.1718   | 1.54579  | 0.93033     | 0.62803     |
| Sierra Leon   | -1.8284  | -1.78345 | -1.323995 | -2.38554 | 0.340378  | -0.1709  | 1.87555  | 0.5755      | 0.74995     |
| Swaziland     | 0.195116 | 0.214869 | 0.536006  | -0.13828 | 0.1907    | 0.01802  | 2.69776  | 0.0386      | 0.98088     |
| Tunisia       | 0.416789 | 0.422571 | 0.731854  | 0.160909 | 0.18747   | 0.18829  | 1.83177  | 0.62774     | 0.73061     |
| Uganda        | -1.22896 | -1.22918 | -0.951345 | -1.47134 | 0.173776  | 0.14226  | 1.74003  | 0.69519     | 0.70638     |
| South Africa  | -0.47813 | -0.35566 | -0.134389 | -0.96664 | 0.317369  | -0.4105  | 1.53719  | 1.17242     | 0.55643     |

**Table A2.13: Voice and accountability index**

|               | Mean     | Median   | Maximum   | Minimum  | Std. Dev. | Skewness | Kurtosis | Jarque-Bera | Probability |
|---------------|----------|----------|-----------|----------|-----------|----------|----------|-------------|-------------|
| Angola        | -1.30652 | -1.33954 | -1.017528 | -1.42237 | 0.119578  | 1.5067   | 4.45664  | 4.66766     | 0.09692     |
| Burundi       | -1.40583 | -1.42386 | -1.133708 | -1.6638  | 0.211575  | 0.13813  | 1.41182  | 1.08276     | 0.58194     |
| Botswana      | 0.754242 | 0.756208 | 0.777313  | 0.728054 | 0.019319  | -0.1828  | 1.44456  | 1.0638      | 0.58749     |
| Côte d'Ivoire | -0.97186 | -1.11571 | -0.191443 | -1.46432 | 0.436635  | 0.58117  | 1.97853  | 0.99769     | 0.60723     |
| Cameroon      | -0.96717 | -0.95412 | -0.767363 | -1.17524 | 0.145445  | -0.0504  | 1.58769  | 0.83533     | 0.65858     |
| Djibouti      | -0.70788 | -0.71236 | -0.560765 | -0.8476  | 0.082652  | 0.14799  | 2.4763   | 0.15078     | 0.92738     |
| Eritrea       | -1.48543 | -1.3348  | -1.073758 | -2.05255 | 0.41089   | -0.3574  | 1.38921  | 1.29405     | 0.5236      |
| Ethiopia      | -0.89819 | -0.92129 | -0.609117 | -1.13529 | 0.210583  | 0.15631  | 1.35609  | 1.16674     | 0.55802     |
| Ghana         | -0.13894 | -0.13404 | 0.388211  | -0.53334 | 0.303944  | 0.31632  | 1.89785  | 0.6729      | 0.7143      |
| The Gambia    | -1.04142 | -1.05593 | -0.587771 | -1.34265 | 0.219499  | 0.71465  | 2.99666  | 0.8512      | 0.65338     |
| Guinea Bissau | -0.60771 | -0.60674 | -0.335653 | -0.85237 | 0.164464  | 0.095    | 1.99617  | 0.43491     | 0.80457     |
| Kenya         | -0.63943 | -0.66726 | -0.341283 | -0.83997 | 0.169357  | 0.44442  | 1.8898   | 0.84274     | 0.65615     |
| Lesotho       | 0.00387  | -0.01295 | 0.282101  | -0.15938 | 0.115441  | 1.24408  | 4.73587  | 3.83506     | 0.14697     |
| Morocco       | -0.48338 | -0.49723 | -0.30444  | -0.63007 | 0.099069  | 0.34     | 2.2768   | 0.41059     | 0.81441     |
| Madagascar    | 0.203907 | 0.256087 | 0.397024  | -0.05408 | 0.160931  | -0.3839  | 1.63745  | 1.01923     | 0.60073     |
| Mali          | 0.302883 | 0.31812  | 0.381857  | 0.181325 | 0.062674  | -0.6519  | 2.40668  | 0.85506     | 0.65212     |
| Mauritius     | 0.974846 | 0.958303 | 1.213333  | 0.803828 | 0.120494  | 0.55802  | 2.66609  | 0.56544     | 0.75373     |
| Malawi        | -0.34154 | -0.34717 | -0.102888 | -0.56027 | 0.1668    | 0.0752   | 1.5281   | 0.91214     | 0.63377     |
| Namibia       | 0.393821 | 0.393825 | 0.522906  | 0.275965 | 0.080066  | 0.10522  | 1.89494  | 0.52727     | 0.76825     |
| Niger         | -0.40424 | -0.29616 | -0.067556 | -0.99373 | 0.328201  | -0.5575  | 1.89163  | 1.02988     | 0.59754     |
| Nigeria       | -1.02034 | -0.8882  | -0.652181 | -1.4888  | 0.380059  | -0.2463  | 1.25412  | 1.37114     | 0.5038      |
| Rwanda        | -1.40321 | -1.45044 | -1.094747 | -1.5031  | 0.129582  | 1.61271  | 4.28573  | 5.0235      | 0.08113     |
| Senegal       | -0.12554 | -0.13653 | 0.193561  | -0.49381 | 0.252166  | -0.0054  | 1.55746  | 0.8671      | 0.6482      |
| Sierra Leon   | -1.5333  | -1.4818  | -1.367983 | -1.91092 | 0.161609  | -1.3513  | 3.98639  | 3.44884     | 0.17828     |
| Swaziland     | -1.17321 | -1.19145 | -0.916734 | -1.44957 | 0.15859   | -0.0358  | 2.32673  | 0.19101     | 0.90891     |
| Tunisia       | -0.82398 | -0.82133 | -0.530938 | -1.10519 | 0.157291  | 0.04909  | 2.90556  | 0.00773     | 0.99614     |
| Uganda        | -0.72205 | -0.69681 | -0.605026 | -0.9379  | 0.110607  | -0.7343  | 2.40289  | 1.04732     | 0.59235     |
| South Africa  | 0.852639 | 0.866669 | 1.052064  | 0.676422 | 0.11253   | 0.11871  | 2.31237  | 0.2205      | 0.89561     |

**Table A 3.1: Summary of signs of coefficients for the corruption control Index**

|   | General public services        | Defence                        | Education                      | Health                         | Social welfare services        | Economic services              | Other                          |
|---|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <i>Panel A: Full sample</i>               |                                |                                |                                |                                |                                |                                |                                |
| $\frac{g_i}{G}$                           | -                              | -                              | +/-                            | +                              | -                              | -                              | +/-                            |
| $\frac{g_i}{GDP}$                         | +                              | -                              | +                              | +                              | +                              | +/-                            | +                              |
| $\frac{G}{GDP}$                           | Indeterminate or insignificant | Significant                    | Indeterminate or insignificant | Significant                    | Indeterminate or insignificant | Indeterminate or insignificant | Indeterminate or insignificant |
| <i>Panel B: Less corrupt sub-sample</i>   |                                |                                |                                |                                |                                |                                |                                |
| $\frac{g_i}{G}$                           | -                              | -                              | +                              | +                              | +                              | +                              | -                              |
| $\frac{g_i}{GDP}$                         | -                              | -                              | -                              | +                              | +                              | +                              | -                              |
| $\frac{G}{GDP}$                           | Significant                    | Significant                    | Indeterminate or insignificant | Significant                    | Significant                    | Significant                    | Significant                    |
| <i>Panel C: 'Most corrupt' sub-sample</i> |                                |                                |                                |                                |                                |                                |                                |
| $\frac{g_i}{G}$                           | -                              | +                              | -                              | -                              | +                              | -                              | +                              |
| $\frac{g_i}{GDP}$                         | +                              | -                              | +                              | +                              | +                              | +                              | +                              |
| $\frac{G}{GDP}$                           | Indeterminate or insignificant | Indeterminate or insignificant | Indeterminate or insignificant | Indeterminate or insignificant | Significant                    | Indeterminate or insignificant | Significant                    |

Source: Author's compilation based on the signs of the estimated coefficients of corruption control index in the various estimations reported above.