



Trade Liberalisation and the Trade Balance in Sub-Saharan Africa: A Pooled Mean Group Approach

By

Lanre Kassim

Presentation Outline

- Motivation
- Background information
- Objectives
- Brief literature review
- Methodology
- Data and Data sources
- Descriptive tables
- Results
- Conclusions

Motivation

- Most studies on trade liberalization adopt the narrow approach of analyzing its impact on GDP growth without considering whether growth is sustainable and consistent with long-run balance of payments equilibrium.
- Deriving new liberalization dates for countries in sample instead of relying on Wacziarg and Welch (2008) or Dean et al (1994) classification
- No study on the relationship between trade liberalization and the trade balance in Sub-Saharan Africa.
- First study to adopt the pooled mean group approach.

Background Information

- Prior to the 1980s, Sub-Saharan African countries adopted protectionist policies.
- However, the debt crisis and global recession of the early 1980s led to the liberalization of trade regimes in the context Structural Adjustment Programs
- The tariff structure has been simplified to not more than five bands.
- Export taxes in most countries have been completely eliminated
- Quantitative restrictions only apply to sensitive goods.

Objectives

- To examine the trade-off between the balance of the trade and output (GDP) growth.
- To investigate the impact of trade liberalisation on the balance of trade.

Brief Literature review

- Santos-Paulino & Thirlwall (2004): Trade liberalisation worsens the trade balance of developing countries by over 2 percentage points of GDP. (GMM estimator)
- Santos-Paulino (2007): The adoption of free trade has led to the deterioration of the trade balance of least developed countries by about 1.30 percentage points GDP. (GMM estimator)

More on Literature

- Wu & Zeng (2008): Trade liberalisation worsens the trade balance of developing countries by about one percentage point of GDP. (Fixed effects estimator)
- Pacheco-Lopez & Thirlwall (2007): The negative trade-off between the trade balance and output GDP growth for Latin American countries worsened in the post-liberalisation era. (Fixed effects estimator)
- Kassim (2013)

Methodology 1

- Trade balance (as a share of GDP) is a function of domestic income growth, foreign income growth, relative prices and a liberalisation dummy.
- Nominal exchange rate is measured as the foreign price of domestic currency

$$Tbg_{it} = \alpha_{0i} + \beta_{1i} gdp_{it} + \beta_{2i} wgdpg_{it} + \beta_{3i} rer_{it} + \beta_{4i} rtot_{it} + \beta_{5i} libdum_{it} + \varepsilon_{it}$$

Methodology contd

- Pooled Mean Group Estimator
- ARDL (1,1,1,1,1,1)

$$Tbg_{it} = \delta_i + \lambda_{10i}gdp_{it} + \lambda_{11i}gdp_{i,t-1} + \lambda_{20i}wgdp_{it} + \lambda_{21i}wgdp_{i,t-1} + \lambda_{30i}rer_{it} + \lambda_{31i}rer_{i,t-1} \\ + \lambda_{41i}rtot_{it} + \lambda_{41i}rtot_{i,t-1} + \lambda_{51i}libdum_{i,t-1} + \nu_i Tbg_{i,t-1} + \mu_{it}$$

- while the error correction equation is

$$\Delta Tbg_{it} = \varphi_i (Tbg_{i,t-1} - \beta_{0i} - \beta_{1i}gdp_{it} - \beta_{2i}wgdp_{it} - \beta_{3i}rer_{it} - \beta_{4i}rtot_{it} - \beta_{5i}libdum) - \lambda_{11}\Delta gdp_{it} \\ - \lambda_{21}\Delta wgdp_{it} - \lambda_{31}\Delta rer_{it} - \lambda_{41}\Delta rtot_{it} - \lambda_{51}\Delta libdum_{it} + \mu_{it}$$

- where

$$\varphi_i = -(1 - \nu_i), \quad \beta_{0i} = \frac{\delta_i}{1 - \nu_i}, \quad \beta_{1i} = \frac{\lambda_{10i} + \lambda_{11i}}{1 - \nu_i}, \quad \beta_{2i} = \frac{\lambda_{20i} + \lambda_{21i}}{1 - \nu_i}, \\ \beta_{3i} = \frac{\lambda_{30i} + \lambda_{31i}}{1 - \nu_i}, \quad \beta_{4i} = \frac{\lambda_{40i} + \lambda_{41i}}{1 - \nu_i}, \quad \beta_{5i} = \frac{\lambda_{50i} + \lambda_{51i}}{1 - \nu_i}$$

Data and Data sources

- Sample size: 28 Sub-Saharan African countries.
- Time period: 1981 to 2010

Sources:

World Bank Development indicators 2011

IMF Government Financial Statistics 2011

African Development Statistics 2012

Descriptive tables

| Year: 1981 to 2010 | | Trade balance (Short run) | | | Trade balance (Long run) | | |
|--------------------|----------|---------------------------|---------------|-----------------|--------------------------|---------------|-----------------|
| Country (28) | Lib Year | Before Lib (%) | After Lib (%) | Better or Worse | Before Lib (%) | After Lib (%) | Better or Worse |
| Benin | 1988 | -14.76 | -11.31 | Better | -17.73 | -8.48 | Better |
| Botswana | 1994 | 7.89 | 12.12 | Better | 7.14 | 9.17 | Better |
| Burkina Faso | 1991 | -16.24 | -11.72 | Better | -18.74 | -13.77 | Better |
| Burundi | 2003 | -10.53 | -24.82 | Worse | -13.50 | -27.39 | Worse |
| Cameroun | 1989 | 0.21 | 2.80 | Better | -0.01 | 1.42 | Better |
| Cote d'Ivoire | 1994 | 3.58 | 8.38 | Better | 4.06 | 8.61 | Better |
| DRC | 2001 | 1.63 | -4.47 | Worse | 0.28 | -7.26 | Worse |
| Ethiopia | 1992 | -4.74 | -6.61 | Worse | -5.06 | -13.02 | Worse |
| Gabon | 1994 | 12.06 | 19.93 | Better | 9.21 | 25.20 | Better |
| Gambia | 1986 | -14.76 | -9.87 | Better | -14.76 | -9.37 | Better |
| Ghana | 1983 | -0.11* | -3.24 | Worse | -0.11 | -12.23 | Worse |
| Kenya | 1993 | -3.98 | -2.88 | Better | -4.14 | -7.56 | Worse |
| Lesotho | 1994 | -113.06 | -101.98 | Better | -119.49 | -84.36 | Better |
| Madagascar | 1988 | -5.84 | -7.78 | Worse | -7.14 | -11.13 | Worse |
| Malawi | 1988 | -3.17 | -11.98 | Worse | -4.00 | -15.18 | Worse |
| Mali | 1988 | -19.22 | -16.92 | Better | -18.21 | -13.39 | Better |
| Mauritius | 1985 | -4.23* | -1.09 | Better | -4.23 | -3.84 | Better |
| Namibia | 1994 | -10.54 | -7.82 | Better | -10.24 | -5.53 | Better |
| Nigeria | 1986 | -1.68 | 4.76 | Better | -1.68 | 6.62 | Better |

Descriptive tables 2

| Year: 1981 to 2010 | | Trade balance (Short run) | | | Trade balance (Long run) | | |
|--------------------|----------|---------------------------|---------------|-----------------|--------------------------|---------------|-----------------|
| Country (28) | Lib Year | Before Lib (%) | After Lib (%) | Better or Worse | Before Lib (%) | After Lib (%) | Better or Worse |
| Rwanda | 1995 | -21.14 | -18.92 | Better | -14.07 | -17.03 | Worse |
| Senegal | 1986 | -15.45 | -7.26 | Better | -15.45 | -10.93 | Better |
| Sierra Leone | 1989 | 3.29 | 0.72 | Worse | -2.68 | -8.98 | Worse |
| South Africa | 1994 | 4.75 | 1.35 | Worse | 4.69 | 0.73 | Worse |
| Swaziland | 1994 | -12.37 | -15.32 | Worse | -19.55 | -10.44 | Better |
| Togo | 1994 | -9.21 | -9.80 | Worse | -7.95 | -13.94 | Worse |
| Uganda | 1987 | -3.89 | -11.35 | Worse | -4.24 | -11.45 | Worse |
| Zambia | 1991 | 0.30 | -5.12 | Worse | -1.73 | -4.64 | Worse |
| Zimbabwe | 1990 | 2.09 | -3.22 | Worse | -0.51 | -7.21 | Worse |

Results

| Regressors | Dependent Variable: Trade balance (as a share of GDP) | | |
|-------------------------------|---|-------------------|-------------------|
| | PMG (I) | PMG (II) | PMG (III) |
| Speed of adjustment (SOA) | -0.25 (-4.12)* | -0.23 (-4.61)* | -0.25 (-6.54)* |
| <i>Long-run coefficients</i> | | | |
| gdp | -0.53 (-5.90)* | -0.61 (-6.24)* | -0.47 (-3.70)* |
| wgdp | 0.34 (0.88) | 0.67 (2.35)** | -0.66 (-1.46) |
| rer | 0.06 (2.64)* | - | 0.08 (2.65)* |
| rtot | - | 0.15 (4.82)* | 0.38 (7.08)* |
| libdum | -3.97 (-5.81)* | -3.73 (-4.66)* | -3.46 (-4.89)* |
| <i>Short-run coefficients</i> | | | |
| gdp | 0.12 (2.40)** | 0.11 (2.29)** | 0.11 (2.11)** |
| wgdp | 0.21 (1.16) | 0.06 (0.63) | 0.24 (1.36) |
| rer | -0.02 (-1.34) | - | -0.02 (-1.25) |
| rtot | - | 0.03 (1.52) | -0.00 (-0.00) |

Results 2

| | <i>SoA</i> | <i>gdp</i> | <i>wgdp</i> | <i>rer</i> | <i>rtot</i> | <i>libdum</i> |
|---------------|--------------------|-------------------|------------------|---------------------|--------------------|--------------------|
| Benin | -0.28 (-6.25)* | 0.29 (2.66)* | 0.08 (0.30) | -0.04 (-1.85)*** | 0.04 (2.10)** | -6.70 (-3.38)* |
| Botswana | -0.46 (-5.72)* | 0.58 (2.69) | 1.45 (2.39)** | -0.07 (-0.46) | -0.17 (-0.29) | -3.54 (-0.91) |
| Burkina Faso | -0.08 (-2.08)** | -0.18 (-2.87)* | -0.04 (-0.20) | 0.04 (1.42) | -0.00 (-0.25) | 2.87 (1.93)*** |
| Burundi | -0.15 (-1.24) | -0.08 (-0.40) | 0.48 (0.67) | -0.02 (-0.49) | -0.03 (-0.36) | -2.50 (-0.47) |
| Cameroun | -0.25 (-2.82)* | 0.12 (0.66) | 0.11 (0.27) | -0.00 (-0.00) | -0.01 (-0.65) | 3.95 (1.48) |
| Cote d'Ivoire | -0.40 (-4.98)* | 0.17 (0.95) | 0.50 (1.43) | -0.02 (-0.06) | 0.03 (1.06) | -4.23 (-1.08) |
| DRC | -0.39 (-3.27)* | 0.02 (0.12) | 0.45 (1.10) | -0.03 (-0.91) | -0.02 (-1.07) | -1.50 (-0.41) |
| Ethiopia | 0.04 (0.66) | -0.00 (-0.08) | -0.20 (-0.69) | 0.04 (0.06)*** | -0.05 (-2.29)** | 2.58 (1.45) |
| Gabon | -0.15 (-1.12) | -0.10 (-0.55) | -0.39 (-0.33) | 0.35 (2.69)* | 0.15 (1.66)*** | 4.94 (0.61) |
| Gambia | -0.41 (-3.34)* | 0.27 (2.26)** | -0.21 (-0.56) | -0.00 (-0.03) | 0.04 (1.20) | -6.34 (-2.13)** |
| Ghana | -0.30 (-2.39)** | 0.12 (0.29) | -0.70 (-1.22) | -0.01 (-0.09) | -0.01 (-0.27) | -0.87 (-0.12) |
| Kenya | -0.73 (-5.33)* | 0.19 (0.94) | 0.33 (1.22) | -0.12 (-2.61)* | -0.01 (-0.51) | 4.54 (1.86)*** |
| Lesotho | -0.06 (-0.71) | -0.65 (-1.21) | 3.45 (2.49)** | 0.05 (0.41) | -0.01 (-0.11) | 0.19 (0.02) |
| Madagascar | -0.28 (-2.41)** | 0.08 (0.93) | -0.00 (-0.01) | -0.10 (-2.30) | -0.02 (-0.81) | 1.64 (0.54) |
| Malawi | -0.38 (-2.17)** | 0.48 (2.75)* | 0.41 (0.51) | -0.17 (-1.30) | -0.05 (-0.80) | -2.85 (-0.45) |
| Mali | -0.05 | 0.14 | 0.33 | 0.16 | 0.01 | -0.57 |

Results 3

| | <i>SoA</i> | <i>gdp</i> | <i>wgdp</i> | <i>rer</i> | <i>rtot</i> | <i>libdum</i> |
|--------------|--------------------|---------------------|---------------------|--------------------|-------------------|---------------------|
| Namibia | 0.54 (-3.88)* | 0.21 (0.75) | (0.52) (0.70) | -0.11 (-0.91) | 0.06 (0.82) | 1.12 (0.19) |
| Nigeria | -0.32 (-2.80)* | 0.12 (0.60) | 0.51 (0.77) | 0.06 (1.17) | -0.04 (-4.10)* | 4.04 (0.78) |
| Rwanda | 0.27 (2.04)** | 0.46 (3.84)* | -0.35 (-0.51) | 0.05 (1.51) | 0.08 (0.90) | 1.93 (0.13) |
| Senegal | -0.09 (-1.54) | 0.08 (1.06) | -0.47 (-1.79)*** | -0.04 (-1.43) | -0.00 (-0.19) | 3.44 (2.00)* |
| Sierra Leone | -0.38 (-2.82)* | -0.11 (-1.26) | -0.02 (-0.04) | - | -0.14 (-4.46)* | 6.67 (1.24) |
| South Africa | -0.33 (-3.00)* | -0.29 (-1.69)*** | 0.24 (0.93) | -0.02 (-0.27) | -0.02 (-0.84) | -1.43 (-0.96) |
| Swaziland | -0.08 (-1.08) | 0.79 (3.13)* | -1.32 (-1.68)*** | -0.14 (-2.44)** | 0.05 (-0.16) | 8.89 (1.80) |
| Togo | -0.31 (-3.01)* | 0.09 (0.69) | 0.49 (1.27) | -0.07 (-2.13)** | -0.02 (-0.60) | 5.59 (1.40) |
| Uganda | -0.13 (-2.20)** | -0.18 (-1.76)*** | 0.74 (2.72)* | 0.02 (1.39) | -0.00 (-0.26) | -3.18 (-1.81)*** |
| Zambia | -0.40 (-3.20)* | -0.04 (-0.28) | 0.32 (0.66) | 0.01 (0.30) | -0.04 (-1.38) | 4.35 (1.19) |
| Zimbabwe | -0.10 (-1.11) | 0.24 (2.82)* | -0.33 (-0.84) | 0.06 (0.56) | -0.00 (-0.16) | -1.59 (-0.51) |

Conclusions

- Trade liberalisation has significantly worsened the trade balance of Sub-Saharan African countries by almost four percentage points of GDP.
- Also, the negative trade-off between the trade balance and output GDP growth for Sub-Saharan Africa has deteriorated in the post liberalisation era.
- There is evidence that in the short-run trade liberalisation significantly improved the trade balance of Burkina Faso, Kenya and Senegal, while in Benin, Gambia and Uganda, the trade balance declined in the post-liberalisation era.



THANK YOU