# Governance and food net-import dependency: Evidence from Sub-Saharan Africa

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## INTRODUCTION

### Problem statement

- Africa remains the most food insecure continent and has the highest prevalence of undernourishment. This scenario has been found to be worsening in Sub-Saharan Africa (SSA) in the recent past.
- Though most countries in SSA are agricultural based, the region is a net-importer of food and agricultural products.
- Government has a joint goal of achieving favourable balance of trade and food security.
- Governance and institution failures have been cited among the challenges facing implementation of agricultural development agenda and economic development in Africa (World Bank, 2008).

**Prevalence of food insecurity, food insecurity experience scale and regional share, 2019**
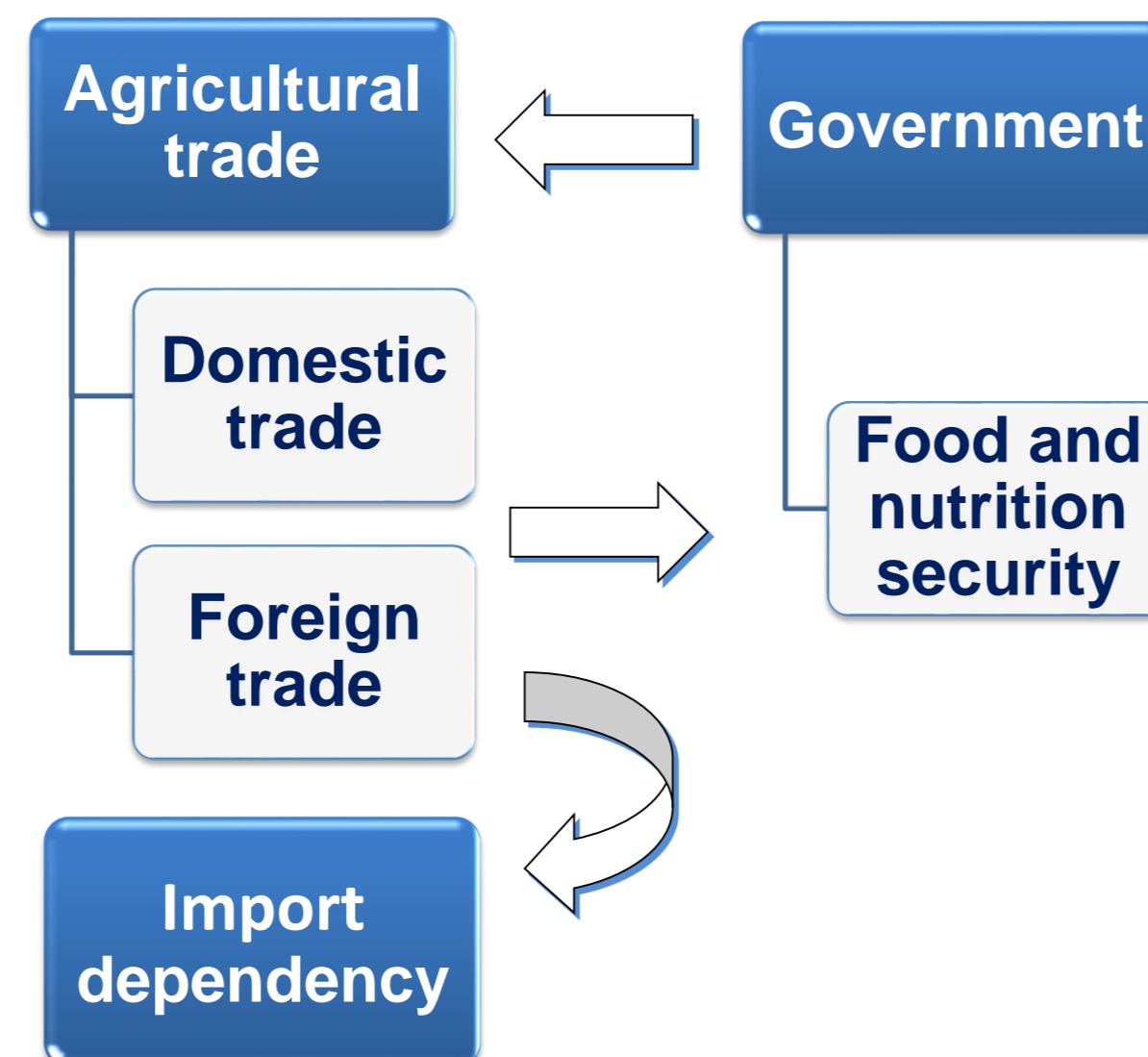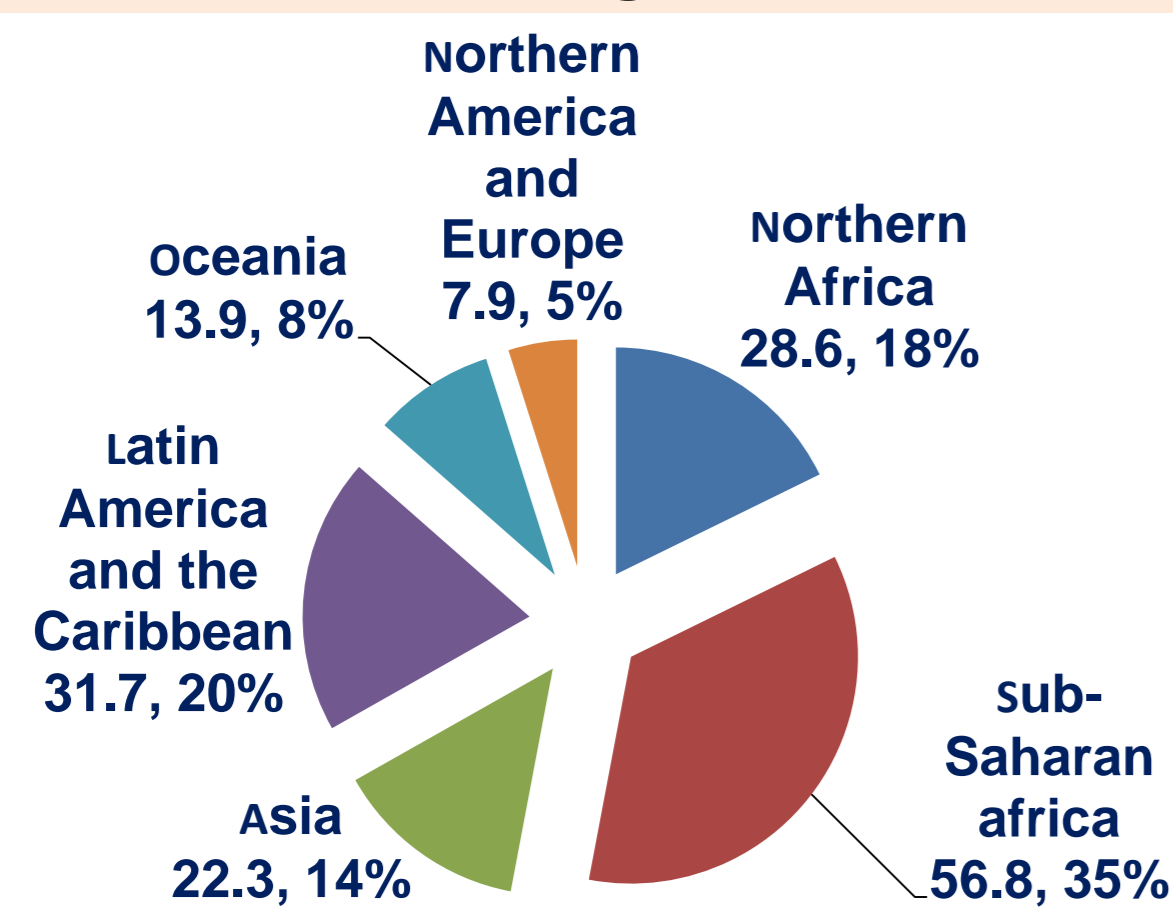


### Objective

To investigate the effect of the quality of governance on food net-import dependency in SSA

## METHODOLOGY

### Data

- The study used panel data for 25 SSA countries for the period 1995-2015
- Data was collected from World Bank, Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) and International Monetary Fund (IMF)
- Net Imports Dependency Ratio (NIDR) was computed based on FAO definition of Import Dependency Ratio (IDR).

IDR=imports * 100/ (production + imports - exports).

- Food NIDR was computed using data on total agriculture which includes cultivation of crops for food and feed, cash crops, livestock production plus forestry, hunting, and fishing as described by FAO. It was calculated as follows:

NIDR = (imports - exports) * 100/ (production + imports − exports)
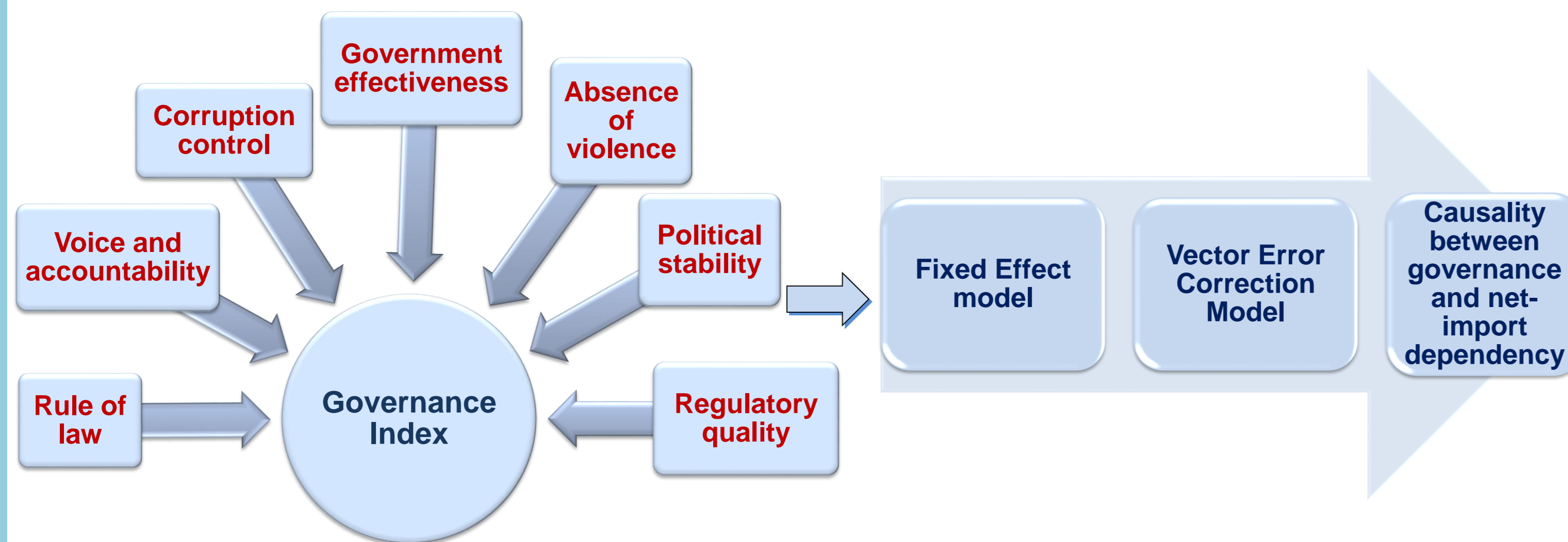


- Principal component analysis was employed to develop a composite governance index based on the six worldwide governance indicators.
- A multivariate panel vector error correction framework was applied to infer causality in the short- and long-run.

### Estimated models

$$NIDR_{it} = G_{it}{}'\lambda + X_{it}{}'\beta + \gamma_i + \varepsilon_{it}$$

$$\Delta NIDR_{i,t} = \theta_{1i} + \sum_{k=1}^{K}\theta_{11,k}\Delta NIDR_{i,t-k} + \sum_{k=1}^{K}\theta_{12,k}\Delta Gov_{i,t-k} + \lambda_1 ECT_{i,t-1} + \mu_{it,1}$$

$$\Delta Gov_{i,t} = \theta_{2i} + \sum_{k=1}^{K}\theta_{21,k}\Delta Gov_{i,t-k} + \sum_{k=1}^{K}\theta_{22,k}\Delta NIDR_{i,t-k} + \lambda_2 ECT_{i,t-1} + \mu_{it,2}$$

## RESULTS AND DISCUSSION

**Table 1**: Regression results for net-import dependency and the composite governance index

| VARIABLES | (1) NIDR | (2) NIDR | (3) NIDR | (4) NIDR | (5) NIDR |
|---|---|---|---|---|---|
| Lgovindex | | -2.606*** | -2.592*** | -1.903*** | -1.903 |
| | | (0.575) | (0.618) | (0.622) | (1.337) |
| Agrivapw | | | -0.0003 | -0.003* | -0.003 |
| | | | (0.001) | (0.001) | (0.003) |
| TFP | | | 0.003 | -0.154** | -0.154 |
| | | | (0.055) | (0.061) | (0.109) |
| Exrate | | | 0.0004 | 0.001 | 0.001 |
| | | | (0.001) | (0.001) | (0.001) |
| CPI | | | 0.0105 | -0.101*** | -0.101* |
| | | | (0.022) | (0.030) | (0.058) |
| Foretodebt | | | 0.004 | 0.004 | 0.004 |
| | | | (0.004) | (0.004) | (0.004) |
| Inpopu | | | | 26.24*** | 26.24* |
| | | | | (6.324) | (15.29) |
| GDPpc | | | | 0.005*** | 0.005** |
| | | | | (0.001) | (0.002) |
| Govindex | -2.893*** | | | | |
| | (0.561) | | | | |
| Observations | 525 | 500 | 500 | 500 | 500 |
| R-squared | 0.811 | 0.816 | 0.817 | 0.828 | 0.102 |

**Table 2**: Regression result for net-import dependency and the composite governance index in different country groups

| VARIABLES | (Middle Income) NIDR | ( Low income) NIDR | (Non-oil Producer) NIDR | (Oil Producer) NIDR |
|---|---|---|---|---|
| Lgovindex | -0.569 | -3.733*** | -4.646*** | -1.401*** |
| | (0.801) | (0.846) | (0.950) | (0.451) |
| Agrivapw | -0.002 | -0.008 | 0.0002 | -0.004*** |
| | (0.001) | (0.007) | (0.007) | (0.001) |
| TFP | -0.196** | 0.0536 | -0.006 | -0.046 |
| | (0.085) | (0.081) | (0.091) | (0.046) |
| Inpopu | 1.023 | -11.35* | -8.604*** | 8.511*** |
| | (2.700) | (6.650) | (3.010) | (1.550) |
| GDPpc | 0.005*** | 0.021 | 0.001 | 0.003*** |
| | (0.001) | (0.014) | (0.002) | (0.001) |
| Observations | 180 | 320 | 300 | 200 |
| R-squared | 0.928 | 0.656 | 0.794 | 0.942 |

- Higher governance index is correlated with lower net-import dependency ratio and the relationship is significant.

**Table 3**: Regression results for net-import dependency and governance indicators

| VARIABLES | (1) NIDR | (2) NIDR | (3) NIDR | (4) NIDR | (5) NIDR | (6) NIDR |
|---|---|---|---|---|---|---|
| Corrpcont | -0.416*** | -0.436*** | -0.438*** | -0.361*** | -0.357*** | -0.357 |
| | (0.089) | (0.093) | (0.097) | (0.098) | (0.099) | (0.266) |
| Polstab | 0.073 | 0.059 | 0.071 | 0.0822 | 0.086* | 0.0861 |
| | (0.047) | (0.048) | (0.049) | (0.052) | (0.052) | (0.101) |
| Goveff | -0.293*** | -0.306*** | -0.313*** | -0.325*** | -0.325*** | -0.325 |
| | (0.085) | (0.086) | (0.086) | (0.085) | (0.085) | (0.196) |
| Regqlty | 0.131 | 0.149 | 0.193** | 0.221** | 0.219** | 0.219 |
| | (0.091) | (0.092) | (0.094) | (0.093) | (0.094) | (0.174) |
| Ruoflaw | -0.229* | -0.212* | -0.279** | -0.287** | -0.289** | -0.289 |
| | (0.110) | (0.111) | (0.116) | (0.116) | (0.117) | (0.212) |
| Voiceacc | -0.264*** | -0.263*** | -0.242*** | -0.241*** | -0.242*** | -0.242 |
| | (0.089) | (0.089) | (0.091) | (0.090) | (0.090) | (0.155) |
| Agrivapw | | -0.001 | -0.002* | -0.003** | -0.003** | -0.003 |
| | | (0.001) | (0.001) | (0.001) | (0.001) | (0.003) |
| TFP | | 0.017 | -0.020 | -0.122** | -0.121** | -0.121 |
| | | (0.043) | (0.049) | (0.054) | (0.058) | (0.089) |
| Exrate | | | -0.002 | -0.001 | -0.001 | -0.001 |
| | | | (0.001) | (0.001) | (0.001) | (0.002) |
| CPI | | | 0.0377* | -0.046 | -0.048* | -0.048 |
| | | | (0.020) | (0.028) | (0.028) | (0.041) |
| Foretodebt | | | 0.005 | 0.004 | 0.004 | 0.004 |
| | | | (0.004) | (0.004) | (0.004) | (0.004) |
| Inpopu | | | | 20.49*** | 20.85*** | 20.85* |
| | | | | (5.826) | (7.183) | (12.00) |
| GDPpc | | | | 0.003** | 0.003** | 0.003 |
| | | | | (0.001) | (0.001) | (0.002) |
| Infreshh2o | | | | | -7.258 | -7.258 |
| | | | | | (11.380) | (9.234) |
| Inagril | | | | | -0.302 | -0.302 |
| | | | | | (5.192) | (7.936) |
| Observations | 525 | 525 | 525 | 525 | 525 | 525 |
| R-squared | 0.848 | 0.849 | 0.851 | 0.856 | 0.856 | 0.278 |

Notes: Standard errors in parentheses
***, **, and * denote statistical significance at 1%, 5% and 10%, respectively

**Table 4**: Regression results for net-import dependency and governance indicators in different country groups

| VARIABLES | (Middle Income) NIDR | (Low income) NIDR | (Non-oil Producer) NIDR | (Oil Producer) NIDR |
|---|---|---|---|---|
| Corrpcont | -0.765*** | -0.061 | -0.307** | -0.223*** |
| | (0.155) | (0.116) | (0.137) | (0.085) |
| Polstab | 0.036 | 0.136** | 0.131* | 0.0891** |
| | (0.086) | (0.064) | (0.076) | (0.045) |
| Goveff | -0.126 | -0.392*** | -0.679*** | 0.189*** |
| | (0.160) | (0.103) | (0.125) | (0.068) |
| Regqlty | 0.434*** | 0.372*** | 0.319** | 0.069 |
| | (0.141) | (0.121) | (0.148) | (0.076) |
| Ruoflaw | 0.333* | -0.657*** | -0.185 | -0.038 |
| | (0.191) | (0.144) | (0.173) | (0.102) |
| Voiceacc | -0.228 | -0.431*** | -0.657*** | -0.221*** |
| | (0.142) | (0.111) | (0.149) | (0.066) |
| Agrivapw | -0.003*** | -0.014** | -0.004 | -0.004*** |
| | (0.001) | (0.006) | (0.006) | (0.001) |
| TFP | -0.303*** | -0.064 | -0.147* | -0.179*** |
| | (0.080) | (0.069) | (0.079) | (0.046) |
| Inpopu | 22.91*** | 43.19*** | 12.75* | 29.26*** |
| | (8.014) | (7.837) | (6.827) | (3.861) |
| GDPpc | 0.003*** | -0.029*** | -0.002 | 0.003*** |
| | (0.001) | (0.007) | (0.002) | (0.001) |
| Observations | 189 | 336 | 315 | 210 |
| R-squared | 0.943 | 0.764 | 0.849 | 0.950 |

- Given the high levels of corruption in SSA, government regulations favor private sector development at the expense of public interest.
- This could explain the positive and significant relationship between regulatory quality and net-import dependency

**Table 5**: Causality between governance and net-import dependency

| Country | $H_0$:Governance does not Granger-cause net-import dependency Short-run LGovindex | $H_0$:Governance does not Granger-cause net-import dependency Long-run LECT | $H_0$: net-import dependency does not Granger-cause Governance Short-run LNIDR | $H_0$: net-import dependency does not Granger-cause Governance Long-run LECT |
|---|---|---|---|---|
| Angola | -10.975*** | -1.834*** | -0.009 | -0.464 |
| Botswana | 3.385* | -0.767*** | -0.026 | -0.350 |
| Chad | 0.549 | -0.099 | 0.020 | -0.287 |
| Cameroon | 0.362 | -0.436*** | -0.024 | -0.202 |
| Congo | 3.370* | -0.074 | 0.042 | -1.014*** |
| Ethiopia | -5.951 | -0.380 | -0.004 | -0.057 |
| Guinea | 0.602 | -0.558** | -0.159* | -0.002 |
| Ghana | 0.782 | -0.002 | 0.014 | -1.04*** |
| Kenya | 1.862 | -0.137 | 0.039* | -0.328* |
| Malawi | -0.478 | -0.373 | 0.047 | -1.058** |
| Nigeria | 0.518 | 0.000 | 0.036 | -0.634* |
| Rwanda | 1.218 | -1.122** | 0.375 | 0.011 |
| Sierra Leone | -0.498 | -0.302 | 0.047 | -0.101 |
| South Africa | 1.319 | -0.532 | 0.016 | -0.038 |
| Uganda | -0.831 | -0.268 | 0.007 | -0.405*** |
| Zambia | -4.027 | -0.003 | 0.003 | -0.586* |
| Zimbabwe | 21.534 | -0.265* | -0.006 | -0.004* |
| Central Africa Re | -0.353 | -0.314 | 0.144 | -0.244 |
| Benin | 2.481 | -0.727* | 0.017 | -0.13 |
| Burkina Faso | 2.307 | -0.550* | -0.019 | -0.007 |
| Mali | -3.333 | -0.593** | -0.014 | -0.057 |
| Mozambique | 1.253 | -2.021*** | 0.657 | -0.131 |
| Niger | -0.458 | -0.307* | -0.096 | -0.763*** |
| Senegal | -3.065 | -0.644* | 0.170 | -0.156 |
| Togo | -5.311 | -0.946* | -0.008 | -0.062 |

Note: The data used covers the full sample period from 1995 to 2015
***, **, and * denote statistical significance at 1%, 5% and 10%, respectively

- Out of the 25 countries studied, evidence of unidirectional causality running from governance to net-import dependency is reported in 14 countries
- The causality between governance and net-import dependency in these countries is mainly in the long run.
- **Hence**, the quality of governance may have a significant effect on the degree of net- import dependency of a country in the long-run

- Corruption control, government effectiveness, rule of law, and voice and accountability are negatively and significantly related with net-import dependency
- Political stability and regulatory quality are positively related to net-import dependency
- Political stability creates conducive environment for investment and trade. It encourages regional integration and bilateral agreements thereby promoting agricultural international trade

## CONCLUSION

- Governments in SSA should employ measures to improve governance dimensions in order to promote agricultural international trade for food and nutritional security in the region
- Good governance creates conducive climate for agricultural investment while poor governance strengthens the grabbing hand, hinders agricultural development and leads to low productivity
- Low agricultural productivity creates supply deficit as population and demand for more food increases
- Increasing governance quality could support reduced net-import dependency on food and agricultural products through promoting agricultural production, exports, and consequently reduced import dependency in SSA in the long-run
- **Therefore**, Governance reforms considerations in SSA are pivotal for sustainable agriculture, and agricultural trade aimed at promoting food and nutrition security