# FOREIGN AID, INSTITUTION QUALITY, AND GROWTH

EE 462 Development Macroeconomics

Semester 1/2022

Reference: Young, A.T., and Sheehan, K.M. (2014). Foreign aid, institution quality, and growth. *European Journal of Political Economy, 36*, 195-208.

# Summary

- Objective:
  - to investigate the linkage between foreign aid, institution quality, and growth
- Method:
  - Use a dynamic panel data model (116 countries, 8 5-yr data from 1970-2010) to estimate the impact of ODA on institutional quality (economic & political)
  - Then, estimate the impact of ODA on growth by controlling for institutional quality
- Results:
  - Aid flows are negatively associated with a recipient's legal system, property rights, and its trade openness.
  - After controlling for institutional quality, aid flows are not significantly related to growth.

# Literature

- Aid & growth
  - Optimistic view
  - Pessimistic view
- Institutions & growth
  - Economic freedom (e.g. private property rights)
  - Political freedom (e.g. check and balances)
- Aid & Institutional quality

# Institutional Quality

1. Polity democracy score
2. Checks and balances measure
3. Economic Freedom of the World (EFW)
4. 5 component area scores of EFW
5. Political rights
6. Civil liberties

**Table 1**
Summary variables included in regression analyses.

| Variable | Description | Source | Mean | Stand. dev |
|---|---|---|---|---|
| DEMOC | Polity IV democracy ranking | Polity IV | 3.217 | 3.697 |
| FREEDOM | Economic Freedom of the World index | Gwartney et al. (2013) | 5.739 | 1.262 |
| CHECKS | Index for number of checks and balances | Keefer and Stasavage (2003) | 2.022 | 1.517 |
| ODA | Official development assistance to GDP ratio | DAC | 0.016 | 0.025 |
| POL_RIGHTS | Index of political rights | Freedom House | 4.357 | 2.015 |
| CIV_LIBS | Index of civil liberties | Freedom House | 4.282 | 1.643 |
| SIZE_GOV | EFW area 1: size of government | Gwartney et al. (2013) | 6.029 | 1.613 |
| PROP_RIGHTS | EFW area 2: legal structure & property rights | Gwartney et al. (2013) | 4.872 | 1.691 |
| MONEY | EFW area 3: access to sound money | Gwartney et al. (2013) | 6.396 | 2.252 |
| TRADE | EFW area 4: freedom to trade internationally | Gwartney et al. (2013) | 5.351 | 2.201 |
| REGULATION | EFW area 5: regulations of credit, labor, & business | Gwartney et al. (2013) | 5.855 | 1.196 |
| OIL | Oil production as a share of GDP | British Petroleum (2011) | 0.000 | 0.001 |
| (OIL when > 0) | | | 0.001 | 0.001 |
| SHOCKS_POS | Mean value of positive terms of trade growth rates | UN & IMF | 0.066 | 0.118 |
| SHOCKS_NEG | Mean value of negative terms of trade growth rates | UN & IMF | −0.045 | 0.086 |
| AG_SHARE | Agricultural share of GDP expressed as a percentage | World Develop. Indicators | 21.560 | 15.658 |
| LIFE_EXPECT | Life expectancy at birth | World Develop. Indicators | 61.211 | 10.992 |
| RGDP_PC | Real per capita GDP, 2005 US$ | Penn World Tables 8.0 | 8114.560 | 27,446.530 |
| LANGUAGE | Linguistic fractionalization | MacroDataGuide | 0.450 | 0.289 |
| ETHNIC | Ethnic fractionalization | MacroDataGuide | 0.501 | 0.245 |
| Investment/GDP | Gross capital formation as a share of GDP | Penn World Tables 8.0 | 0.198 | 0.118 |
| Pop. growth | Population growth rate (over 5-year periods) | Penn World Tables 8.0 | 0.105 | 0.073 |
| Urb. pop. share | Urban population share expressed as a percentage | World Develop. Indicators | 45.227 | 23.424 |
| Prim. enroll. | Primary school enrollment rate expressed as a percentage | World Develop. Indicators | 94.409 | 25.668 |
| Second enroll. | Secondary school enrollment rate expressed as a percentage | World Develop. Indicators | 50.075 | 30.243 |

# Estimation of relationship between aid and institutional quality

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- $INST_t = \beta_0 + \beta_1 ODA_{t-1;t} + \beta_2 INST_{t-1} + \beta_3 X_{t-1}$
- $INST_t - INST_{t-1} = \beta_0 + \beta_1 ODA_{t-1;t} + (\beta_2 - 1) INST_{t-1} + \beta_3 X_{t-1}$

# Aid’s Effect on Institution’s Quality

**Table 2**
OLS period fixed effects regressions of baseline institutional variables on foreign aid.

| | (1) Dependent variable DEMOC-DEMOC(−1) | (2) CHECKS-CHECKS(−1) | (3) FREEDOM-FREEDOM(−1) |
|---|---|---|---|
| ODA | 8.507** | 2.851 | 0.131 |
| | (3.865) | (2.101) | (2.468) |
| OIL | −20.225 | −26.949 | 9.249 |
| | (61.478) | (37.283) | (85.099) |
| SHOCKS_NEG | 3.442*** | 0.484 | −0.780 |
| | (1.109) | (0.796) | (0.481) |
| SHOCKS_POS | 2.748*** | −0.013 | −0.650 |
| | (1.053) | (0.517) | (0.441) |
| LANGUAGE | 0.447 | 0.573* | 0.014 |
| | (0.398) | (0.311) | (0.100) |
| ETHNIC | −0.738* | −0.292 | −0.090 |
| | (0.420) | (0.300) | (0.129) |
| RPCGROWTH | −0.008 | 0.069 | 0.542*** |
| | (0.278) | (0.148) | (0.133) |
| DONORSSI | −0.074 | −0.251 | 0.103* |
| | (0.202) | (0.173) | (0.056) |
| INST(−1) | −0.231*** | −0.535*** | −0.203*** |
| | (0.039) | (0.054) | (0.028) |
| Redundant fixed effects | 5.989*** | 4.303*** | 13.513*** |
| $R^2$ | 0.165 | 0.305 | 0.296 |
| Countries | 111 | 116 | 81 |
| Observations | 802 | 732 | 545 |

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants and regional dummy variables are included in all regressions (though not reported). “Redundant fixed effects” refer to F-tests are for the null hypothesis that the period fixed effects are jointly insignificant. The panel consists of 5-year periods and the notation “(−1)” denotes a 5-year lag.

**Table 3**
2SLS period fixed effects regressions of baseline institutional variables on foreign aid.

| | (1) | (2) | (3) |
|---|---|---|---|
| | Dependent variable | | |
| | DEMOC-DEMOC(−1) | CHECKS-CHECKS(−1) | FREEDOM-FREEDOM(−1) |
| ODA | −13.461 | −15.028* | −19.111*** |
| | (12.599) | (8.921) | (7.014) |
| OIL | −137.515 | −137.331** | −97.015 |
| | (101.222) | (69.548) | (115.057) |
| SHOCKS_NEG | 2.818** | 0.051 | −0.716 |
| | (1.179) | (0.939) | (0.610) |
| SHOCKS_POS | 2.529** | −0.133 | −0.636 |
| | (1.257) | (0.608) | (0.617) |
| LANGUAGE | 0.019 | 0.427 | 0.003 |
| | (0.371) | (0.333) | (0.150) |
| ETHNIC | −0.419 | −0.083 | 0.062 |
| | (0.442) | (0.349) | (0.210) |
| RPCGROWTH | −0.147 | 0.047 | 0.436*** |
| | (0.362) | (0.185) | (0.167) |
| DONORSSI | 0.085 | −0.115 | 0.221*** |
| | (0.216) | (0.156) | (0.066) |
| INST(−1) | −0.257*** | −0.575*** | −0.284*** |
| | (0.042) | (0.058) | (0.039) |
| F-stat (first stage) | 8.924*** | 9.278*** | 13.465*** |
| J-stat | 0.165 | 1.505 | 0.731 |
| J-stat p-value | 0.684 | 0.220 | 0.392 |
| Countries | 107 | 112 | 79 |
| Observations | 676 | 629 | 481 |

**Table 4**

2SLS period fixed effects regressions of additional institutional variables on foreign aid.

| Dependent variable (INST-INST(−1)) | (1) Coefficient on ODA | (2) J-stat | (3) J-stat p-value | (4) F stat (first stage) |
|---|---|---|---|---|
| POL_RIGHTS | 11.122<br>(7.559) | 1.290 | 0.256 | 8.742*** |
| CIV_LIBS | 15.962**<br>(6.436) | 4.151** | 0.042 | 9.776*** |
| SIZE_GOV | 1.764<br>(8.034) | 1.274 | 0.259 | 17.409*** |
| PROP_RIGHTS | −55.024***<br>(19.582) | 0.379 | 0.538 | 11.307*** |
| MONEY | −12.475<br>(12.864) | 1.061 | 0.303 | 15.462*** |
| TRADE | −38.713***<br>(13.358) | 0.421 | 0.517 | 13.762*** |
| REGULATION | −8.535<br>(5.476) | 0.017 | 0.896 | 13.741*** |

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants and regional dummy variables are included in all regressions (though not reported). Lagged values of AG_SHARE and LIFE_EXPECT are employed as instruments. The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

# Growth regressions including affected institutional measures

**Table 5**
Regressions of real GDP per capita growth on institutional variables, initial income, and other controls.

| | (1) Dependent variable (per cap. real GDP growth) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | Fixed period effects | Fixed country effects | Fixed country effects | Fixed country effects; 2SLS | Fixed country effects; 2SLS (just identified) |
| DEMOC | 0.003 | 0.005 | 0.003 | 0.009 | −0.005 |
| | (0.004) | (0.007) | (0.006) | (0.044) | (0.038) |
| CHECKS | 0.005 | 0.011 | 0.018 | −0.006 | 0.031 |
| | (0.008) | (0.016) | (0.013) | (0.130) | (0.141) |
| FREEDOM | 0.039** | 0.039* | | 0.079** | 0.090*** |
| | (0.017) | (0.023) | | (0.040) | (0.030) |
| SIZE_GOV | | | 0.011 | | |
| | | | (0.015) | | |
| PROP_RIGHTS | | | 0.012 | | |
| | | | (0.016) | | |
| MONEY | | | 0.003 | | |
| | | | (0.009) | | |
| TRADE | | | 0.017 | | |
| | | | (0.014) | | |
| REGULATION(−1) | | | −0.009 | | |
| | | | (0.023) | | |
| Investment/GDP | 0.165 | 0.110 | 0.309 | −0.058 | −0.173 |
| | (0.194) | (0.188) | (0.408) | (0.447) | (0.443) |
| Population growth | −0.894*** | −0.641 | −0.910*** | −0.496 | −0.428 |
| | (0.336) | (0.458) | (0.212) | (0.545) | (0.582) |
| Init. real GDP per cap. | −0.139*** | −0.518*** | −0.411*** | −0.409*** | −0.417*** |
| | (0.031) | (0.072) | (0.061) | (0.058) | (0.057) |
| Urban pop. share | 0.003*** | 0.004 | 0.009* | | |
| | (0.001) | (0.004) | (0.005) | | |
| Primary enrollment | −0.000 | −0.000 | −0.001 | | |
| | (0.000) | (0.000) | (0.001) | | |
| Secondary enrollment | 0.001 | 0.001 | −0.002 | | |
| | (0.001) | (0.002) | (0.002) | | |
| ODA | −4.594*** | −4.823* | −3.569 | 1.423 | 0.971 |
| | (1.074) | (2.893) | (3.772) | (2.675) | (1.943) |
| F-stat (red. fix. effects) | 1.158 | 2.068*** | 1.985*** | | |
| J-stat | | | | 0.055 | |
| J-stat p-value | | | | 0.815 | |
| $R^2$ | 0.177 | 0.451 | 0.492 | | |
| Countries | 76 | 76 | 73 | 78 | 78 |
| Observations | 366 | 366 | 300 | 437 | 437 |

**Table 6**
First stage regressions from 2SLS growth regressions.

| | (1) DEMOC | (2) CHECKS | (3) FREEDOM | (4) ODA |
|---|---|---|---|---|
| ODA (lag) | 116.304*** | 31.800*** | 40.687* | 0.793*** |
| | (28.335) | (10.334) | (22.161) | (0.081) |
| $ODA^2$ (lag) | −161.2655 | −51.821 | −164.004* | −0.288 |
| | (155.163) | (65.429) | (93.952) | (0.446) |
| ODA * POLITICAL_RIGHTS (lag) | −11.592*** | −2.881** | −5.280*** | 0.010 |
| | (3.167) | (1.287) | (1.404) | (0.011) |
| ODA * population (lag) | 0.140 | 0.064 | 0.893*** | −0.007*** |
| | (0.360) | (0.222) | (0.242) | (0.002) |
| ODA * (real GDP) (lag) | 0.000 | 0.000 | −0.000 | 0.000 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Investment/GDP | 5.808*** | 2.024** | 3.563*** | 0.067*** |
| | (2.248) | (0.809) | (1.036) | (0.014) |
| Population growth | −3.738** | −1.822*** | −3.599** | 0.006 |
| | (1.528) | (0.670) | (1.505) | (0.009) |
| Initial real GDP per cap. | 1.599*** | 0.459** | 1.283*** | −0.004*** |
| | (0.503) | (0.223) | (0.284) | (0.001) |
| F-stat (Instruments) | 6.068*** | 3.204*** | 5.950*** | 170.276*** |
| $R^2$ | 0.710 | 0.544 | 0.621 | 0.698 |

Notes: *, **, and *** denote statistical significance at the 10, 5, and 1% levels, respectively. Standard errors are clustered by country and are reported in parentheses. Constants are included in all regressions (though not reported). Country fixed effects are also included in all regressions. The F-statistic is associated with the test of joint insignificance of $ODA^2$, ODA * POLITICAL_RIGHTS, ODA * population, and ODA * (real GDP). The panel consists of 5-year periods and the notation "(−1)" denotes a 5-year lag.

**Table 7**
Regressions of real GDP per capita growth on separate areas of economic freedom and other controls.

| | (1) Dependent variable (Per cap. real GDP growth) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | Fixed period effects | Fixed country effects | Fixed country effects; 2SLS | Fixed country effects; 2SLS | Fixed country effects; 2SLS | Fixed country effects; 2SLS | Fixed country effects; 2SLS |
| DEMOC | −0.004 | 0.003 | 0.000 | −0.000 | 0.007* | 0.002 | 0.010* |
| | (0.004) | (0.006) | (0.009) | (0.013) | (0.004) | (0.007) | (0.005) |
| CHECKS | 0.007 | 0.018 | −0.007 | 0.002 | 0.010 | −0.003 | 0.009 |
| | (0.008) | (0.013) | (0.017) | (0.022) | (0.012) | (0.018) | (0.012) |
| SIZE_GOV | 0.005 | 0.011 | 0.139** | | | | |
| | (0.010) | (0.015) | (0.067) | | | | |
| PROP_RIGHTS | 0.024** | 0.012 | | 0.240 | | | |
| | (0.011) | (0.016) | | (0.296) | | | |
| MONEY | 0.006 | 0.003 | | | 0.033** | | |
| | (0.008) | (0.009) | | | (0.014) | | |
| TRADE | 0.010 | 0.017 | | | | 0.065* | |
| | (0.012) | (0.014) | | | | (0.037) | |
| REGULATION | −0.011 | −0.009 | | | | | 0.039 |
| | (0.016) | (0.023) | | | | | (0.080) |
| Investment/GDP | 0.106 | 0.309 | −0.211 | −0.210 | 0.075 | −0.230 | 0.119 |
| | (0.179) | (0.408) | (0.336) | (0.830) | (0.174) | (0.429) | (0.295) |
| Population growth | −0.920*** | −0.910*** | −0.358 | −0.692 | −0.634 | −0.560 | −0.670 |
| | (0.269) | (0.212) | (0.679) | (1.123) | (0.420) | (0.375) | (0.411) |
| Init. real GDP per cap. | −0.098*** | −0.411*** | −0.400*** | −0.505*** | −0.426*** | −0.425*** | −0.404*** |
| | (0.026) | (0.061) | (0.057) | (0.178) | (0.057) | (0.066) | (0.065) |
| Urban pop. share | 0.002*** | 0.009* | | | | | |
| | (0.008) | (0.005) | | | | | |
| Primary enrollment | −0.001** | −0.001 | | | | | |
| | (0.006) | (0.001) | | | | | |
| Secondary enrollment | 0.001 | −0.002 | | | | | |
| | (0.001) | (0.002) | | | | | |
| ODA | −3.564*** | −3.569 | −2.291 | 1.912 | −2.042 | −0.801 | −2.276 |
| | (1.226) | (3.772) | (1.636) | (4.224) | (1.499) | (1.571) | (1.658) |
| F-stat (red. fix. effects) | 1.542 | 1.985*** | | | | | |
| F-stat (first stage) | | | 0.874 | 0.460 | 10.132*** | 4.224*** | 4.081*** |
| J-stat | | | 0.016 | 0.336 | 0.606 | 0.138 | 2.512 |
| J-stat p-values | | | 0.899 | 0.562 | 0.436 | 0.711 | 0.473 |
| $R^2$ | 0.179 | 0.492 | | | | | |
| Countries | 73 | 73 | 78 | 78 | 78 | 77 | 78 |
| Observations | 300 | 300 | 440 | 417 | 445 | 406 | 436 |