# Why do governments tax or subsidize fossil fuels?

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Table 1: Cross-Section / Basic Specification

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | −1.032*** | −0.939*** | −0.873*** | −0.745*** |
| | (0.193) | (0.181) | (0.181) | (0.182) |
| log(GNI Per Capita Sq) | 0.066*** | 0.061*** | 0.057*** | 0.050*** |
| | (0.011) | (0.011) | (0.011) | (0.011) |
| Central Government Debt | 0.003*** | 0.002** | 0.002** | 0.002** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Value-Added Tax Rate | 0.049*** | 0.042*** | 0.041*** | 0.035*** |
| | (0.005) | (0.005) | (0.005) | (0.005) |
| Fossil Fuel Dependence | | −0.016*** | | |
| | | (0.004) | | |
| log(Oil and Gas Exports PC) | | | −0.024*** | |
| | | | (0.005) | |
| Fossil Fuel Export Dependence | | | | −0.007*** |
| | | | | (0.001) |
| Constant | 3.543*** | 3.328*** | 2.986*** | 2.695*** |
| | (0.817) | (0.750) | (0.750) | (0.747) |
| Observations | 140 | 139 | 139 | 136 |
| $R^2$ | 0.598 | 0.673 | 0.672 | 0.737 |
| Adjusted $R^2$ | 0.586 | 0.660 | 0.660 | 0.727 |
| *Note:* | | | | *p<0.1; **p<0.05; ***p<0.01 |

Table 2: Cross-Section / Additional Controls

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | −0.939*** | −0.946*** | −0.946*** | −0.540*** |
| | (0.181) | (0.188) | (0.188) | (0.206) |
| log(GNI Per Capita Sq) | 0.061*** | 0.060*** | 0.060*** | 0.037*** |
| | (0.011) | (0.012) | (0.012) | (0.013) |
| Value-Added Tax Rate | 0.042*** | 0.040*** | 0.040*** | 0.036*** |
| | (0.005) | (0.005) | (0.005) | (0.008) |
| Fossil Fuel Dependence | −0.016*** | −0.013** | −0.013** | −0.013*** |
| | (0.004) | (0.005) | (0.005) | (0.005) |
| Autocracy (Polity IV) | | −0.116 | −0.116 | −0.036 |
| | | (0.104) | (0.104) | (0.108) |
| Government Effectiveness | | 0.044 | 0.044 | 0.010 |
| | | (0.079) | (0.079) | (0.079) |
| Central Government Debt | 0.002** | 0.001* | 0.001* | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | −0.050 |
| | | | | (0.116) |
| Latitude | | | | 0.0003 |
| | | | | (0.002) |
| Landlocked | | | | −0.005 |
| | | | | (0.052) |
| Asia + Pacific | | | | −0.005 |
| | | | | (0.112) |
| Europe + North America | | | | 0.105 |
| | | | | (0.173) |
| Former USSR | | | | −0.272* |
| | | | | (0.147) |
| Latin America + Caribbean | | | | −0.233*** |
| | | | | (0.089) |
| Middle East | | | | −0.347*** |
| | | | | (0.124) |
| Fossil Fuel Dependence * Autocracy | | −0.002 | −0.002 | −0.00005 |
| | | (0.009) | (0.009) | (0.006) |
| Constant | 3.328*** | 3.490*** | 3.490*** | 1.921** |
| | (0.750) | (0.746) | (0.746) | (0.827) |
| Observations | 139 | 136 | 136 | 136 |
| $R^2$ | 0.673 | 0.684 | 0.684 | 0.750 |

Table 3: Instrumental Variables Approach

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| Fossil Fuel Dependence | −0.032*** | −0.038*** | −0.038*** | −0.038*** |
| | (0.007) | (0.012) | (0.012) | (0.011) |
| log(GNI Per Capita) | −0.869*** | −1.048*** | −1.048*** | −0.552* |
| | (0.229) | (0.259) | (0.259) | (0.290) |
| log(GNI Per Capita Sq) | 0.058*** | 0.075*** | 0.075*** | 0.049*** |
| | (0.014) | (0.017) | (0.017) | (0.019) |
| Autocracy (Polity IV) | | −0.202 | −0.202 | −0.109 |
| | | (0.155) | (0.155) | (0.135) |
| Government Effectiveness | | −0.192 | −0.192 | −0.234** |
| | | (0.118) | (0.118) | (0.119) |
| Central Government Debt | 0.001 | 0.0003 | 0.0003 | −0.0002 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | −0.136 |
| | | | | (0.160) |
| Latitude | | | | 0.001 |
| | | | | (0.002) |
| Landlocked | | | | −0.051 |
| | | | | (0.068) |
| Asia + Pacific | | | | −0.080 |
| | | | | (0.128) |
| Europe + North America | | | | −0.099 |
| | | | | (0.181) |
| Former USSR | | | | −0.441*** |
| | | | | (0.145) |
| Latin America + Caribbean | | | | −0.415*** |
| | | | | (0.115) |
| Middle East | | | | −0.399*** |
| | | | | (0.129) |
| Value-Added Tax Rate | 0.034*** | 0.036*** | 0.036*** | 0.038*** |
| | (0.007) | (0.007) | (0.007) | (0.009) |
| Fossil Fuel Dependence * Autocracy | | 0.011 | 0.011 | 0.009 |
| | | (0.012) | (0.012) | (0.008) |
| Constant | 3.230*** | 3.512*** | 3.512*** | 1.435 |
| | (0.897) | (1.022) | (1.022) | (1.104) |
| Observations | 137 | 134 | 134 | 134 |
| Adjusted $R^2$ | 0.587 | 0.546 | 0.546 | 0.612 |

Table 4: Cross-section Time-series: Annual Panel

| | *Dependent variable:* |
|---|---|
| | meanbmgap2015adj |
| Value-Added Tax Rate | $0.019^{***}$ |
| | (0.004) |
| log(GNI Per Capita) | $-0.018$ |
| | (0.097) |
| log(GNI Per Capita Sq) | 0.004 |
| | (0.006) |
| Fossil Fuel Dependence | $-0.006^{***}$ |
| | (0.002) |
| Autocracy (Polity IV) | $0.096^{*}$ |
| | (0.054) |
| Government Effectiveness | 0.027 |
| | (0.031) |
| Central Government Debt | $0.001^{***}$ |
| | (0.0003) |
| Fossil Fuel Dependence * Autocracy | $-0.005$ |
| | (0.003) |
| Constant | 0.129 |
| | (0.401) |
| Observations | 1,535 |
| Adjusted $R^2$ | 0.930 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 |

Table 5: Cross-section Time-series: Monthly Panel

| | *Dependent variable:* |
|---|---|
| | bmgap2015adj |
| 1 Qr Before Elections | 0.001 |
| | (0.009) |
| 2 Qr Before Elections | 0.004 |
| | (0.010) |
| 3 Qr Before Elections | 0.001 |
| | (0.009) |
| 4 Qr Before Elections | 0.001 |
| | (0.010) |
| 1 Qr After Elections | 0.002 |
| | (0.009) |
| 2 Qr After Elections | −0.003 |
| | (0.009) |
| 3 Qr After Elections | −0.007 |
| | (0.010) |
| 4 Qr After Elections | −0.011 |
| | (0.009) |
| 1 Qr After Leader Turnover | 0.010 |
| | (0.015) |
| 2 Qr After Leader Turnover | 0.013 |
| | (0.014) |
| 3 Qr After Leader Turnover | 0.017 |
| | (0.014) |
| 4 Qr After Leader Turnover | 0.008 |
| | (0.014) |
| Oil Discovery Month | 0.041** |
| | (0.016) |
| 1 Qr After Discovery | 0.033** |
| | (0.015) |
| 2 Qr After Discovery | 0.029* |
| | (0.016) |
| 3 Qr After Discovery | 0.016 |
| | (0.015) |
| 4 Qr After Discovery | 0.023 |
| | (0.016) |
| Constant | 0.218*** |
| | (0.015) |
| Observations | 22,155 |

Table S4: Bivariate relationships between Regime Type and Fossil Fuel Taxes

| | *Dependent variable:* | | | | |
|---|---|---|---|---|---|
| | meanbmgap2015adj | | | | |
| | (1) | (2) | (3) | (4) | (5) |
| Polity IV (continuous) | 0.044*** | | | | |
| | (0.005) | | | | |
| Autocracy (Polity IV) | | −0.537*** | | | |
| | | (0.097) | | | |
| Democracy (Polity IV) | | | 0.449*** | | |
| | | | (0.070) | | |
| Electoral Democracy (V-DEM) | | | | 1.116*** | |
| | | | | (0.122) | |
| Democracy (Boix et al.) | | | | | 0.488*** |
| | | | | | (0.074) |
| Constant | 0.312*** | 0.547*** | 0.238*** | −0.121 | 0.205*** |
| | (0.039) | (0.040) | (0.052) | (0.074) | (0.056) |
| Observations | 153 | 153 | 153 | 154 | 156 |
| $R^2$ | 0.294 | 0.123 | 0.214 | 0.342 | 0.232 |
| Adjusted $R^2$ | 0.290 | 0.117 | 0.209 | 0.337 | 0.227 |
| *Note:* | | | | | *p<0.1; **p<0.05; ***p<0.01 |

Table S5: Cross-sectional models: Alternative measures of regime type

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | −0.939*** | −0.920*** | −0.920*** | −0.476** |
| | (0.181) | (0.191) | (0.191) | (0.194) |
| log(GNI Per Capita Sq) | 0.061*** | 0.058*** | 0.058*** | 0.033*** |
| | (0.011) | (0.012) | (0.012) | (0.012) |
| Central Government Debt | 0.002** | 0.002** | 0.002** | 0.001* |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | −0.030 |
| | | | | (0.113) |
| Latitude | | | | 0.001 |
| | | | | (0.002) |
| Landlocked | | | | 0.001 |
| | | | | (0.051) |
| Asia + Pacific | | | | −0.040 |
| | | | | (0.103) |
| Europe + North America | | | | 0.053 |
| | | | | (0.163) |
| Former USSR | | | | −0.300** |
| | | | | (0.138) |
| Latin America + Caribbean | | | | −0.266** |
| | | | | (0.108) |
| Middle East | | | | −0.354*** |
| | | | | (0.124) |
| Value-Added Tax Rate | 0.042*** | 0.040*** | 0.040*** | 0.035*** |
| | (0.005) | (0.005) | (0.005) | (0.007) |
| Fossil Fuel Dependence | −0.016*** | −0.014*** | −0.014*** | −0.015*** |
| | (0.004) | (0.005) | (0.005) | (0.005) |
| BMR Democracy | | 0.100 | 0.100 | 0.042 |
| | | (0.074) | (0.074) | (0.090) |
| Government Effectiveness | | 0.031 | 0.031 | −0.005 |
| | | (0.078) | (0.078) | (0.078) |
| Fossil Fuel Dependence * BMR Democracy | | 0.005 | 0.005 | 0.007 |
| | | (0.011) | (0.011) | (0.010) |
| Constant | 3.328*** | 3.324*** | 3.324*** | 1.626** |
| | (0.750) | (0.760) | (0.760) | (0.786) |
| Observations | 139 | 139 | 139 | 139 |
| Adjusted $R^2$ | 0.660 | 0.664 | 0.664 | 0.717 |

Table S6: Cross-sectional models: Alternative measures of regime type.

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | $-0.939^{***}$ | $-0.936^{***}$ | $-0.936^{***}$ | $-0.541^{***}$ |
| | (0.181) | (0.189) | (0.189) | (0.194) |
| log(GNI Per Capita Sq) | $0.061^{***}$ | $0.059^{***}$ | $0.059^{***}$ | $0.037^{***}$ |
| | (0.011) | (0.012) | (0.012) | (0.012) |
| Central Government Debt | $0.002^{**}$ | $0.002^{**}$ | $0.002^{**}$ | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | $-0.061$ |
| | | | | (0.120) |
| Latitude | | | | 0.0003 |
| | | | | (0.002) |
| Landlocked | | | | $-0.004$ |
| | | | | (0.050) |
| Asia + Pacific | | | | $-0.001$ |
| | | | | (0.109) |
| Europe + North America | | | | 0.108 |
| | | | | (0.165) |
| Former USSR | | | | $-0.264^{*}$ |
| | | | | (0.145) |
| Latin America + Caribbean | | | | $-0.257^{***}$ |
| | | | | (0.091) |
| Middle East | | | | $-0.316^{**}$ |
| | | | | (0.140) |
| Value-Added Tax Rate | $0.042^{***}$ | $0.039^{***}$ | $0.039^{***}$ | $0.035^{***}$ |
| | (0.005) | (0.006) | (0.006) | (0.008) |
| Fossil Fuel Dependence | $-0.016^{***}$ | $-0.014^{*}$ | $-0.014^{*}$ | $-0.014^{**}$ |
| | (0.004) | (0.008) | (0.008) | (0.007) |
| Electoral Democracy | | 0.228 | 0.228 | 0.146 |
| | | (0.199) | (0.199) | (0.254) |
| Government Effectiveness | | 0.028 | 0.028 | $-0.007$ |
| | | (0.080) | (0.080) | (0.080) |
| Fossil Fuel Dependence * Electoral Democracy | | 0.003 | 0.003 | 0.003 |
| | | (0.016) | (0.016) | (0.015) |
| Constant | $3.328^{***}$ | $3.379^{***}$ | $3.379^{***}$ | $1.866^{**}$ |
| | (0.750) | (0.739) | (0.739) | (0.768) |
| Observations | 139 | 137 | 137 | 137 |
| Adjusted $R^2$ | 0.660 | 0.663 | 0.663 | 0.719 |

Table S7: Cross-sectional models: Alternative measures of regime type.

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | $-0.939^{***}$ | $-0.977^{***}$ | $-0.977^{***}$ | $-0.551^{***}$ |
| | (0.181) | (0.194) | (0.194) | (0.198) |
| log(GNI Per Capita Sq) | $0.061^{***}$ | $0.061^{***}$ | $0.061^{***}$ | $0.037^{***}$ |
| | (0.011) | (0.012) | (0.012) | (0.013) |
| Central Government Debt | $0.002^{**}$ | $0.002^{**}$ | $0.002^{**}$ | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | $-0.051$ |
| | | | | (0.119) |
| Latitude | | | | 0.0004 |
| | | | | (0.002) |
| Landlocked | | | | $-0.005$ |
| | | | | (0.052) |
| Asia + Pacific | | | | $-0.006$ |
| | | | | (0.106) |
| Europe + North America | | | | 0.092 |
| | | | | (0.173) |
| Former USSR | | | | $-0.280^{*}$ |
| | | | | (0.143) |
| Latin America + Caribbean | | | | $-0.243^{***}$ |
| | | | | (0.090) |
| Middle East | | | | $-0.339^{***}$ |
| | | | | (0.129) |
| Value-Added Tax Rate | $0.042^{***}$ | $0.039^{***}$ | $0.039^{***}$ | $0.036^{***}$ |
| | (0.005) | (0.005) | (0.005) | (0.008) |
| Fossil Fuel Dependence | $-0.016^{***}$ | $-0.011^{**}$ | $-0.011^{**}$ | $-0.013^{***}$ |
| | (0.004) | (0.005) | (0.005) | (0.005) |
| Polity IV | | 0.010 | 0.010 | 0.004 |
| | | (0.007) | (0.007) | (0.008) |
| Government Effectiveness | | 0.043 | 0.043 | 0.006 |
| | | (0.081) | (0.081) | (0.080) |
| Fossil Fuel Dependence * Polity IV | | $-0.00001$ | $-0.00001$ | $-0.00002$ |
| | | (0.001) | (0.001) | (0.001) |
| Constant | $3.328^{***}$ | $3.629^{***}$ | $3.629^{***}$ | $1.959^{**}$ |
| | (0.750) | (0.773) | (0.773) | (0.799) |
| Observations | 139 | 136 | 136 | 136 |
| Adjusted $R^2$ | 0.660 | 0.666 | 0.666 | 0.717 |

Table S8: Cross-sectional models: Alternative measure of region

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | −0.939*** | −0.946*** | −0.946*** | −0.724*** |
| | (0.181) | (0.188) | (0.188) | (0.216) |
| log(GNI Per Capita Sq) | 0.061*** | 0.060*** | 0.060*** | 0.049*** |
| | (0.011) | (0.012) | (0.012) | (0.014) |
| Central Government Debt | 0.002** | 0.001* | 0.001* | 0.001* |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | −0.045 |
| | | | | (0.123) |
| Latitude | | | | 0.0003 |
| | | | | (0.002) |
| Landlocked | | | | −0.027 |
| | | | | (0.060) |
| Europe + Central Asia | | | | 0.019 |
| | | | | (0.181) |
| Latin America + Caribbean | | | | −0.207 |
| | | | | (0.139) |
| Middle East + North Africa | | | | −0.345*** |
| | | | | (0.127) |
| North America | | | | −0.452*** |
| | | | | (0.152) |
| South Asia | | | | −0.071 |
| | | | | (0.132) |
| Sub-Saharan Africa | | | | 0.035 |
| | | | | (0.151) |
| Value-Added Tax Rate | 0.042*** | 0.040*** | 0.040*** | 0.031*** |
| | (0.005) | (0.005) | (0.005) | (0.008) |
| Fossil Fuel Dependence | −0.016*** | −0.013** | −0.013** | −0.013*** |
| | (0.004) | (0.005) | (0.005) | (0.005) |
| Autocracy (Polity IV) | | −0.116 | −0.116 | −0.096 |
| | | (0.104) | (0.104) | (0.154) |
| Government Effectiveness | | 0.044 | 0.044 | 0.030 |
| | | (0.079) | (0.079) | (0.087) |
| Fossil Fuel Dependence * Autocracy (Polity IV) | | −0.002 | −0.002 | −0.002 |
| | | (0.009) | (0.009) | (0.009) |
| Constant | 3.328*** | 3.490*** | 3.490*** | 2.671*** |
| | (0.750) | (0.746) | (0.746) | (0.930) |

Table S9: Cross-sectional models: National Oil Companies

| | *Dependent variable:* | | |
|---|---|---|---|
| | meanbmgap2015adj | | |
| | (1) | (2) | (3) |
| log(GNI Per Capita) | $-0.834^{***}$ | $-0.808^{***}$ | $-0.841^{***}$ |
| | (0.198) | (0.171) | (0.195) |
| log(GNI Per Capita Sq) | $0.052^{***}$ | $0.052^{***}$ | $0.053^{***}$ |
| | (0.013) | (0.011) | (0.013) |
| Value-Added Tax Rate | $0.039^{***}$ | $0.037^{***}$ | $0.040^{***}$ |
| | (0.005) | (0.005) | (0.005) |
| Fossil Fuel Dependence | $-0.008$ | $-0.007$ | $-0.009^{*}$ |
| | (0.005) | (0.005) | (0.005) |
| Autocracy (Polity IV) | $-0.053$ | $-0.018$ | $-0.050$ |
| | (0.095) | (0.085) | (0.099) |
| Government Effectiveness | 0.071 | 0.053 | 0.054 |
| | (0.078) | (0.069) | (0.078) |
| Central Government Debt | $0.002^{*}$ | 0.001 | $0.002^{*}$ |
| | (0.001) | (0.001) | (0.001) |
| National Oil Company (Mahdavi) | $-0.139^{**}$ | | |
| | (0.064) | | |
| Influential National Oil Company (Mahdavi) | | $-0.293^{***}$ | |
| | | (0.094) | |
| National Oil Company (Cheon et al.) | | | $-0.146^{**}$ |
| | | | (0.073) |
| Fossil Fuel Dependence * Autocracy | $-0.004$ | $-0.006$ | $-0.004$ |
| | (0.008) | (0.008) | (0.008) |
| Constant | $3.155^{***}$ | $3.021^{***}$ | $3.135^{***}$ |
| | (0.761) | (0.683) | (0.752) |
| Observations | 134 | 134 | 136 |
| Adjusted $R^2$ | 0.678 | 0.706 | 0.677 |
| *Note:* | | | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 |

Table S10: Cross-sectional models: Motorization rate

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | meanbmgap2015adj | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | −1.046*** | −1.061*** | −1.061*** | −0.746*** |
| | (0.204) | (0.218) | (0.218) | (0.249) |
| log(GNI Per Capita Sq) | 0.071*** | 0.070*** | 0.070*** | 0.054*** |
| | (0.013) | (0.015) | (0.015) | (0.017) |
| Central Government Debt | 0.001* | 0.001 | 0.001 | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Value-Added Tax Rate | 0.042*** | 0.041*** | 0.041*** | 0.037*** |
| | (0.005) | (0.005) | (0.005) | (0.007) |
| Fossil Fuel Dependence | −0.026*** | −0.022*** | −0.022*** | −0.022*** |
| | (0.005) | (0.007) | (0.007) | (0.006) |
| Autocracy (Polity IV) | | −0.108 | −0.108 | −0.069 |
| | | (0.094) | (0.094) | (0.116) |
| Government Effectiveness | | 0.052 | 0.052 | 0.018 |
| | | (0.080) | (0.080) | (0.091) |
| Motorization Rate | −0.315 | −0.376 | −0.376 | −0.595 |
| | (0.292) | (0.310) | (0.310) | (0.414) |
| European Union | | | | −0.059 |
| | | | | (0.117) |
| Latitude | | | | 0.001 |
| | | | | (0.002) |
| Landlocked | | | | −0.002 |
| | | | | (0.059) |
| Asia + Pacific | | | | −0.056 |
| | | | | (0.108) |
| Europe + North America | | | | 0.078 |
| | | | | (0.194) |
| Former USSR | | | | −0.201 |
| | | | | (0.185) |
| Latin America + Caribbean | | | | −0.219** |
| | | | | (0.100) |
| Middle East | | | | −0.266** |
| | | | | (0.128) |
| Fossil Fuel Dependence * Polity IV | | −0.001 | −0.001 | 0.001 |
| | | (0.008) | (0.008) | (0.007) |
| Constant | 3.627*** | 3.813*** | 3.813*** | 2.560*** |
| | (0.798) | (0.806) | (0.806) | (0.945) |

Table S11: Instrumental Variables models: Alternative instrument

| | *Dependent variable:* | | |
|---|---|---|---|
| | meanbmgap2015adj | | |
| | (1) | (2) | (3) |
| Fossil Fuel Dependence | −0.060** | −0.190 | −0.083 |
| | (0.026) | (0.303) | (0.090) |
| log(GNI Per Capita) | −0.316 | −0.373 | −0.974* |
| | (0.407) | (1.101) | (0.511) |
| log(GNI Per Capita Sq) | 0.030 | 0.100 | 0.084 |
| | (0.023) | (0.129) | (0.054) |
| Value-Added Tax Rate | 0.033*** | 0.064 | 0.044*** |
| | (0.010) | (0.057) | (0.013) |
| Central Government Debt | −0.0001 | −0.008 | −0.001 |
| | (0.002) | (0.018) | (0.004) |
| Autocracy (Polity IV) | | −0.688 | −0.260 |
| | | (1.022) | (0.317) |
| Government Effectiveness | | −1.605 | −0.530 |
| | | (2.918) | (0.808) |
| log(Land Area PC) | 0.045 | 0.085 | 0.074 |
| | (0.060) | (0.198) | (0.110) |
| log(Coastline PC) | 0.008 | 0.055 | 0.011 |
| | (0.019) | (0.128) | (0.035) |
| log(Mountainous Area PC) | 0.007 | 0.033 | −0.001 |
| | (0.018) | (0.090) | (0.023) |
| log(Good Soil PC) | −0.053 | −0.150 | −0.074 |
| | (0.039) | (0.243) | (0.086) |
| log(Tropical Area PC) | 0.016 | 0.052 | 0.023 |
| | (0.016) | (0.069) | (0.024) |
| Europe/Northern America/Oceania | −0.250 | −1.190 | |
| | (0.250) | (2.229) | |
| Asia | −0.223 | −0.512 | |
| | (0.176) | (0.878) | |
| Latin America/Caribbean | −0.364* | −1.362 | |
| | (0.207) | (2.258) | |
| Fossil Fuel Dependence * Polity IV | | 0.061 | 0.023 |
| | | (0.113) | (0.040) |
| Constant | 0.981 | −2.315 | 2.287 |
| | (1.681) | (8.114) | (1.832) |
| Observations | 135 | 132 | 132 |
| Adjusted $R^2$ | 0.357 | −3.217 | 0.024 |

Table S12: Instrumental Variables models: First stage results

| | *Dependent variable:* | |
|---|---|---|
| | fuel_income_dependence | |
| | (1) | (2) |
| Oil Endowment PC 1960 | 2.357*** | |
| | (0.214) | |
| Basin Type Area PC 1960 | | 0.660** |
| | | (0.277) |
| Constant | 28.289*** | 10.110*** |
| | (2.422) | (2.412) |
| Observations | 152 | 152 |
| $R^2$ | 0.558 | 0.049 |
| Adjusted $R^2$ | 0.555 | 0.043 |
| F Statistic (df = 1; 150) | 189.210*** | 7.725*** |
| *Note:* | *p<0.1; **p<0.05; ***p<0.01 | |

Table S13: Cross-sectional Time-series: with and without fixed effects

| | *Dependent variable:* | |
|---|---|---|
| | meanbmgap2015adj | |
| | (1) | (2) |
| Value-Added Tax Rate | $0.040^{***}$ | $0.019^{***}$ |
| | (0.002) | (0.004) |
| log(GNI Per Capita) | $-0.840^{***}$ | $-0.018$ |
| | (0.058) | (0.097) |
| log(GNI Per Capita Sq) | $0.055^{***}$ | 0.004 |
| | (0.004) | (0.006) |
| Fossil Fuel Dependence | $-0.014^{***}$ | $-0.006^{***}$ |
| | (0.001) | (0.002) |
| Autocracy (Polity IV) | $-0.151^{***}$ | $0.096^{*}$ |
| | (0.040) | (0.054) |
| Government Effectiveness | 0.029 | 0.027 |
| | (0.021) | (0.031) |
| Central Government Debt | $0.001^{***}$ | $0.001^{***}$ |
| | (0.0003) | (0.0003) |
| Fossil Fuel Dependence * Autocracy | $-0.0004$ | $-0.005$ |
| | (0.003) | (0.003) |
| Constant | $2.983^{***}$ | 0.129 |
| | (0.235) | (0.401) |
| Observations | 1,535 | 1,535 |
| $R^2$ | 0.642 | 0.937 |
| Adjusted $R^2$ | 0.640 | 0.930 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 | |

Table S14: Cross-sectional time-series models:Alternative measures of regime type

| | *Dependent variable:* | |
|---|---|---|
| | meanbmgap2015adj | |
| | (1) | (2) |
| Value-Added Tax Rate | $0.041^{***}$ | $0.018^{***}$ |
| | (0.002) | (0.004) |
| log(GNI Per Capita) | $-0.817^{***}$ | $-0.047$ |
| | (0.060) | (0.095) |
| log(GNI Per Capita Sq) | $0.053^{***}$ | 0.006 |
| | (0.004) | (0.006) |
| Fossil Fuel Dependence | $-0.014^{***}$ | $-0.010^{***}$ |
| | (0.002) | (0.002) |
| Democracy | $0.071^{***}$ | 0.009 |
| | (0.023) | (0.033) |
| Government Effectiveness | 0.025 | 0.043 |
| | (0.021) | (0.030) |
| Central Government Debt | $0.001^{***}$ | $0.001^{***}$ |
| | (0.0003) | (0.0003) |
| Fossil Fuel Dependence * Democracy | $-0.001$ | $0.008^{**}$ |
| | (0.003) | (0.004) |
| Constant | $2.841^{***}$ | 0.293 |
| | (0.242) | (0.389) |
| Observations | 1,581 | 1,581 |
| $R^2$ | 0.636 | 0.938 |
| Adjusted $R^2$ | 0.634 | 0.931 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 | |

Table S15: Cross-sectional time-series models: Alternative measures of regime type

| | *Dependent variable:* | |
|---|---|---|
| | meanbmgap2015adj | |
| | (1) | (2) |
| log(GNI Per Capita) | $-0.841^{***}$ | $-0.041$ |
| | (0.059) | (0.097) |
| log(GNI Per Capita Sq) | $0.054^{***}$ | 0.005 |
| | (0.004) | (0.006) |
| Fossil Fuel Dependence | $-0.014^{***}$ | $-0.011^{***}$ |
| | (0.002) | (0.003) |
| Electoral Democracy | $0.173^{***}$ | 0.059 |
| | (0.059) | (0.078) |
| Government Effectiveness | 0.018 | 0.048 |
| | (0.021) | (0.030) |
| Central Government Debt | $0.001^{***}$ | $0.001^{***}$ |
| | (0.0003) | (0.0003) |
| Value-Added Tax Rate | $0.041^{***}$ | $0.018^{***}$ |
| | (0.002) | (0.004) |
| Fossil Fuel Dependence * Electoral Democracy | $-0.0004$ | 0.008 |
| | (0.005) | (0.007) |
| Constant | $2.916^{***}$ | 0.259 |
| | (0.237) | (0.394) |
| Observations | 1,561 | 1,561 |
| $R^2$ | 0.639 | 0.937 |
| Adjusted $R^2$ | 0.637 | 0.930 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 | |

Table S16: Cross-sectional time-series models: Alternative measures of regime type.

| | *Dependent variable:* | |
|---|---|---|
| | meanbmgap2015adj | |
| | (1) | (2) |
| log(GNI Per Capita) | $-0.850^{***}$ | $-0.029$ |
| | (0.061) | (0.097) |
| log(GNI Per Capita Sq) | $0.055^{***}$ | 0.005 |
| | (0.004) | (0.006) |
| Fossil Fuel Dependence | $-0.014^{***}$ | $-0.007^{***}$ |
| | (0.001) | (0.002) |
| Polity IV (Continuous) | $0.008^{***}$ | $-0.003$ |
| | (0.002) | (0.003) |
| Government Effectiveness | $0.036^{*}$ | 0.033 |
| | (0.021) | (0.031) |
| Central Government Debt | $0.001^{***}$ | $0.001^{***}$ |
| | (0.0003) | (0.0003) |
| Value-Added Tax Rate | $0.041^{***}$ | $0.018^{***}$ |
| | (0.002) | (0.004) |
| Fossil Fuel Dependence * Polity IV (Continuous) | $-0.0002$ | 0.0003 |
| | (0.0002) | (0.0002) |
| Constant | $3.009^{***}$ | 0.178 |
| | (0.248) | (0.401) |
| Observations | 1,535 | 1,535 |
| $R^2$ | 0.639 | 0.937 |
| Adjusted $R^2$ | 0.637 | 0.930 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 | |

Table S17: Cross-sectional time-series models: Motorization rate.

| | *Dependent variable:* | |
|---|---|---|
| | meanbmgap2015adj | |
| | (1) | (2) |
| log(GNI Per Capita) | $-0.962^{***}$ | $-0.230^{*}$ |
| | (0.073) | (0.137) |
| log(GNI Per Capita Sq) | $0.062^{***}$ | $0.015^{*}$ |
| | (0.005) | (0.008) |
| Fossil Fuel Dependence | $-0.020^{***}$ | $-0.001$ |
| | (0.002) | (0.002) |
| Autocracy (Polity IV) | $-0.197^{***}$ | $0.147^{**}$ |
| | (0.044) | (0.059) |
| Government Effectiveness | $0.082^{***}$ | $-0.004$ |
| | (0.025) | (0.036) |
| Central Government Debt | $0.001^{**}$ | $0.001^{***}$ |
| | (0.0003) | (0.0004) |
| Motorization Rate | $-0.226^{**}$ | $0.452^{*}$ |
| | (0.103) | (0.234) |
| Value-Added Tax Rate | $0.043^{***}$ | $0.015^{***}$ |
| | (0.002) | (0.004) |
| Fossil Fuel Dependence * Autocracy | 0.004 | $-0.002$ |
| | (0.003) | (0.003) |
| Constant | $3.520^{***}$ | $0.983^{*}$ |
| | (0.283) | (0.549) |
| Observations | 1,103 | 1,103 |
| $R^2$ | 0.738 | 0.961 |
| Adjusted $R^2$ | 0.736 | 0.956 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 | |

Table S18: Cross-Sectional Time Series (Monthly) with and without fixed effects.

| | *Dependent variable:* | |
|---|---|---|
| | bmgap2015adj | |
| | (1) | (2) |
| 1 Qr Before Elections | −0.018 | 0.001 |
| | (0.027) | (0.009) |
| 2 Qr Before Elections | −0.007 | 0.004 |
| | (0.027) | (0.010) |
| 3 Qr Before Elections | −0.010 | 0.001 |
| | (0.028) | (0.009) |
| 4 Qr Before Elections | −0.006 | 0.001 |
| | (0.028) | (0.010) |
| 1 Qr After Elections | −0.005 | 0.002 |
| | (0.027) | (0.009) |
| 2 Qr After Elections | −0.014 | −0.003 |
| | (0.026) | (0.009) |
| 3 Qr After Elections | −0.016 | −0.007 |
| | (0.027) | (0.010) |
| 4 Qr After Elections | −0.020 | −0.011 |
| | (0.027) | (0.009) |
| 1 Qr After Leader Turnover | 0.044 | 0.010 |
| | (0.047) | (0.015) |
| 2 Qr After Leader Turnover | 0.025 | 0.013 |
| | (0.047) | (0.014) |
| 3 Qr After Leader Turnover | 0.032 | 0.017 |
| | (0.047) | (0.014) |
| 4 Qr After Leader Turnover | 0.037 | 0.008 |
| | (0.047) | (0.014) |
| Oil Discovery Month | −0.249*** | 0.041** |
| | (0.053) | (0.016) |
| 1 Qr After Discovery | −0.259*** | 0.033** |
| | (0.055) | (0.015) |
| 2 Qr After Discovery | −0.285*** | 0.029* |
| | (0.054) | (0.016) |
| 3 Qr After Discovery | −0.283*** | 0.016 |
| | (0.054) | (0.015) |
| 4 Qr After Discovery | −0.278*** | 0.023 |
| | (0.057) | (0.016) |
| Constant | 0.503*** | 0.218*** |
| | (0.004) | (0.015) |

Table S19: Diesel analysis: cross-sectional base specification

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | mean_bmgap_diesel_spotprice_la | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | $-0.899^{***}$ | $-0.820^{***}$ | $-0.780^{***}$ | $-0.664^{***}$ |
| | (0.163) | (0.150) | (0.145) | (0.146) |
| log(GNI Per Capita Sq) | $0.057^{***}$ | $0.053^{***}$ | $0.050^{***}$ | $0.044^{***}$ |
| | (0.010) | (0.009) | (0.009) | (0.009) |
| Central Government Debt | $0.001^{**}$ | 0.001 | 0.001 | 0.0005 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Value-Added Tax Rate | $0.042^{***}$ | $0.034^{***}$ | $0.035^{***}$ | $0.030^{***}$ |
| | (0.004) | (0.004) | (0.004) | (0.004) |
| Fossil Fuel Dependence | | $-0.015^{***}$ | | |
| | | (0.003) | | |
| log(Oil and Gas Exports PC) | | | $-0.019^{***}$ | |
| | | | (0.004) | |
| Fossil Fuel Export Dependence | | | | $-0.006^{***}$ |
| | | | | (0.001) |
| Constant | $3.101^{***}$ | $2.953^{***}$ | $2.692^{***}$ | $2.433^{***}$ |
| | (0.676) | (0.606) | (0.597) | (0.594) |
| Observations | 138 | 137 | 137 | 135 |
| $R^2$ | 0.587 | 0.666 | 0.656 | 0.722 |
| Adjusted $R^2$ | 0.575 | 0.653 | 0.643 | 0.711 |
| *Note:* | | | | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 |

Table S20: Diesel analysis: cross-sectional full specification.

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | mean_bmgap_diesel_spotprice_la | | | |
| | (1) | (2) | (3) | (4) |
| log(GNI Per Capita) | $-0.820^{***}$ | $-0.891^{***}$ | $-0.891^{***}$ | $-0.439^{***}$ |
| | (0.150) | (0.154) | (0.154) | (0.159) |
| log(GNI Per Capita Sq) | $0.053^{***}$ | $0.058^{***}$ | $0.058^{***}$ | $0.031^{***}$ |
| | (0.009) | (0.010) | (0.010) | (0.010) |
| Value-Added Tax Rate | $0.034^{***}$ | $0.032^{***}$ | $0.032^{***}$ | $0.023^{***}$ |
| | (0.004) | (0.004) | (0.004) | (0.006) |
| Fossil Fuel Dependence | $-0.015^{***}$ | $-0.014^{***}$ | $-0.014^{***}$ | $-0.013^{***}$ |
| | (0.003) | (0.004) | (0.004) | (0.004) |
| Autocracy (Polity IV) | | $-0.155^{**}$ | $-0.155^{**}$ | $-0.122$ |
| | | (0.078) | (0.078) | (0.077) |
| Government Effectiveness | | $-0.027$ | $-0.027$ | $-0.034$ |
| | | (0.068) | (0.068) | (0.066) |
| Central Government Debt | 0.001 | 0.0002 | 0.0002 | 0.0001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | 0.003 |
| | | | | (0.097) |
| Latitude | | | | 0.001 |
| | | | | (0.001) |
| Landlocked | | | | 0.057 |
| | | | | (0.040) |
| Asia + Pacific | | | | $-0.101$ |
| | | | | (0.094) |
| Europe + North America | | | | 0.088 |
| | | | | (0.145) |
| Former USSR | | | | $-0.205$ |
| | | | | (0.127) |
| Latin America + Caribbean | | | | $-0.229^{***}$ |
| | | | | (0.067) |
| Middle East | | | | $-0.308^{***}$ |
| | | | | (0.119) |
| Fossil Fuel Dependence * Autocracy | | $-0.005$ | $-0.005$ | $-0.001$ |
| | | (0.006) | (0.006) | (0.005) |
| Constant | $2.953^{***}$ | $3.228^{***}$ | $3.228^{***}$ | $1.583^{**}$ |
| | (0.696) | (0.600) | (0.600) | (0.624) |
| Observations | 137 | 134 | 134 | 134 |
| $R^2$ | 0.666 | 0.686 | 0.686 | 0.762 |

Table S21: Diesel analysis: instrumental variable specification.

| | *Dependent variable:* | | | |
|---|---|---|---|---|
| | mean_bmgap_diesel_spotprice_la | | | |
| | (1) | (2) | (3) | (4) |
| Fossil Fuel Dependence | −0.025*** | −0.030*** | −0.030*** | −0.032*** |
| | (0.006) | (0.009) | (0.009) | (0.009) |
| log(GNI Per Capita) | −0.795*** | −0.967*** | −0.967*** | −0.425* |
| | (0.177) | (0.200) | (0.200) | (0.225) |
| log(GNI Per Capita Sq) | 0.052*** | 0.068*** | 0.068*** | 0.039*** |
| | (0.011) | (0.013) | (0.013) | (0.015) |
| Autocracy (Polity IV) | | −0.214* | −0.214* | −0.186 |
| | | (0.113) | (0.113) | (0.118) |
| Government Effectiveness | | −0.181* | −0.181* | −0.224* |
| | | (0.098) | (0.098) | (0.123) |
| Central Government Debt | −0.00004 | −0.001 | −0.001 | −0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| European Union | | | | −0.065 |
| | | | | (0.131) |
| Latitude | | | | 0.001 |
| | | | | (0.002) |
| Landlocked | | | | 0.019 |
| | | | | (0.055) |
| Asia + Pacific | | | | −0.160* |
| | | | | (0.095) |
| Europe + North America | | | | −0.072 |
| | | | | (0.135) |
| Former USSR | | | | −0.350*** |
| | | | | (0.112) |
| Latin America + Caribbean | | | | −0.376*** |
| | | | | (0.098) |
| Middle East | | | | −0.370*** |
| | | | | (0.114) |
| Value-Added Tax Rate | 0.029*** | 0.029*** | 0.029*** | 0.026*** |
| | (0.006) | (0.006) | (0.006) | (0.007) |
| Fossil Fuel Dependence * Autocracy | | 0.004 | 0.004 | 0.008 |
| | | (0.008) | (0.008) | (0.008) |
| Constant | 2.974*** | 3.280*** | 3.280*** | 1.103 |
| | (0.688) | (0.777) | (0.777) | (0.849) |
| Observations | 135 | 132 | 132 | 132 |
| $R^2$ | 0.627 | 0.620 | 0.620 | 0.688 |

Table S22: Diesel analysis: cross-sectional time-series specification.

| | *Dependent variable:* | |
|---|---|---|
| | bmgap_diesel_spotprice_la | |
| | (1) | (2) |
| log(GNI Per Capita) | $-0.790^{***}$ | $-0.208$ |
| | (0.069) | (0.132) |
| log(GNI Per Capita Sq) | $0.052^{***}$ | 0.013 |
| | (0.004) | (0.008) |
| Fossil Fuel Dependence | $-0.015^{***}$ | $-0.005^{*}$ |
| | (0.002) | (0.003) |
| Autocracy (Polity IV) | $-0.160^{***}$ | 0.066 |
| | (0.042) | (0.068) |
| Government Effectiveness | $-0.007$ | 0.061 |
| | (0.028) | (0.045) |
| Central Government Debt | 0.0001 | 0.0004 |
| | (0.0003) | (0.0004) |
| Value-Added Tax Rate | $0.035^{***}$ | $0.013^{**}$ |
| | (0.002) | (0.005) |
| Fossil Fuel Dependence * Autocracy | $-0.001$ | 0.0003 |
| | (0.003) | (0.005) |
| Constant | $2.772^{***}$ | $1.236^{**}$ |
| | (0.272) | (0.549) |
| Observations | 740 | 740 |
| $R^2$ | 0.657 | 0.930 |
| Adjusted $R^2$ | 0.653 | 0.913 |
| *Note:* | $^{*}$p<0.1; $^{**}$p<0.05; $^{***}$p<0.01 | |