Natural Resource Curse EITI

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How does the resource curse work?

```
#wb %>%
 # select(country, CC.EST, GE.EST, exports, imports, gdp_pc, resource_rents, VA.EST) %>%
 # knitr::kable()

summary(wb)
```

```
##     iso2c              iso3c             country              date
##  Length:53          Length:53          Length:53          Min.   :2018
##  Class :character   Class :character   Class :character   1st Qu.:2018
##  Mode  :character   Mode  :character   Mode  :character   Median :2018
##                                                           Mean   :2018
##                                                           3rd Qu.:2018
##                                                           Max.   :2018
##
##      CC.EST            GE.EST           exports             imports
##  Min.   :-1.8003   Min.   :-2.4494   Min.   :1.561e+08   Min.   :3.518e+08
##  1st Qu.:-1.1447   1st Qu.:-1.1989   1st Qu.:1.711e+09   1st Qu.:3.079e+09
##  Median :-0.7169   Median :-0.7660   Median :4.518e+09   Median :5.784e+09
##  Mean   :-0.6474   Mean   :-0.8024   Mean   :1.222e+10   Mean   :1.410e+10
##  3rd Qu.:-0.2173   3rd Qu.:-0.5592   3rd Qu.:9.987e+09   3rd Qu.:1.359e+10
##  Max.   : 0.7675   Max.   : 0.8761   Max.   :1.101e+11   Max.   :1.089e+11
##                                      NA's   :4           NA's   :4
##       gdp                gdp_pc        resource_rents         PV.EST
##  Min.   :4.123e+08   Min.   :  271.8   Min.   : 0.00206   Min.   :-2.4324
##  1st Qu.:4.840e+09   1st Qu.:  742.2   1st Qu.: 2.60273   1st Qu.:-1.1741
##  Median :1.455e+10   Median : 1491.0   Median : 6.21438   Median :-0.5967
##  Mean   :4.659e+10   Mean   : 2591.3   Mean   :10.42699   Mean   :-0.6805
##  3rd Qu.:4.507e+10   3rd Qu.: 3202.1   3rd Qu.:14.41162   3rd Qu.:-0.1326
##  Max.   :3.972e+11   Max.   :16390.8   Max.   :54.91636   Max.   : 0.9780
##  NA's   :3           NA's   :3         NA's   :3
##      RL.EST             RQ.EST          fuel_exports         VA.EST
##  Min.   :-2.3320   Min.   :-2.2846   Min.   : 0.0000   Min.   :-2.17493
##  1st Qu.:-1.0809   1st Qu.:-0.9779   1st Qu.: 0.1325   1st Qu.:-1.14830
##  Median :-0.6859   Median :-0.7336   Median : 1.0176   Median :-0.58222
##  Mean   :-0.6972   Mean   :-0.7542   Mean   :15.6161   Mean   :-0.59057
##  3rd Qu.:-0.3368   3rd Qu.:-0.3369   3rd Qu.:15.8103   3rd Qu.:-0.04318
##  Max.   : 0.7791   Max.   : 1.0196   Max.   :95.3967   Max.   : 0.99843
##                                      NA's   :17
```

Top 10 Resource Rents in Africa

Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents.

```
wb %>%
  select(country, resource_rents, GE.EST, VA.EST) %>%
  slice_max(resource_rents, n = 10) %>%
  knitr::kable()
```

country	resource_rents	GE.EST	VA.EST
Congo, Rep.	54.91636	-1.2172360	-1.1802540
Libya	43.44258	-1.8470370	-1.5224920
Angola	26.76821	-1.0520860	-0.9183374
Congo, Dem. Rep.	25.51925	-1.5547870	-1.4951770
Chad	23.95443	-1.5288470	-1.4527160
Gabon	23.42102	-0.8122834	-0.9471998
Sudan	22.09493	-1.6198570	-1.8378700
Liberia	21.55805	-1.3408310	-0.0431769
Zambia	19.11167	-0.5592093	-0.3190484
Algeria	19.02333	-0.4439246	-0.9816775

Bottom 10 Resource Rents in Africa

```
wb %>%
  select(country, resource_rents, GE.EST, VA.EST) %>%
  slice_min(resource_rents, n = 10) %>%
  knitr::kable()
```

country	resource_rents	GE.EST	VA.EST
Mauritius	0.0020558	0.8760849	0.7596182
Seychelles	0.0943516	0.5022840	0.2124024
Djibouti	0.2631597	-0.8990966	-1.3517280
Cabo Verde	0.3791000	0.3192393	0.9984295
Botswana	1.2178888	0.3334411	0.4762686
Kenya	1.3097587	-0.4108523	-0.3574186
Comoros	1.3900808	-1.6391340	-0.4784060
Morocco	1.5869644	-0.2092959	-0.6592323
Sao Tome and Principe	1.9041521	-0.6393903	0.1590701
Eswatini	2.3502588	-0.6599468	-1.3559290

Top 10 Fuel export countries in Africa

```
wb %>%
  select(country, fuel_exports, GE.EST, VA.EST) %>%
  slice_max(fuel_exports, n = 10) %>%
  knitr::kable()
```

country	fuel_exports	GE.EST	VA.EST
Libya	95.39675	-1.8470370	-1.5224920
Nigeria	94.11378	-1.0225910	-0.4080985
Angola	92.41781	-1.0520860	-0.9183374
Congo, Rep.	82.21741	-1.2172360	-1.1802540
Mozambique	46.55994	-0.8742813	-0.4660109
Ghana	30.60561	-0.2102704	0.5792788
Egypt, Arab Rep.	24.56567	-0.5848041	-1.3115360
Togo	16.50873	-1.0577910	-0.7432480
Cote d'Ivoire	15.92611	-0.5705186	-0.2315187
Senegal	15.77176	-0.2678156	0.2403084

Trade calculations

```
wb$trade <- (wb$imports + wb$exports) / wb$gdp

wb$trade_resources <- wb$fuel_exports / wb$imports
```

Correlation

```
cor.test(wb$resource_rents, wb$gdp_pc, method=c("pearson", "kendall", "spearman"))
```

```
##
##  Pearson's product-moment correlation
##
## data:  wb$resource_rents and wb$gdp_pc
## t = -0.36086, df = 48, p-value = 0.7198
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.3256478  0.2296579
## sample estimates:
##         cor
## -0.05201489
```

```
cor.test(wb$resource_rents, wb$CC.EST, method=c("pearson", "kendall", "spearman"))
```

```
##
##  Pearson's product-moment correlation
##
## data:  wb$resource_rents and wb$CC.EST
## t = -4.9817, df = 48, p-value = 8.579e-06
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.7416308 -0.3647150
## sample estimates:
##       cor
## -0.583797
```

```
cor.test(wb$resource_rents, wb$GE.EST, method=c("pearson", "kendall", "spearman"))
```

```
##
##  Pearson's product-moment correlation
##
## data:  wb$resource_rents and wb$GE.EST
## t = -4.1695, df = 48, p-value = 0.000127
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.6943312 -0.2770559
## sample estimates:
##        cor
## -0.5156386
```

```
cor.test(wb$fuel_exports, wb$resource_rents, method=c("pearson", "kendall", "spearman"))
```

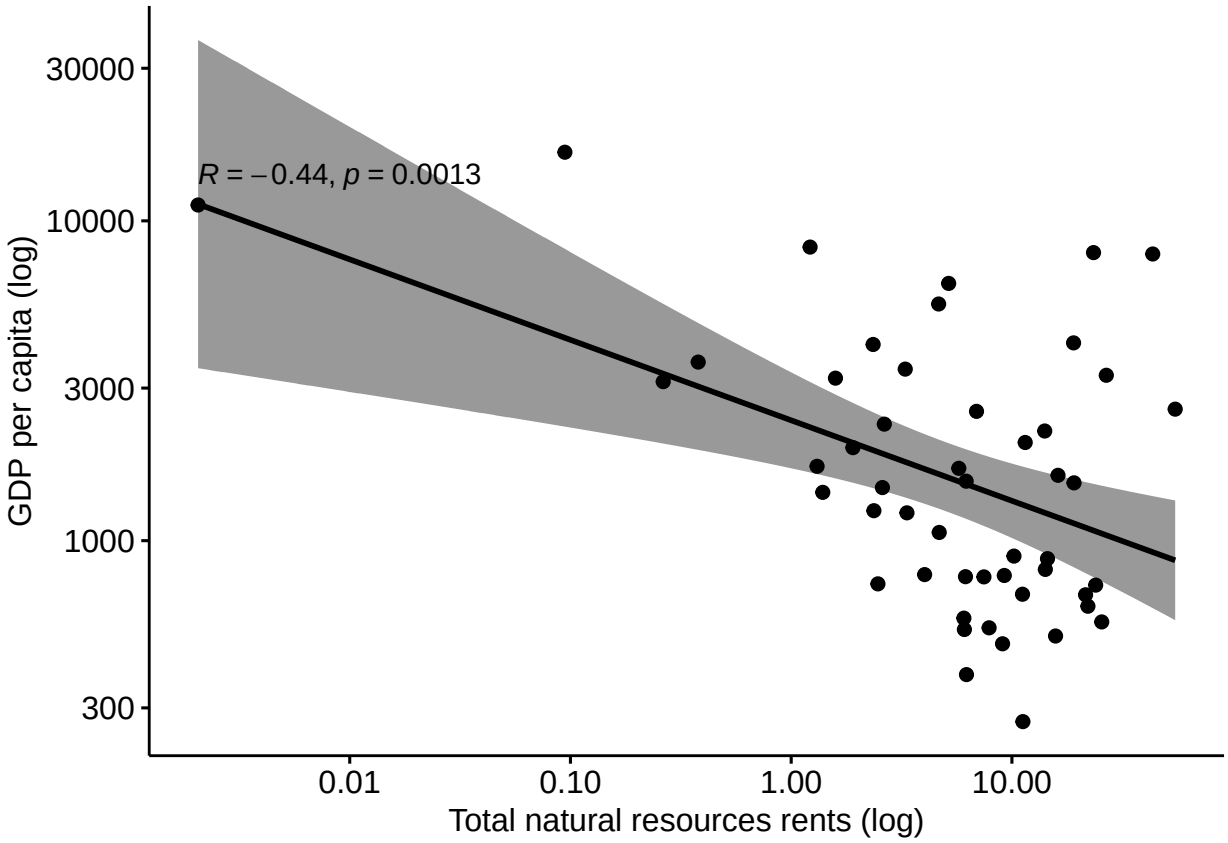
```
##
##  Pearson's product-moment correlation
##
## data:  wb$fuel_exports and wb$resource_rents
## t = 7.0613, df = 34, p-value = 3.737e-08
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.5926965 0.8773600
## sample estimates:
##      cor
## 0.771085
```

Correlation Plots

Resource Rents vs GDPpc

```
ggscatter(wb, x = "resource_rents", y = "gdp_pc",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xscale = "log10", yscale = "log10",
          xlab = "Total natural resources rents (log)", ylab = "GDP per capita (log)")
```

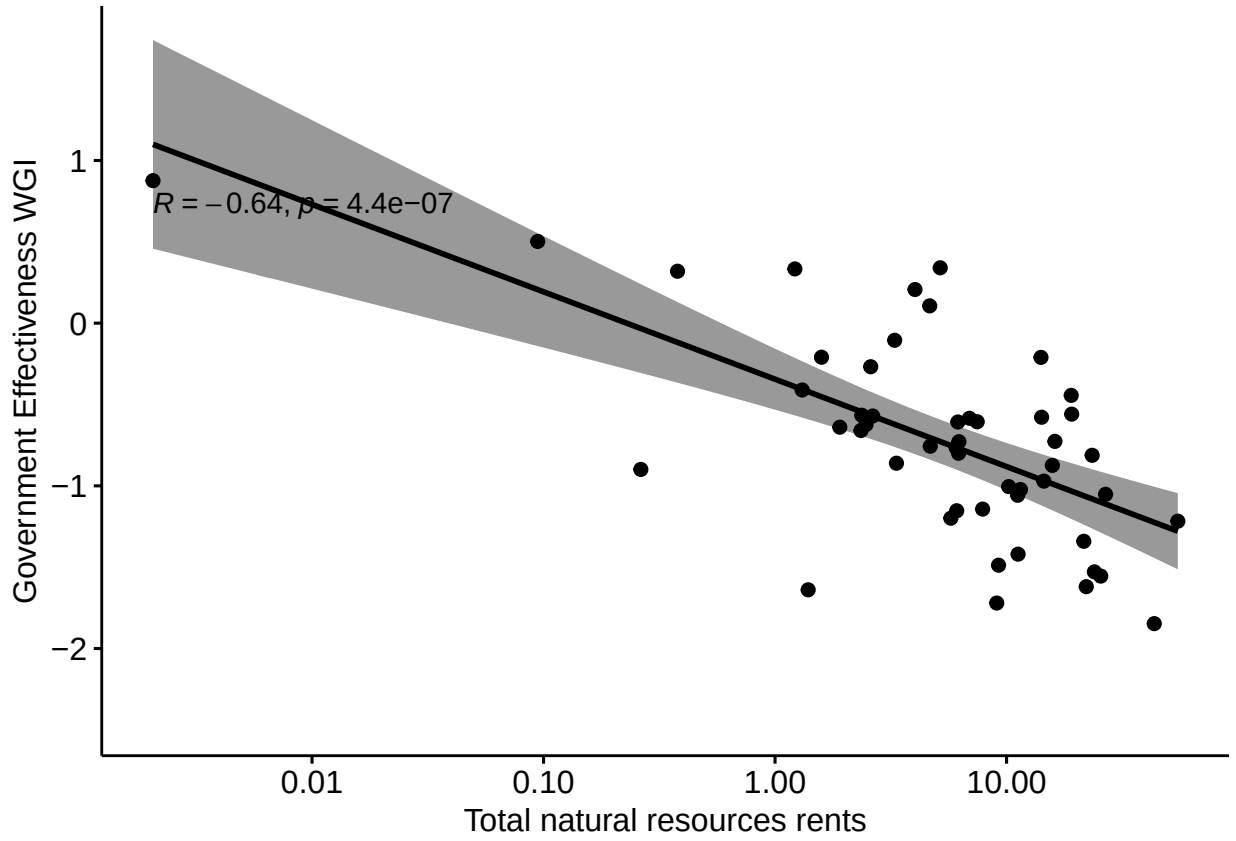
```
## `geom_smooth()` using formula 'y ~ x'
```



Resource Rents vs Government Effectiveness

```
ggscatter(wb, x = "resource_rents", y = "GE.EST",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xscale = "log10",
          xlab = "Total natural resources rents", ylab = "Government Effectiveness WGI")
```

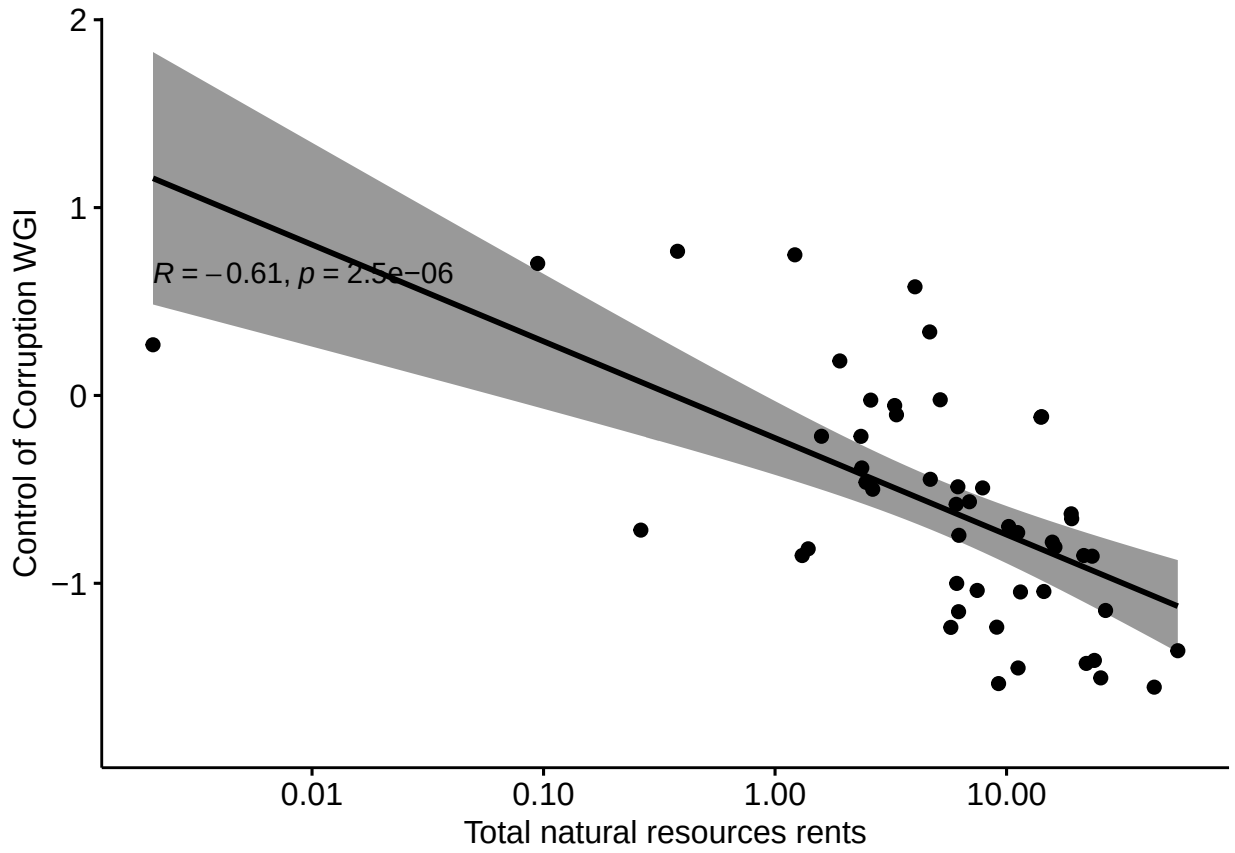
```
## `geom_smooth()` using formula 'y ~ x'
```



Resource Rents vs Control of Corruption

```
ggscatter(wb, x = "resource_rents", y = "CC.EST",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xscale = "log10",
          xlab = "Total natural resources rents", ylab = "Control of Corruption WGI")
```

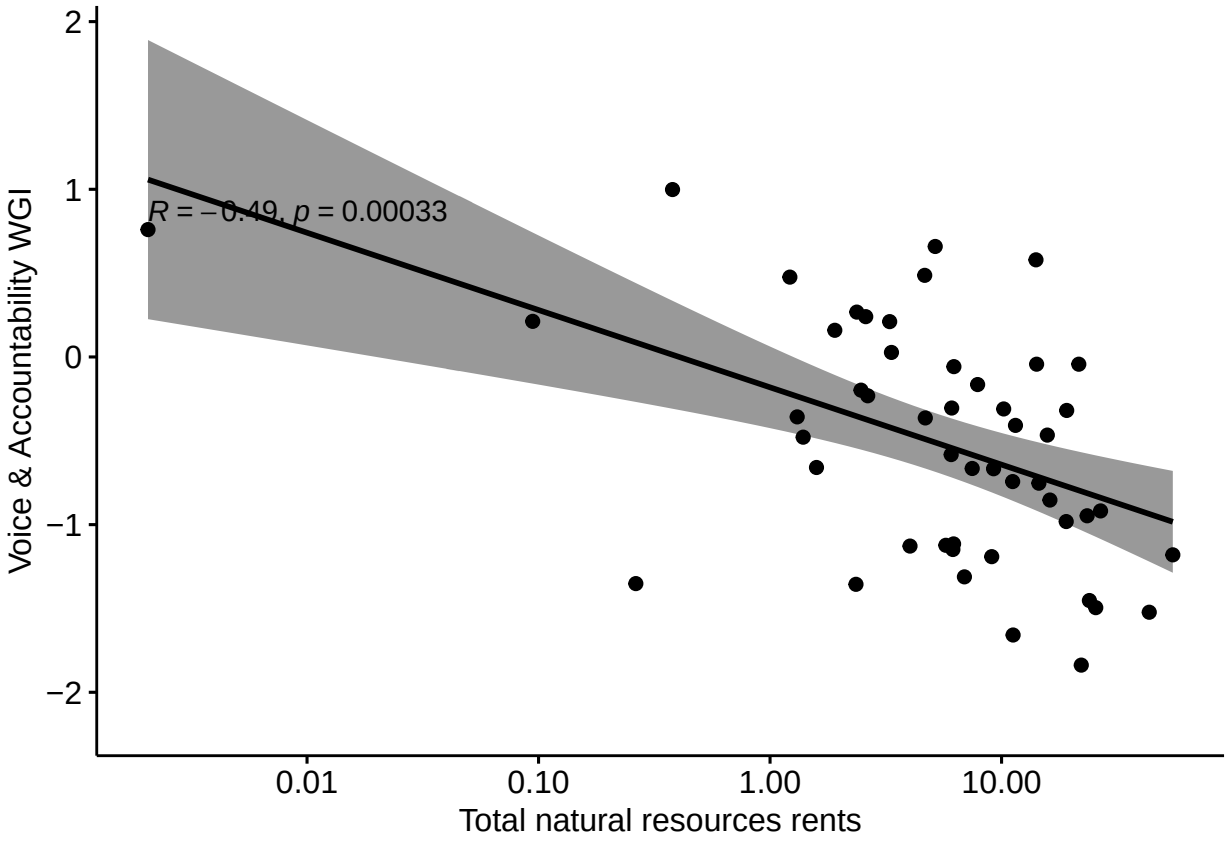
```
## `geom_smooth()` using formula 'y ~ x'
```



Resource Rents vs Voice & Accountability

```
ggscatter(wb, x = "resource_rents", y = "VA.EST",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xscale = "log10",
          xlab = "Total natural resources rents", ylab = "Voice & Accountability WGI")
```

```
## `geom_smooth()` using formula 'y ~ x'
```



Trade of Resources vs Voice & Accountability

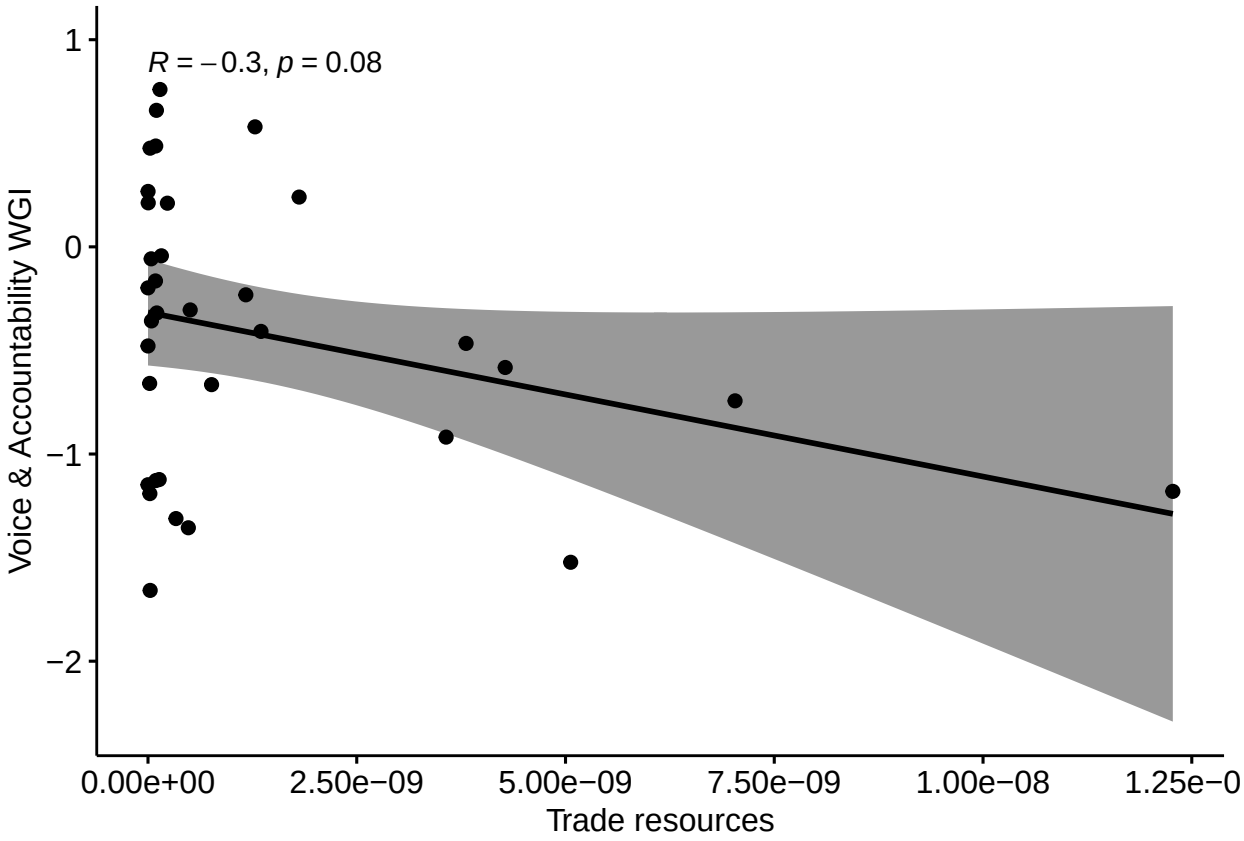
```
ggscatter(wb, x = "trade_resources", y = "VA.EST",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xlab = "Trade resources", ylab = "Voice & Accountability WGI")
```

```
## `geom_smooth()` using formula 'y ~ x'
```

```
## Warning: Removed 19 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 19 rows containing non-finite values (stat_cor).
```

```
## Warning: Removed 19 rows containing missing values (geom_point).
```



Trade of Resources vs Control of Corruption

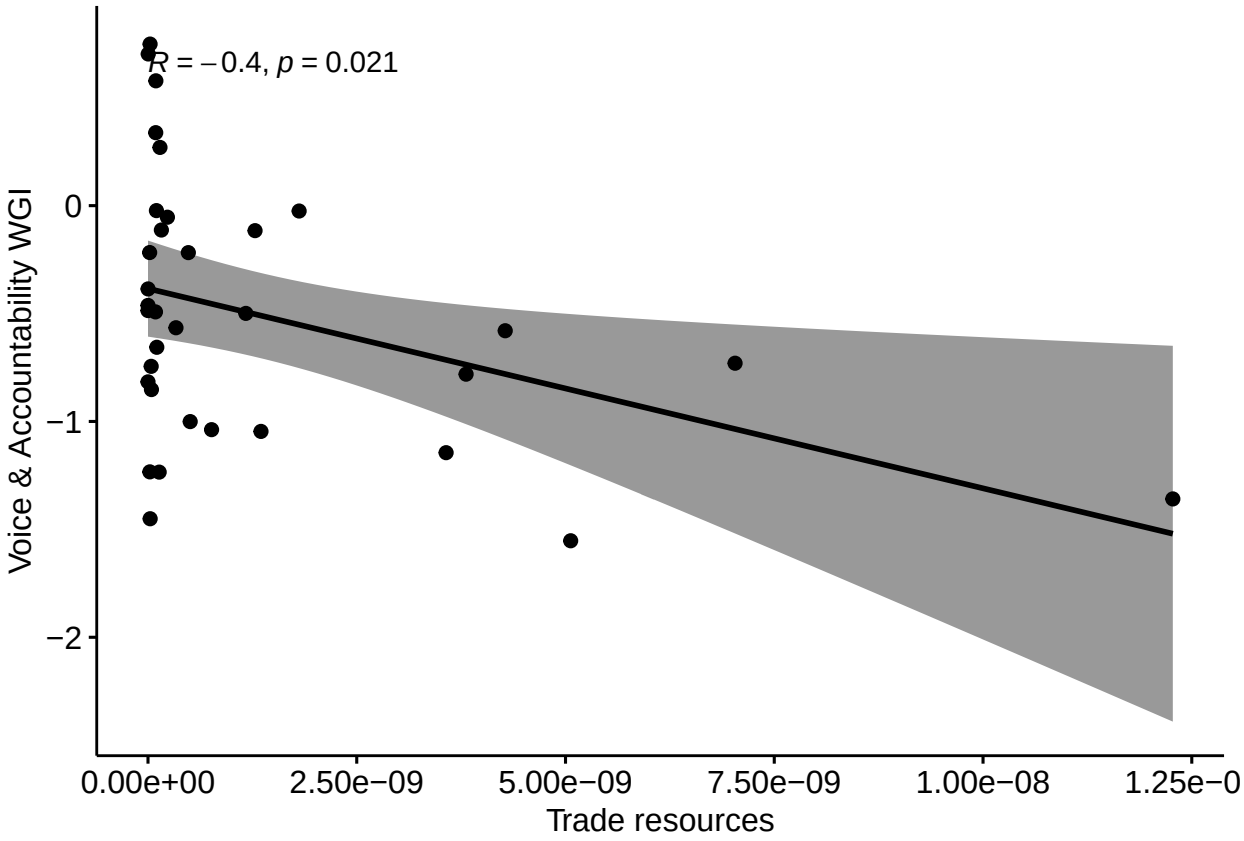
```
ggscatter(wb, x = "trade_resources", y = "CC.EST",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xlab = "Trade resources", ylab = "Voice & Accountability WGI")
```

```
## `geom_smooth()` using formula 'y ~ x'
```

```
## Warning: Removed 19 rows containing non-finite values (stat_smooth).
```

```
## Warning: Removed 19 rows containing non-finite values (stat_cor).
```

```
## Warning: Removed 19 rows containing missing values (geom_point).
```



Human Development Index and Resource Rents

```
HDI_wb <- merge(wb, HDI, by.all = "ïso3c")
```

Correlation

```
cor.test(HDI_wb$resource_rents, HDI_wb$HDI, method=c("pearson", "kendall", "spearman"))
```

```
##
##  Pearson's product-moment correlation
##
## data:  HDI_wb$resource_rents and HDI_wb$HDI
## t = -0.62068, df = 48, p-value = 0.5377
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.358669  0.193935
## sample estimates:
##         cor
## -0.08922945
```

```r
cor.test(HDI_wb$fuel_exports, HDI_wb$HDI, method=c("pearson", "kendall", "spearman"))
```

```
##
##  Pearson's product-moment correlation
##
## data:  HDI_wb$fuel_exports and HDI_wb$HDI
## t = 0.39575, df = 34, p-value = 0.6948
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.2667552  0.3876273
## sample estimates:
##        cor
## 0.06771503
```

```r
cor.test(HDI_wb$trade, HDI_wb$HDI, method=c("pearson", "kendall", "spearman"))
```

```
##
##  Pearson's product-moment correlation
##
## data:  HDI_wb$trade and HDI_wb$HDI
## t = 1.4028, df = 46, p-value = 0.1674
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  -0.0865726  0.4601949
## sample estimates:
##       cor
## 0.2025443
```

```r
cor.test(HDI_wb$VA.EST, HDI_wb$HDI, method=c("pearson", "kendall", "spearman"))
```

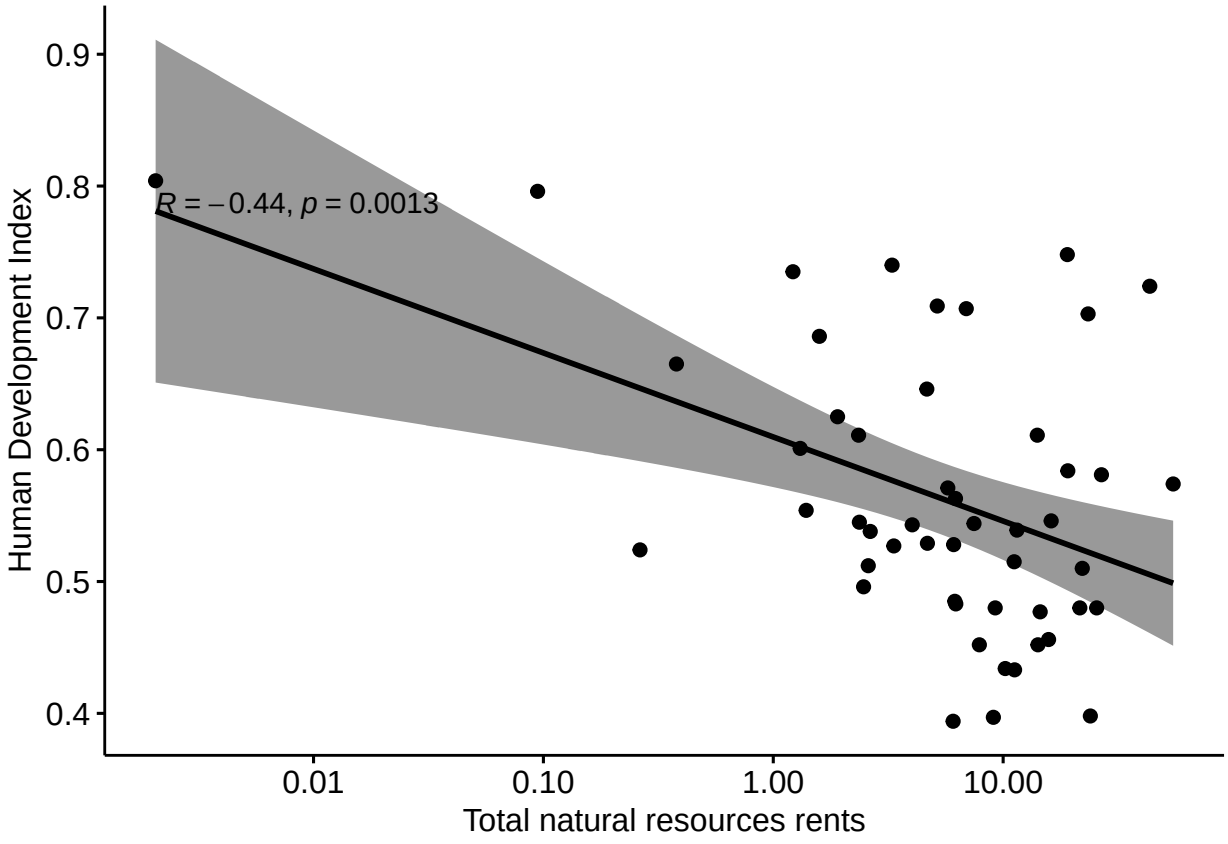
```
##
##  Pearson's product-moment correlation
##
## data:  HDI_wb$VA.EST and HDI_wb$HDI
## t = 2.9209, df = 50, p-value = 0.005225
## alternative hypothesis: true correlation is not equal to 0
## 95 percent confidence interval:
##  0.1215464 0.5929089
## sample estimates:
##       cor
## 0.3817829
```

Correlation Plots

Resource Rents vs HDI

```r
ggscatter(HDI_wb, x = "resource_rents", y = "HDI",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xscale = "log10",
          xlab = "Total natural resources rents", ylab = "Human Development Index")
```

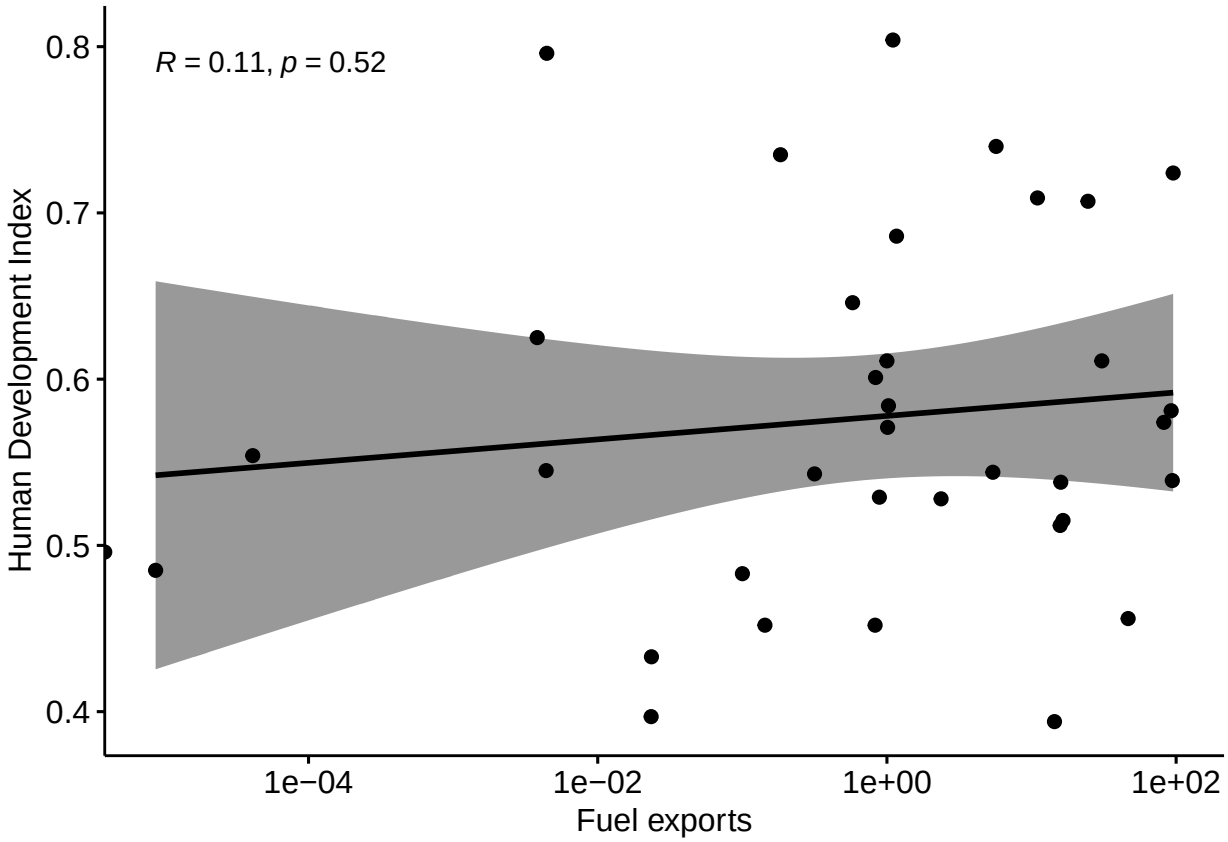
```
## `geom_smooth()` using formula 'y ~ x'
```



Fuel exports vs HDI

```
ggscatter(HDI_wb, x = "fuel_exports", y = "HDI",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xscale = "log10",
          xlab = "Fuel exports", ylab = "Human Development Index")
```

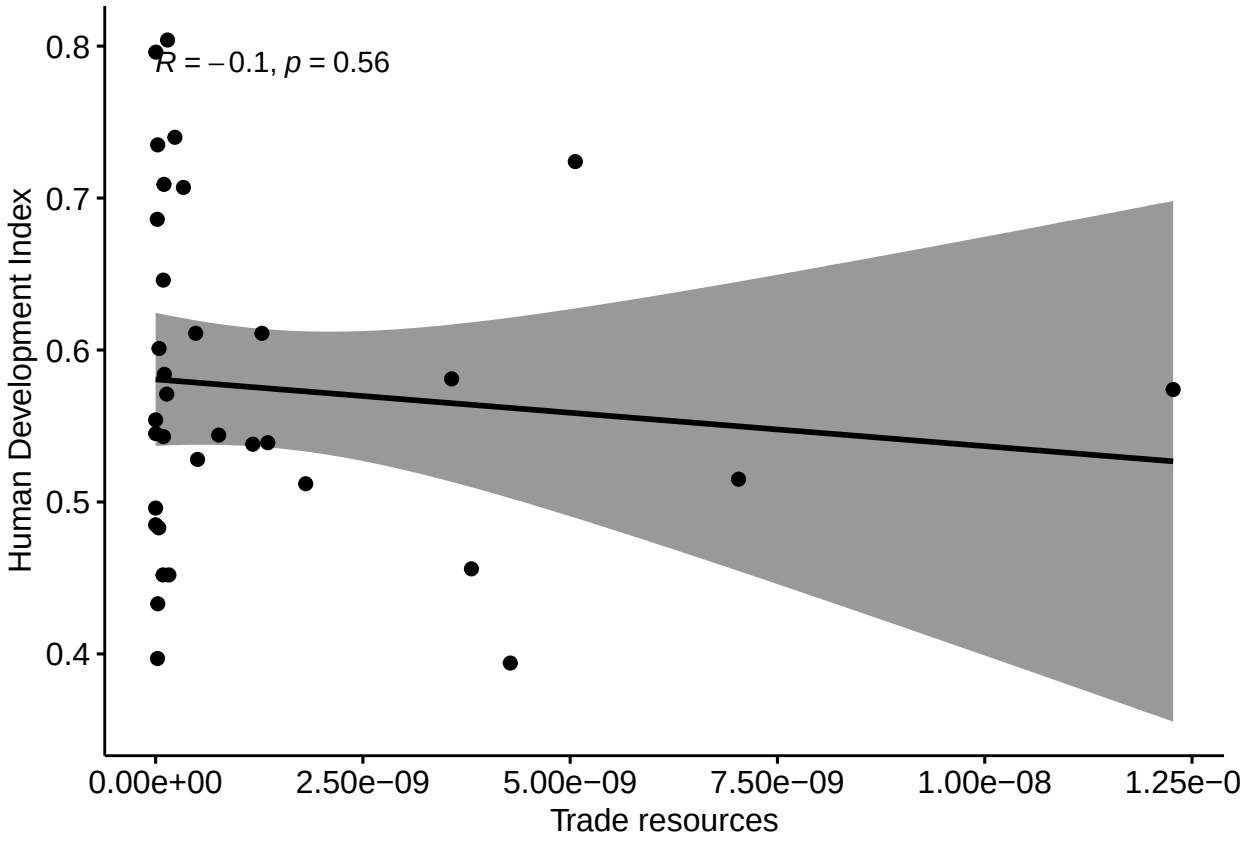
```
## `geom_smooth()` using formula 'y ~ x'
```



Trade resources vs HDI

```
ggscatter(HDI_wb, x = "trade_resources", y = "HDI",
          add = "reg.line", conf.int = TRUE,
          cor.coef = TRUE, cor.method = "pearson",
          xlab = "Trade resources", ylab = "Human Development Index")
```

```
## `geom_smooth()` using formula 'y ~ x'
```


R = −0.1, p = 0.56
Human Development Index
0.8
0.7
0.6
0.5
0.4
0.00e+00
2.50e−09
5.00e−09
7.50e−09
1.00e−08
1.25e−0
Trade resources