



DEVTECH

Curse or Blessing? Natural Resources, Human Development and Gender

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Motivation (i)

- The Enigma of Natural Resources (NR)
 - NR have been accused of causing stagnant growth, political and economic turmoil
 - Mexico, Nigeria, Venezuela
 - But strong growth for many countries
 - Australia, Botswana, Norway, the United States
- Sachs and Warner—Curse!
- Lederman and Maloney—not so fast
 - Criticize Sachs and Warner’s NR proxy and outliers
 - Found no support to NR Curse
 - Alternative hypothesis: trade structure, debt overhang, institutions, etc.

Motivation (ii)

- Latin America's History
 - Successes
 - Chile, Venezuela (1920-70)
 - Failures
 - Venezuela (post 70), even more today
- No Curse also for Human Development
 - Pineda and Rodriguez (2011) found strong positive effect of natural resources on HDI
 - Particularly its non-income dimensions
- This research adds to the analysis gender balance
 - Changes in HDI and gender indicators tend to be larger for high net exporting countries of NR

High net exporting countries of NR tend to have better performance

Summary Statistics: Mean of variables

	Changes (1990-2012)		
	All countries	High Net Exporters	High Net Importers
HDI	0.004745 <i>142</i>	0.0042803 <i>21</i>	0.0044915 <i>16</i>
Adolescent fertility rate	-1.124101 <i>228</i>	-0.8414897 <i>23</i>	-0.4062512 <i>19</i>
School enrollment secondary (female)	0.9248055 <i>119</i>	0.5650904 <i>9</i>	0.5266916 <i>11</i>
Labor force participation (15-64, female/male)	0.2095296 <i>219</i>	0.3821475 <i>23</i>	0.497169 <i>19</i>
Maternal mortality ratio	-7.875157 <i>217</i>	-1.158103 <i>23</i>	-0.3295455 <i>16</i>
Proportion of seats held by women in national parliaments	0.4474824 <i>164</i>	0.509375 <i>16</i>	0.6128409 <i>16</i>
Gender Inequality Index*	-0.007199 <i>80</i>	-0.0086806 <i>12</i>	-0.004947 <i>11</i>

Note: High Net Exporters/Importers refers to countries that are exporting/importing more than the average exporter/importer.

* Changes for Gender Inequality Index if for 2000-2012, due to data availability.

Our Analysis (i)

- Data
 - Lederman and Maloney's Natural Resource Proxy
 - Net exports of natural resources per worker
 - Total imports (to control for bias)
 - Human development data from UNDP, HDRO
 - HDI and Gender Inequality Index
 - Gender indicators from World Bank, WDI
 - Adolescent fertility rate, secondary enrollment (female), labor force participation (15-64, female/male), maternal mortality ratio and proportion of seats held by women in parliaments
 - Cross-country control variables
 - Terms of trade shocks and institutions

Our Analysis (ii)

- Period
1990-2012 for all indicators, except Gender inequality Index (2000-2012)
- Methodology
OLS cross country growth regression
Beta coefficients and controlling for outliers
- Regional dummies interactions
To check for any differential effect of natural resources among regions,
particularly among Latin American countries

NR has a positive effect on HDI...

HDI change (1990-2012) OLS regression

Explanatory variables:	coeff.	coeff.	coeff.
Net Natural Resource Exports (pos NX/L)	0.000260** [0.000118]	0.00018 [0.000167]	0.00023 [0.000194]
Net Natural Resource Imports (neg NX/L)	-0.000399*** [0.000140]	-0.000371** [0.000143]	-0.000371** [0.000155]
Total Imports of Net Natural Resource Exporters (pos M/L)	0.00028 [0.000169]	0.000402** [0.000190]	0.00021 [0.000194]
Total Imports of Net Natural Resource Importers (neg M/L)	0.000817*** [0.000217]	0.000834*** [0.000237]	0.000877*** [0.000263]
ln HDI in 1990	-0.00645*** [0.00103]	-0.00650*** [0.000929]	-0.00700*** [0.000932]
Terms of Trade Growth		0.00271 [0.00653]	-0.00100 [0.00750]
Executive Constraint			0.00043 [0.000367]
Interaction Latin America and Net Natural Resources Exports	-0.00019 [0.000282]	-0.00007 [0.000299]	-0.00005 [0.000332]
Interaction Latin America and Total Imports of Net Natural Resources Exporters	-0.000412 [0.000311]	-0.00040 [0.000308]	-0.0000921 [0.000323]
<i>Sum of coefficients:</i>			
pos NX/L + pos M/L	0.00054	0.00058	0.00043
F test	10.70000	8.07000	3.36000
p value	0.00160	0.00580	0.07120
neg NX/L + neg M/L	0.000418	0.00046	0.00051
F test	4.21000	4.73000	4.52000
p value	0.04340	0.03290	0.03710
pos NX/L*LAC + pos M/L*LAC	-0.00060	-0.00046	-0.00015
F test	3.46000	2.07000	0.18000
p value	0.06650	0.15460	0.67390
Observations	95	89	84
R-squared	0.590	0.662	0.680

Robust normalized beta coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Notes: (1) Change refers to annual average change in the period 1990 - 2012; (2) Regional Dummies are included in all specifications.

... and on Gender Balance (i)...

Adolescent fertility rate change (1990-2012) OLS regression

Explanatory variables:	coeff.	coeff.	coeff.
Net Natural Resource Exports (pos NX/L)	-0.0461 [0.0640]	-0.066 [0.0678]	-0.0669 [0.0589]
Net Natural Resource Imports (neg NX/L)	0.0392 [0.0693]	0.0348 [0.0681]	-0.00796 [0.0697]
Total Imports of Net Natural Resource Exporters (pos M/L)	-0.151** [0.0700]	-0.164** [0.0789]	-0.193** [0.0934]
Total Imports of Net Natural Resource Importers (neg M/L)	-0.210** [0.0906]	-0.299*** [0.0954]	-0.210** [0.0951]
In Adolescent fertility rate in 1990	-0.738*** [0.111]	-0.770*** [0.120]	-0.847*** [0.164]
Terms of Trade Growth		3.489 [2.240]	3.312 [2.481]
Executive Constraint			-0.00998 [0.228]
Interaction Latin America and Net Natural Resources Exports	0.0753 [0.128]	0.0987 [0.130]	0.143 [0.124]
Interaction Latin America and Total Imports of Net Natural Resources Exporters	-0.238* [0.141]	-0.128 [0.146]	0.0179 [0.158]
<i>Sum of coefficients:</i>			
pos NX/L + pos M/L	-0.19663	-0.23007	-0.26038
F test	6.09000	9.65000	10.59000
p value	0.01530	0.00260	0.00170
neg NX/L + neg M/L	-0.17032	-0.26429	-0.21751
F test	4.09000	7.92000	5.26000
p value	0.04580	0.00600	0.02470
pos NX/L*LAC + pos M/L*LAC	-0.16224	-0.02967	0.16046
F test	1.20000	0.03000	0.73000
p value	0.27530	0.85300	0.39630
Observations	114	102	91
R-squared	0.638	0.693	0.677

Robust normalized beta coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Notes: (1) Change refers to annual average change in the period 1990 - 2012; (2) Regional Dummies are included in all specifications.

... and on Gender Balance (ii)...

School enrollment secondary (female) change (1990-2012) OLS regression

Explanatory variables:	coeff.	coeff.	coeff.
Net Natural Resource Exports (pos NX/L)	-0.00345 [0.0917]	-0.028 [0.0661]	-0.0487 [0.0851]
Net Natural Resource Imports (neg NX/L)	-0.0911 [0.0748]	-0.0324 [0.0690]	-0.0327 [0.0791]
Total Imports of Net Natural Resource Exporters (pos M/L)	0.219* [0.122]	0.437*** [0.105]	0.352*** [0.121]
Total Imports of Net Natural Resource Importers (neg M/L)	0.143 [0.173]	0.380* [0.193]	0.269 [0.208]
In School enrollment secondary (female) in 1990	-0.0616 [0.203]	-0.365 [0.231]	-0.321 [0.266]
Terms of Trade Growth		8.803*** [2.095]	9.884*** [3.434]
Executive Constraint			0.564 [0.390]
Interaction Latin America and Net Natural Resources Exports	-0.369* [0.198]	-0.350*** [0.123]	-0.378*** [0.133]
Interaction Latin America and Total Imports of Net Natural Resources Exporters	-0.267 [0.189]	-0.14 [0.124]	0.0159 [0.199]
<i>Sum of coefficients:</i>			
pos NX/L + pos M/L	0.21508	0.38158	0.22617
F test	3.11000	15.62000	2.89000
p value	0.08580	0.00040	0.09970
neg NX/L + neg M/L	0.051477	0.33220	0.28669
F test	0.11000	3.74000	1.41000
p value	0.74540	0.06210	0.24530
pos NX/L*LAC + pos M/L*LAC	-0.63642	-0.35049	-0.23030
F test	8.85000	5.74000	1.07000
p value	0.00500	0.02260	0.30890
Observations	54	48	46
R-squared	0.615	0.748	0.748

Robust normalized beta coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Notes: (1) Change refers to annual average change in the period 1990 - 2012; (2) Regional Dummies are included in all specifications.

... and on Gender Balance (iii)...

Labor force participation (15-64, female/male) change (1990-2012) OLS regression

Explanatory variables:	coeff.	coeff.	coeff.
Net Natural Resource Exports (pos NX/L)	-0.000382** [0.000168]	-0.000326 [0.000210]	-0.000274 [0.000226]
Net Natural Resource Imports (neg NX/L)	0.000176 [0.000251]	0.000235 [0.000161]	0.000209 [0.000180]
Total Imports of Net Natural Resource Exporters (pos M/L)	0.00103*** [0.000338]	0.000998** [0.000382]	0.00112*** [0.000421]
Total Imports of Net Natural Resource Importers (neg M/L)	0.00133*** [0.000319]	0.00126*** [0.000301]	0.00137*** [0.000414]
In Labor force participation (15-64, female/male) in 1990	-0.00588*** [0.000805]	-0.00538*** [0.000947]	-0.00476*** [0.000909]
Terms of Trade Growth		0.014 [0.0135]	-0.000149 [0.0115]
Executive Constraint			-0.000222 [0.000872]
Interaction Latin America and Net Natural Resources Exports	0.00120* [0.000604]	0.00117* [0.000693]	0.00152** [0.000646]
Interaction Latin America and Total Imports of Net Natural Resources Exporters	-0.00223*** [0.000767]	-0.00174** [0.000834]	-0.00182** [0.000911]
<i>Sum of coefficients:</i>			
pos NX/L + pos M/L	0.00065	0.00067	0.00084
F test	7.85000	6.36000	8.74000
p value	0.00610	0.01340	0.00420
neg NX/L + neg M/L	0.001510	0.00149	0.00157
F test	32.57000	27.59000	20.42000
p value	0.00000	0.00000	0.00000
pos NX/L*LAC + pos M/L*LAC	-0.00104	-0.00057	-0.00031
F test	1.72000	0.46000	0.13000
p value	0.19280	0.49730	0.72070
Observations	118	105	92
R-squared	0.660	0.679	0.707

Robust normalized beta coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Notes: (1) Change refers to annual average change in the period 1990 - 2012; (2) Regional Dummies are included in all specifications.

... but negative in other dimensions (i) ...

Maternal mortality ratio change (1990-2012) OLS regression

Explanatory variables:	coeff.	coeff.	coeff.
Net Natural Resource Exports (pos NX/L)	0.927*** [0.298]	0.810** [0.399]	0.884** [0.432]
Net Natural Resource Imports (neg NX/L)	0.471* [0.251]	0.458* [0.257]	0.253 [0.290]
Total Imports of Net Natural Resource Exporters (pos M/L)	0.862** [0.381]	0.635 [0.425]	0.459 [0.499]
Total Imports of Net Natural Resource Importers (neg M/L)	0.249 [0.340]	0.332 [0.387]	0.446 [0.525]
ln Maternal mortality ratio in 1990	-2.460*** [0.510]	-2.621*** [0.524]	-3.380*** [0.587]
Terms of Trade Growth		16.48* [9.408]	22.05** [10.91]
Executive Constraint			-0.473 [1.260]
Interaction Latin America and Net Natural Resources Exports	-0.189 [0.679]	-0.152 [0.695]	-0.481 [0.676]
Interaction Latin America and Total Imports of Net Natural Resources Exporters	-0.145 [1.199]	0.234 [1.191]	0.156 [1.147]
<i>Sum of coefficients:</i>			
pos NX/L + pos M/L	1.78923	1.44534	1.34377
F test	17.77000	8.36000	5.24000
p value	0.00010	0.00480	0.02470
neg NX/L + neg M/L	0.719528	0.78923	0.69891
F test	4.24000	4.03000	2.14000
p value	0.04190	0.04770	0.14750
pos NX/L*LAC + pos M/L*LAC	-0.33358	0.08149	-0.32477
F test	0.14000	0.01000	0.11000
p value	0.70960	0.93250	0.74250
Observations	118	109	97
R-squared	0.819	0.798	0.79

Robust normalized beta coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Notes: (1) Change refers to annual average change in the period 1990 - 2012; (2) Regional Dummies are included in all specifications.

... but negative in other dimensions (ii) ...

Proportion of seats held by women in national parliaments (1990-2012) OLS regression

Explanatory variables:	coeff.	coeff.	coeff.
Net Natural Resource Exports (pos NX/L)	-0.0361 [0.0559]	-0.0164 [0.0563]	-0.00675 [0.0528]
Net Natural Resource Imports (neg NX/L)	-0.130* [0.0722]	-0.0482 [0.0553]	-0.109 [0.0704]
Total Imports of Net Natural Resource Exporters (pos M/L)	-0.015 [0.0632]	0.0066 [0.0599]	-0.0336 [0.0857]
Total Imports of Net Natural Resource Importers (neg M/L)	0.0534 [0.0879]	-0.0362 [0.0895]	0.118 [0.135]
In Proportion of seats held by women in national parliaments in 1990	-0.113 [0.0721]	-0.195*** [0.0687]	-0.073 [0.0714]
Terms of Trade Growth		-2.925 [3.222]	-4.83 [3.087]
Executive Constraint			0.548** [0.222]
Interaction Latin America and Net Natural Resources Exports	0.111 [0.135]	0.119 [0.123]	0.129 [0.129]
Interaction Latin America and Total Imports of Net Natural Resources Exporters	-0.186 [0.158]	-0.175 [0.159]	-0.0599 [0.192]
<i>Sum of coefficients:</i>			
pos NX/L + pos M/L	-0.05103	-0.00983	-0.04032
F test	0.73000	0.03000	0.29000
p value	0.39730	0.87300	0.59460
neg NX/L + neg M/L	-0.076366	-0.08433	0.00870
F test	1.23000	1.43000	0.01000
p value	0.27230	0.23580	0.93730
pos NX/L*LAC + pos M/L*LAC	-0.07529	-0.05646	0.06928
F test	0.38000	0.15000	0.14000
p value	0.53800	0.69770	0.71280
Observations	81	78	67
R-squared	0.370	0.376	0.430

Robust normalized beta coefficients in brackets

*** p<0.01, ** p<0.05, * p<0.1

Notes: (1) Change refers to annual average change in the period 1990 - 2012; (2) Regional Dummies are included in all specifications.

Conclusions (i)

- We found evidence against a natural resource curse on human development and gender balance
- For most indicators, the main driver is the compound effect of NR abundance
 - The effect tends to be larger for net exporters
- Results are negative or not significant for some important dimensions
 - Maternal mortality and women in parliaments

Conclusions (ii)

- Results are negative or not significant for Latin American countries.
Particularly, HDI and secondary enrollment (female)
Similar to the case of Pineda and Rodriguez (2011)
- Future research
Focus on understanding different transmission mechanisms (e.g. budget allocations, political participation) Use multidimensional indicators of gender balance (limited data availability)



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