

Interdependence, Endogeneity, and Natural Resource Abundance: Rethinking the Political Resource Curse

Sarah M. Brooks and Marcus J. Kurtz
Ohio State University

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“Curse” of Natural Resources

- Potentially-detrimental effects of large endowments of natural resource wealth
 - **Growth-inhibiting**
 - “Dutch Disease”
 - Over-extended state bureaucracy
 - Lack of taxation capacity
 - **Inimical to democracy**
 - Lack of accountability as rulers do not need to tax citizens
 - Means to ward off challengers (fund an internal security apparatus; buy-off opponents; promote clientelism)

Exceptions to the 'Curse'

- **Norway's North Sea oil in the 1960s; Australia, Canada, U.K., United States**
 - But: many were democratic or well on their way to democracy when oil was discovered
- More challenging cases of resource-rich democracy:
 - **Botswana, Chile, South Africa, Indonesia, Brazil, Mexico, Venezuela**

Resource-rich nations are found among the world's fastest *and* slowest growing countries

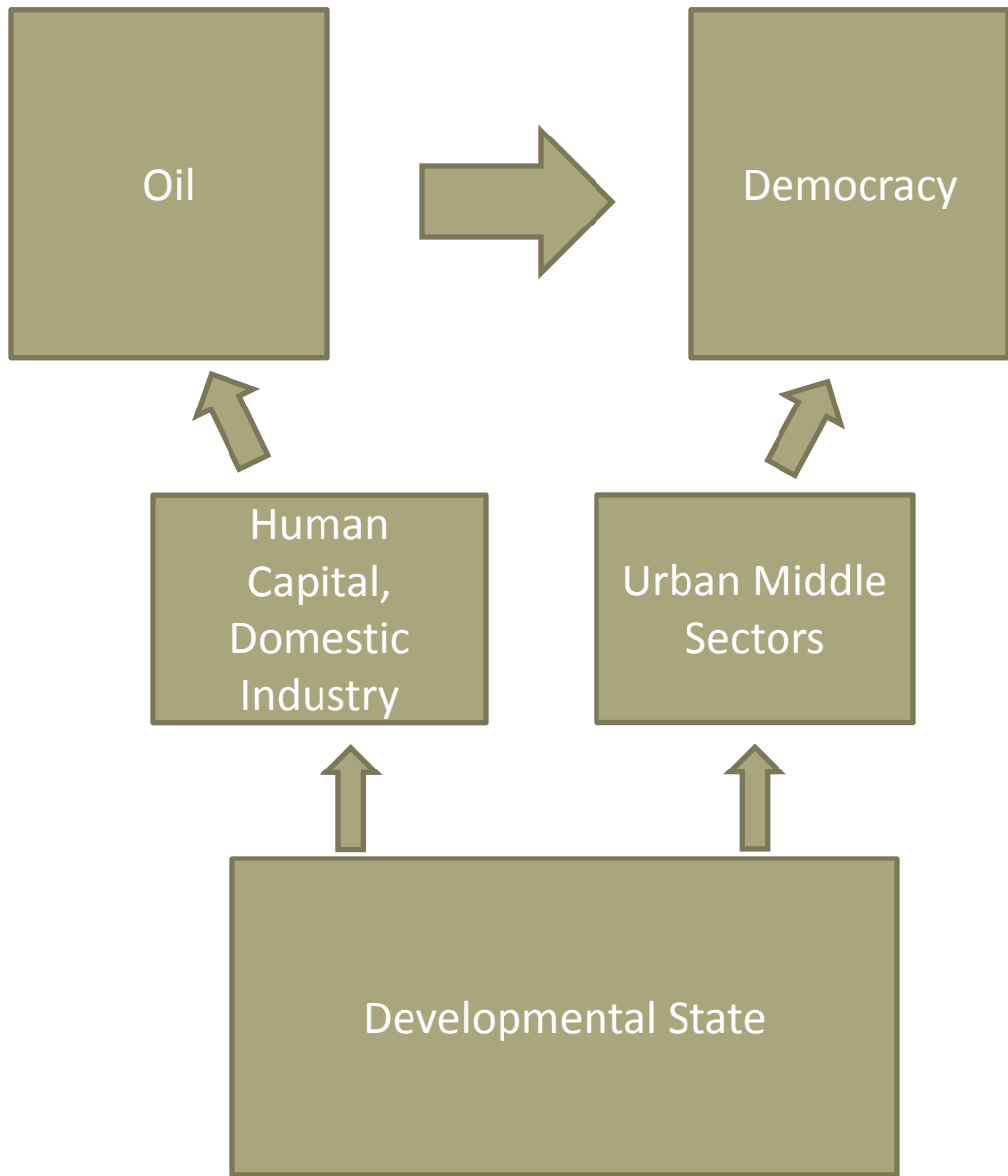
When Are Resources a ‘Curse’?

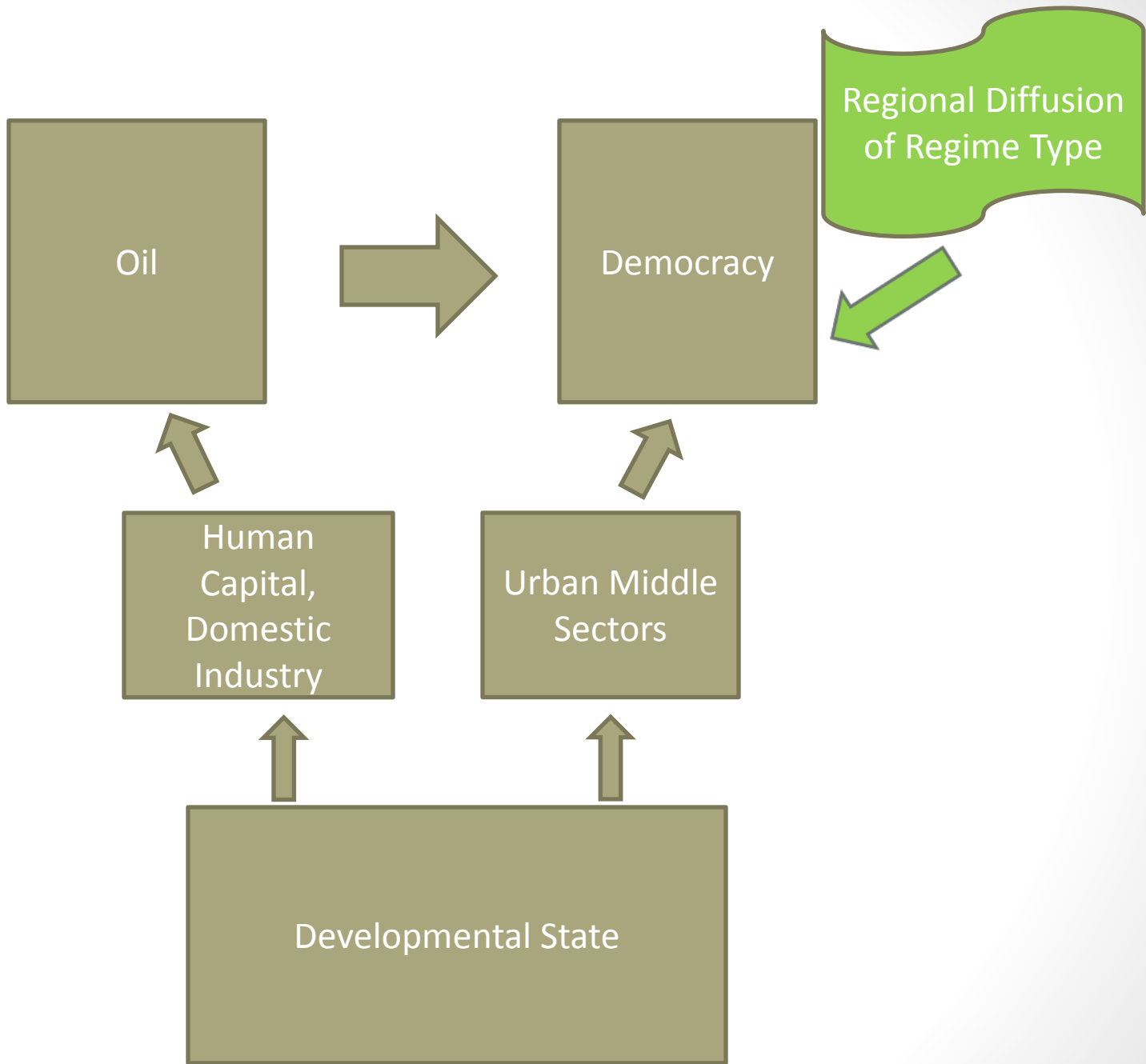
- **Institutions**
 - “Grabber friendly” vs. “producer friendly” (Mehlum et al. 2006)
 - Promote accountability vs. patronage (Robinson et al. 2006)
- **Inequality in the non-resource economy**
 - Dampens redistributive pressure on tax rates (Dunning 2008)
- **Ownership Structure**
 - Public vs. private (Jones Luong and Weinthal 2010)
- **Human Capital**
 - Helps convert resource wealth into growth via technological transfer (Kurtz and Brooks 2011)
- **Resources are not a curse** (Haber and Menaldo 2011)

Reconsidering the 'Resource Curse'

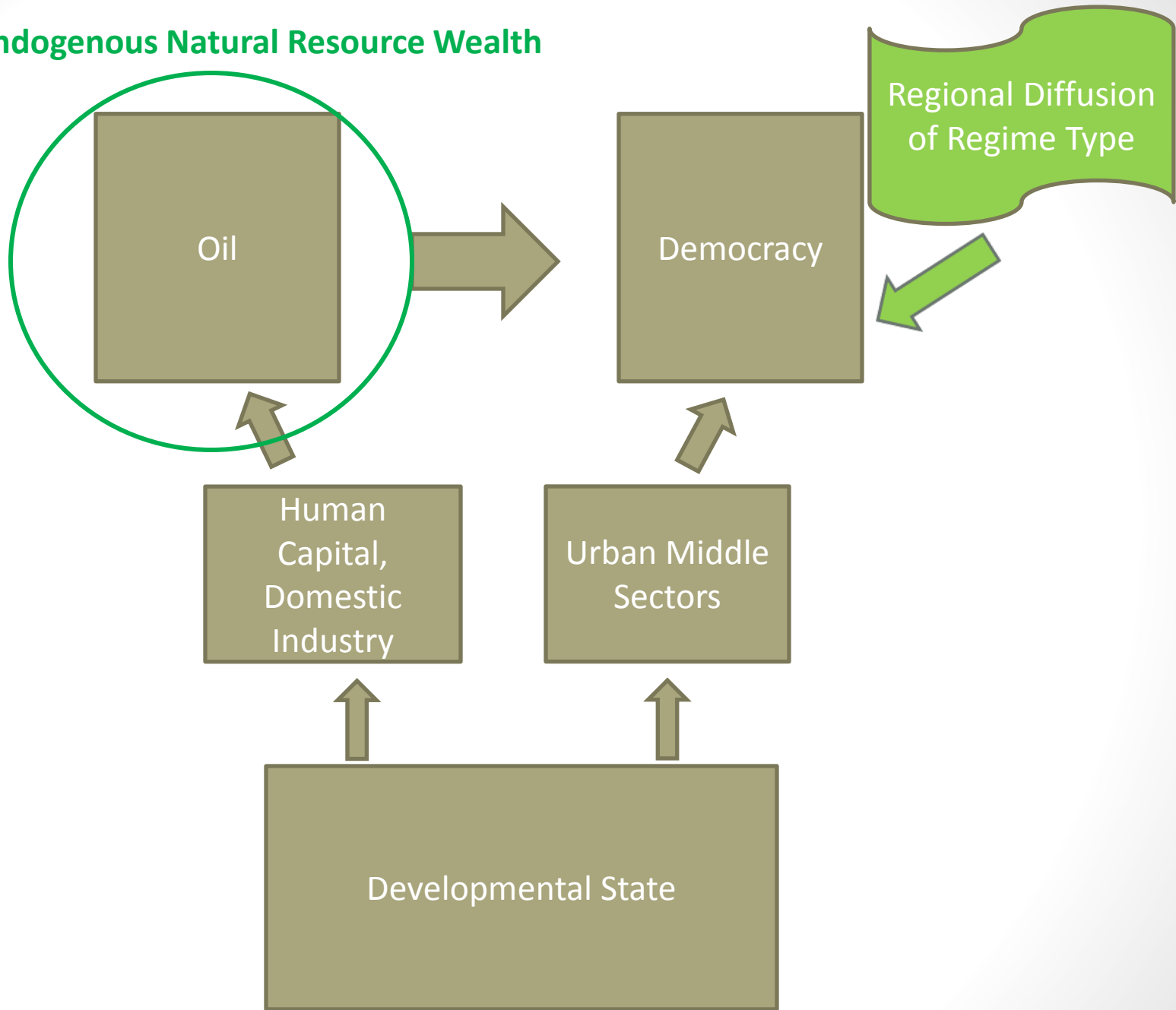
Analysis of the oil-democracy relationship may be confounded by two possibilities:

- 1. Natural resource wealth may be endogenous**
 - To the developmental processes that also favor democracy
- 2. Political regime outcomes may be interdependent**
 - Geographic clustering of regime types, even where resource endowments vary





Endogenous Natural Resource Wealth



Endogenous Natural Resources

- Oil is typically considered a “gift of nature”
 - See however, David and Wright 1997; Stijns 2006
- Oil must be discovered and extracted to become a developmental resource
 - Depends on technology
 - Which in turn depends on local industrial capacity, human capital
- Human capital permits adoption of technology at the global frontier
 - And its use to detect and extract ever-more difficult and previously-undiscovered reserves

Endogenous natural resources

Our argument:

Larger domestic industrial sector and human capital stock

➡ greater indigenous capacity to find, produce, and process petroleum

➡ higher reserves and production over time

We should see higher and more stable levels of oil revenue where industrialization and skill levels are higher

Industrialization also results in social, economic and structural changes favorable to democracy

When is this likely in resource-rich nations?

Developmental State

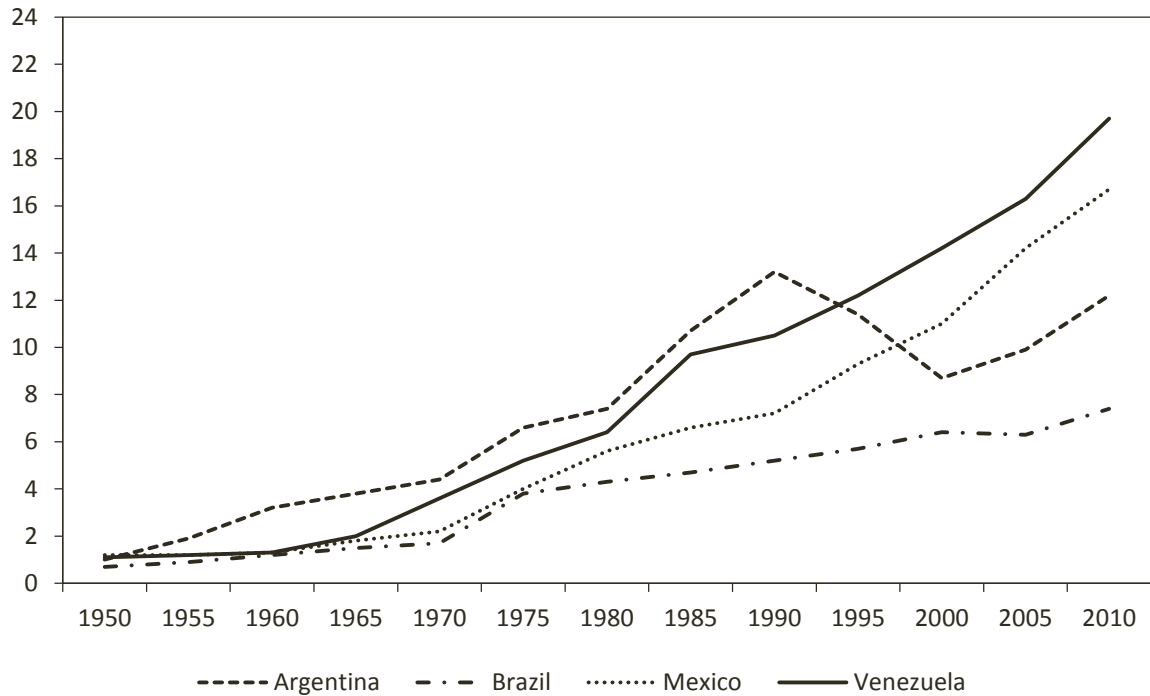
- Industrial policies aimed at ‘catching up’ with industrialized Western nations in the twentieth century
- Varied by region:
 - Import substituting industrialization (ISI) followed by
 - deepening in Latin America;
 - export-led growth in Asia
- In some cases: ruinous financial consequences

Less deleterious legacies:

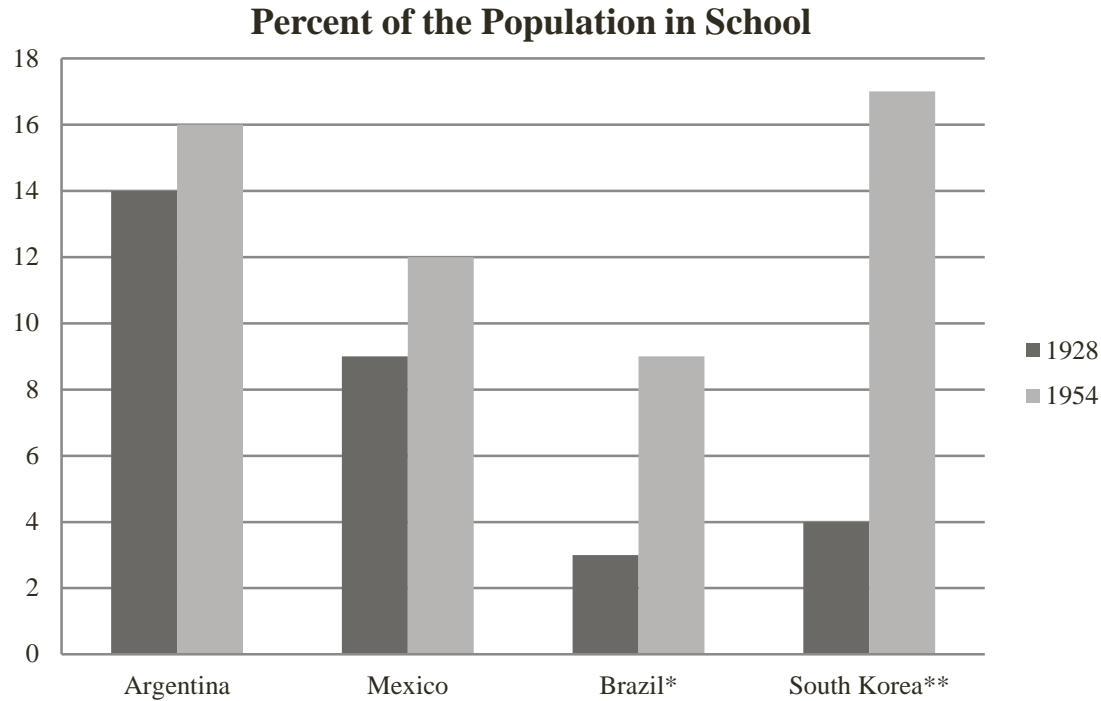
- 1. Human capital investments**
- 2. Social-structural change**

Human Capital Investments

Tertiary Education (% of population aged 15 and over)



Human Capital Investments



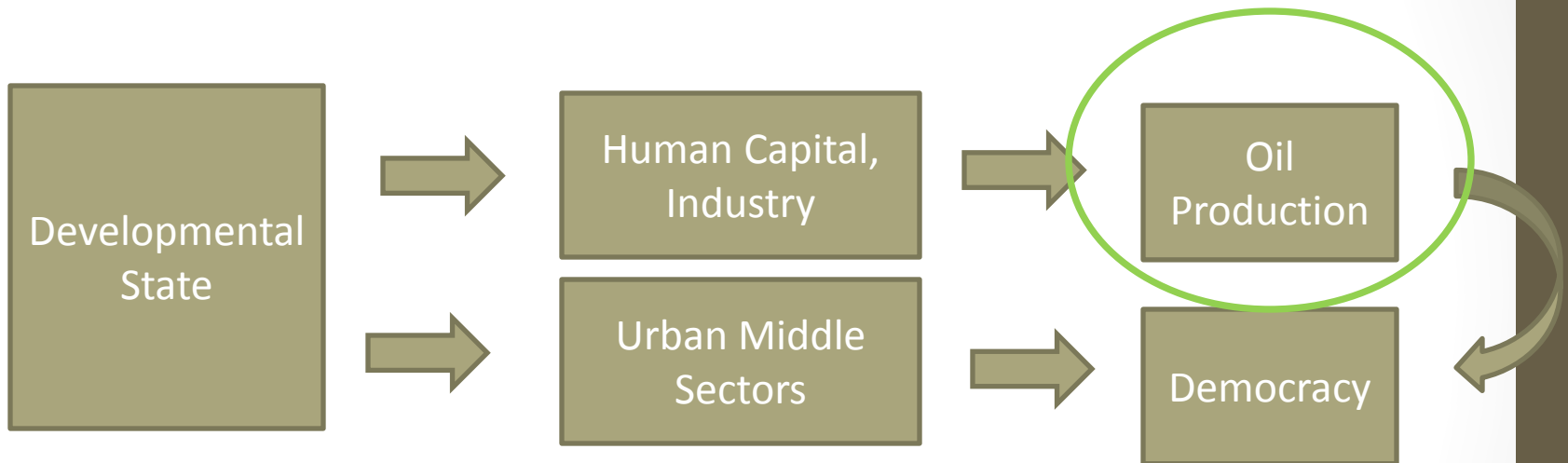
*Brazil the first data point is for 1887 rather than 1928; ** For Korea, the 1928 data include North Korea.

Social-Structural Change

- Urbanization and the rise of organized interests – industrial and labor-based classes
 - Urban middle sectors long considered part of the prerequisites of democracy (Lipset 1959)
- Industrialists and working-class actors pressed for democracy in resource-rich nations
 - (Dunning 2005; Karl 1989; Uhlin 1997; Roxborough 1994)



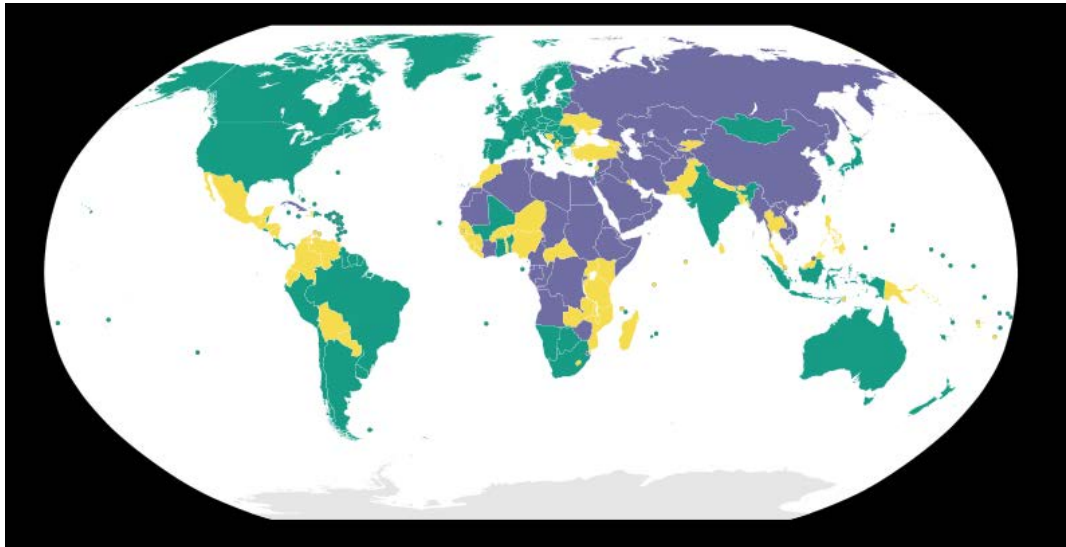
Endogenous Natural Resource Endowments



Who Democratizes?

Industrialization, urbanization and increased human capital stocks are permissive conditions

Not sufficient to explain where we observe democracy across the globe



Democratic Diffusion

Temporal, spatial correlations in regime changes (e.g., Huntington's 'waves')

Geographic proximity facilitates transmission of ideas, perceptions of the appropriateness, comparability (shared culture, history)

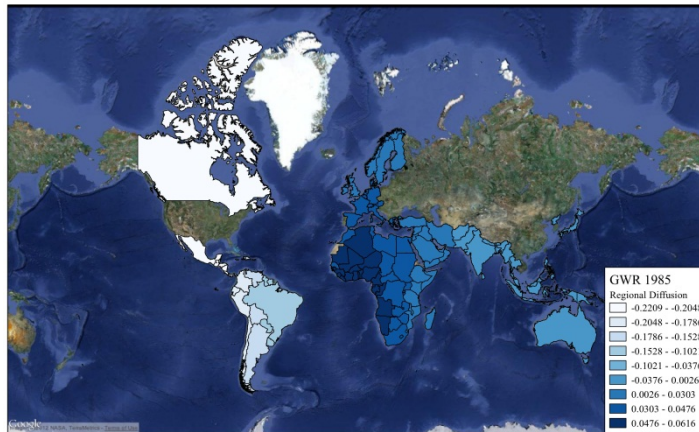
- (Brinks and Coppedge 2006; Gleditch and Ward 2006; O'Laughlin et al 1998; Starr 1991)

Regional diffusion

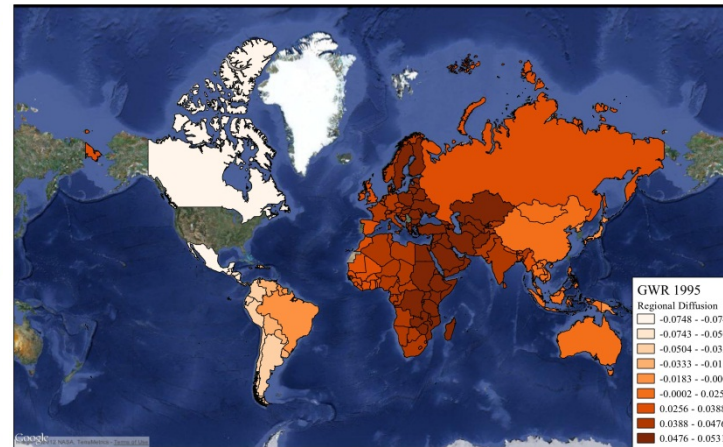
- Shared cultural, religious and economic ties, and common development models
- Emulate higher-status countries
- Learn from higher-growth countries

Diffusion of Democracy as a Regional Process*

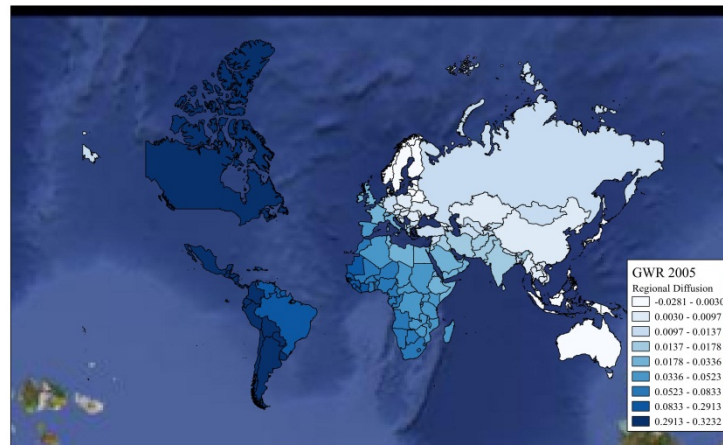
Democratic Diffusion, 1985



Democratic Diffusion, 1995



Democratic Diffusion, 2005



*Heterogeneity in the diffusion process modeled via geographically weighted regression

Empirical Analysis

Step 1: Is oil income endogenous?

Fixed effects model to account for country-specific variations in endowment, institutional quality, etc.

DV: oil revenue per capita (Haber and Menaldo 2011)

IVs: Industrialization, wealth, human capital, time

Table 1. Is Oil a Fixed Endowment?
(Coefficient estimates/Standard Errors)

Dependent Variable: Oil Income

	Model I	Model II	Model III
	Fixed Effects Regression	Arellano-Bond Estimates	Arellano-Bond estimates with Industrialization and Human Capital Endogenous
Oil Income _{t-1}	0.742744 0.014697	0.680884 0.055764	0.689865 0.049923
Industrialization	1.061496 0.314494	30.93399 10.99422	24.68543 8.719176
Wealth	5.343178 5.861408	527.902 418.7313	141.4142 151.1956
Human Capital	-0.31654 1.780574	12.90948 107.2963	-5.23787 64.44122
Time Trend	0.321726 0.219812	0.07229 5.576152	5.125246 4.808075
Constant	-69.4457 45.59438	-5365.17 3248.951	-1923.68 1209.742
N	2776	2667	2667

Notes: Coefficients on the country-level fixed effects are not displayed for Model I, they are removed via differencing in the Arellano-Bond estimates. Model I is a cross-sectional, time-series GLS estimate with heteroskedasticity-consistent standard errors. Data include all non-communist countries from 1970-2006, including the communist successor states after 1990. Countries with populations less than one million are omitted from the analysis.

Net of endowments and antecedent income, industrialization is a robust predictor of the level of oil income per capita

Empirical Analysis

Step 2: Does natural resource wealth promote authoritarianism?

DV: Regime type (Polity2, Marshall & Jaggers 2011)

IVs: Oil income, wealth, human capital, industrialization, diffusion (whole region, wealthier peers, faster-growing peers)

Controls: trade, civil war

Instruments for oil revenue: land area, land area per capita, and proven reserves

Table 2. Endogenous Oil Wealth and Regime Outcomes
(Coefficient Estimates/Standard Errors)

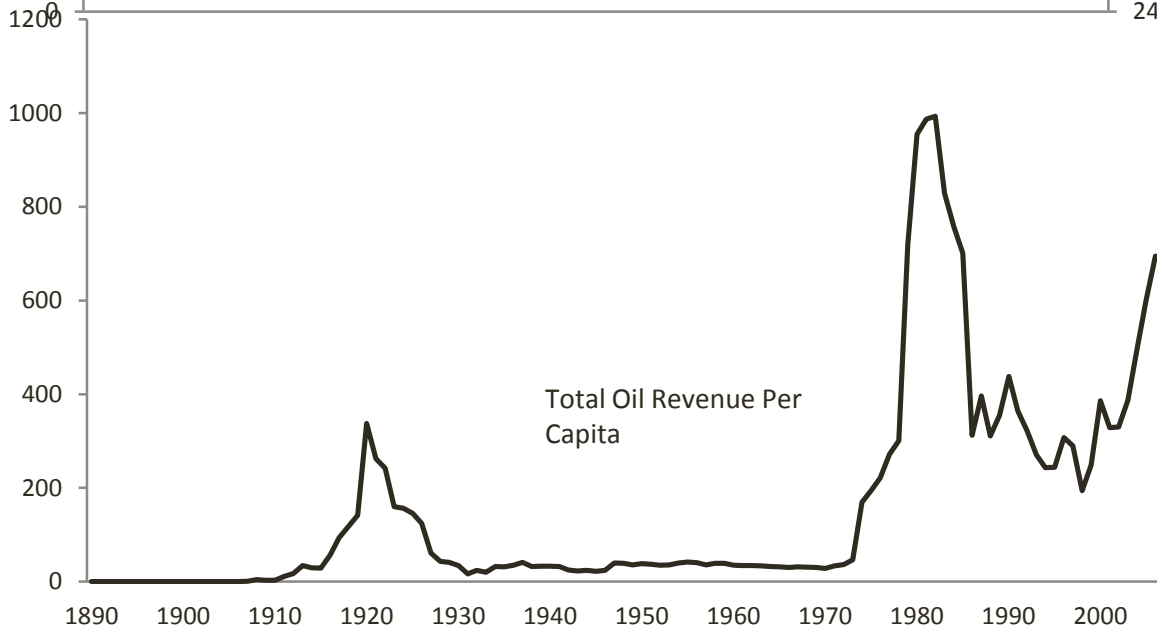
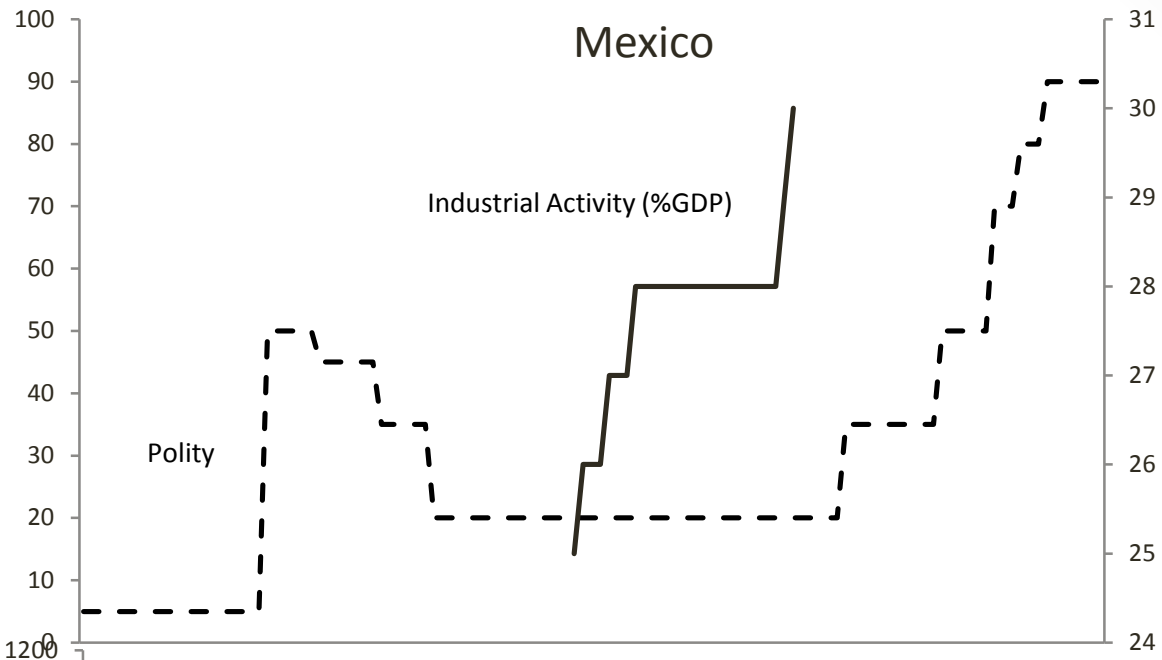
	Model IV	Model V	Model VI	Model VII	Model VIII
	Instrumental Variables Model	Instrumental Variables Model	Arellano-Bond Model	Arellano-Bond Model	Arellano-Bond Model
Regime _{t-1}	0.806521 0.01108	0.775191 0.0127	0.78247 0.025412	0.685444 0.035865	0.662962 0.035673
Oil Income	9.05E-05 4.05E-05	0.000351 0.000138	2.4E-05 2.24E-05	7.04E-05 3.53E-05	
Predicted Oil					0.000426* 0.000266
Orthogonal Oil					8.59E-05 6.66E-05
Wealth	-1.29671 0.225889	-1.22789 0.283866	-0.65248 0.530631	-1.35097 0.658802	-2.24163 0.646362
Industrialization	0.015651 0.008386	-0.00232 0.010262	0.016728 0.013364	0.007796 0.018651	
Human Capital	-0.08259 0.089737	-0.0899 0.100556	0.04401 0.155215	0.102902 0.27493	-0.25504 0.30265

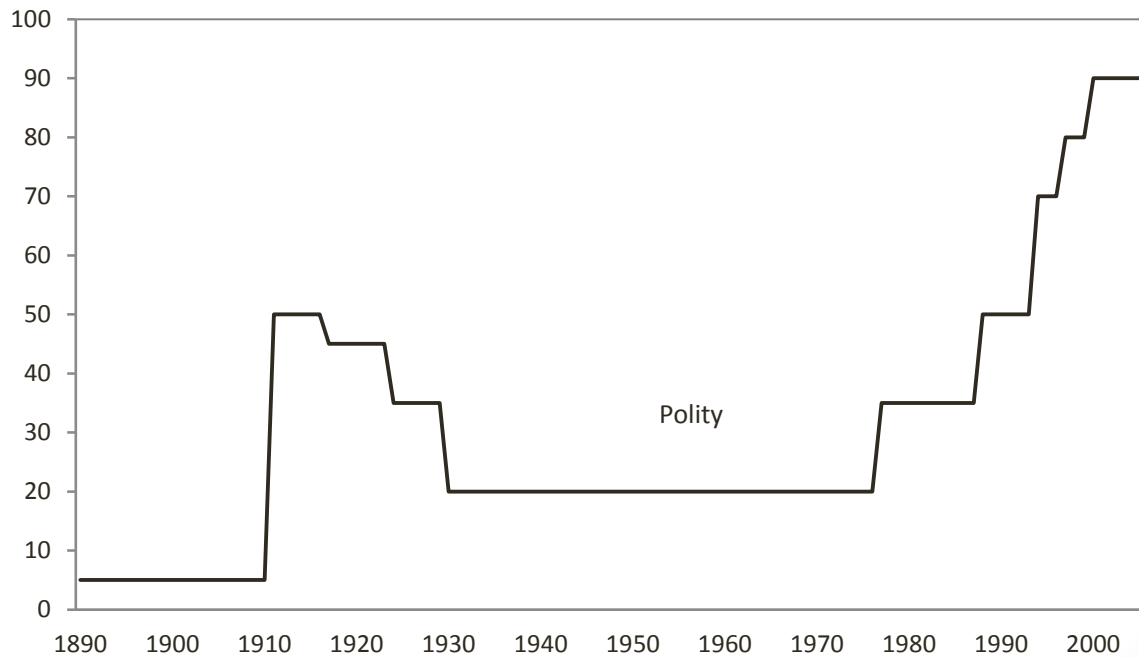
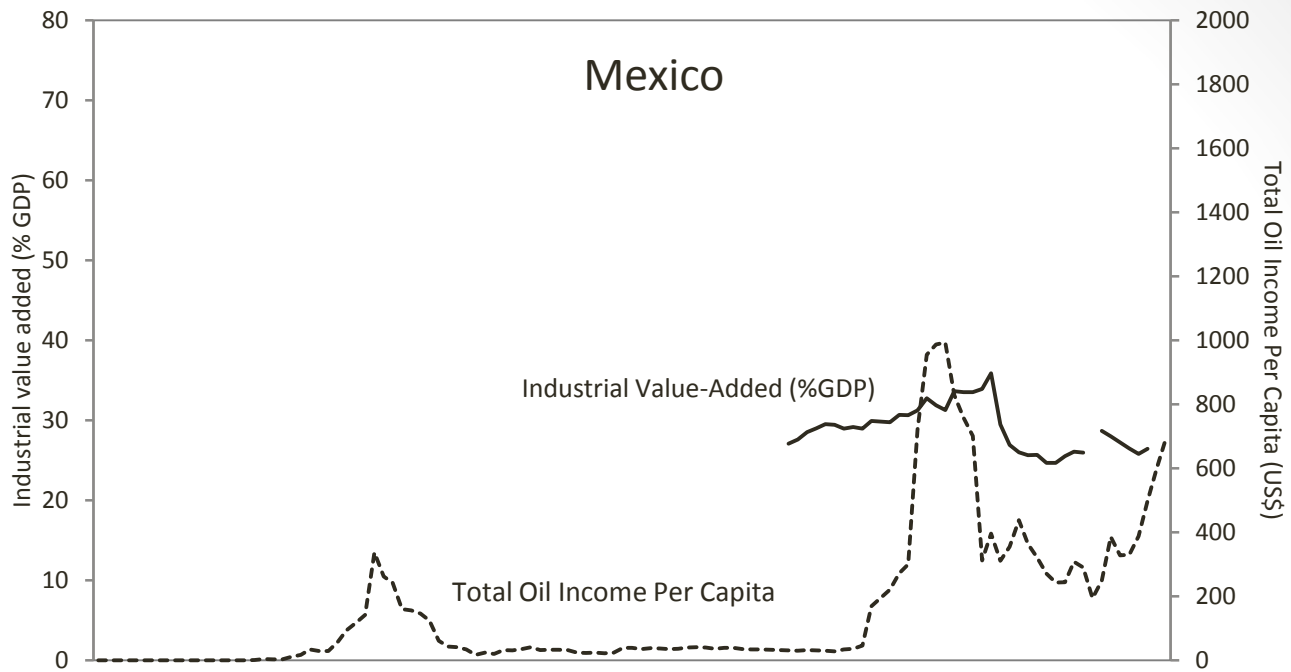
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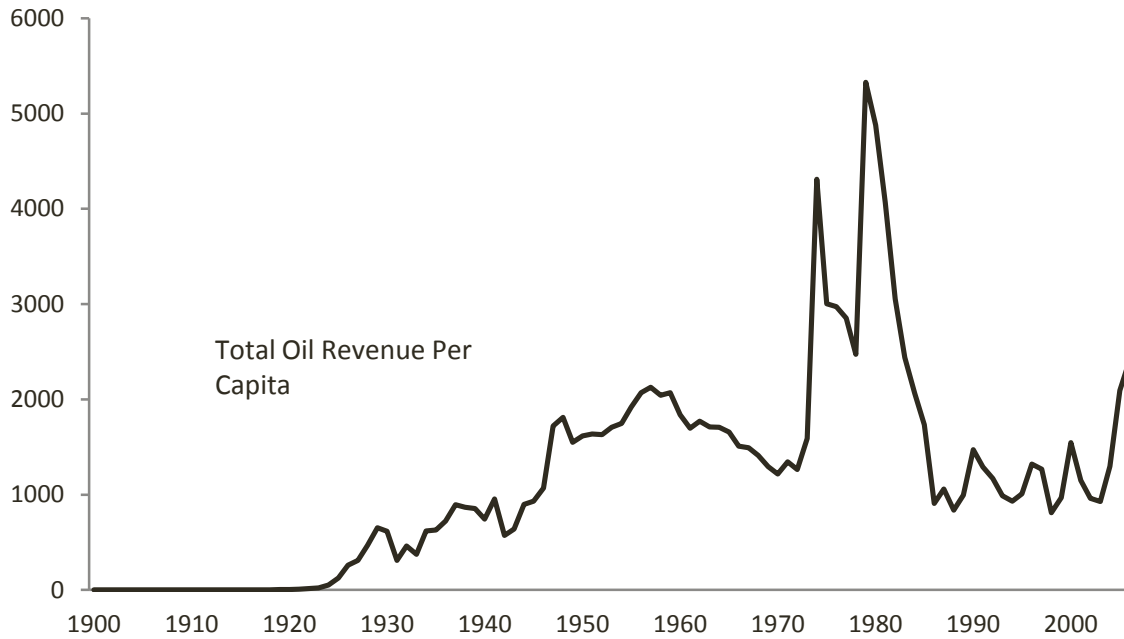
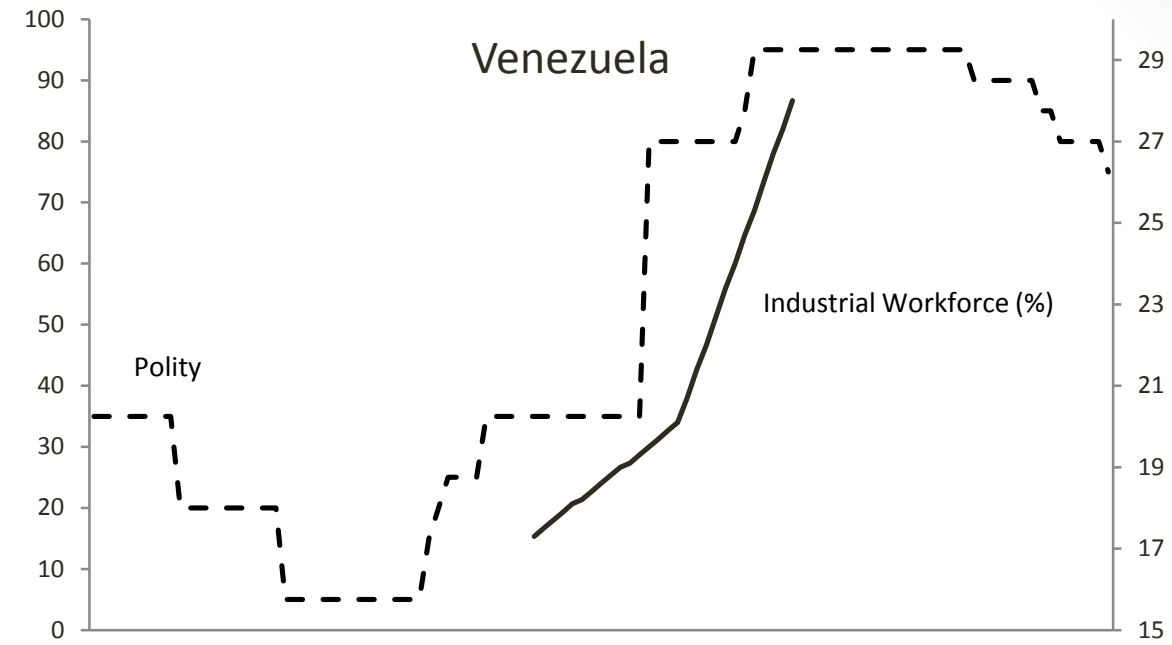
	Model IV	Model V	Model VI	Model VII	Model VIII
	Instrumental Variables Model	Instrumental Variables Model	Arellano-Bond Model	Arellano-Bond Model	Arellano-Bond Model
Regional Diffusion		0.143552 0.037786		0.147152 0.071661	0.212065 0.075558
Regional Development Diffusion		0.083759 0.029088		0.088467 0.06791	0.131136 0.059836
Regional Growth Diffusion		-0.02987 0.017114		-0.04597 0.024545	-0.04151 0.021466
Trade	-0.00089 0.002515	-0.00132 0.002864	-0.00078 0.005321	-0.00262 0.005297	-0.00717 0.005308
Civil War	-0.32118 0.165632	-0.30975 0.185689	-0.4123 0.203499	-0.22401 0.332465	0.002798 0.353278
Time Trend	0.065094 0.01048	0.041528 0.013854	0.028854 0.022152	0.028127 0.032018	0.06332 0.038632
Constant	10.13915 1.801755	10.03921 2.196338	4.859979 4.257838	10.25478 5.233706	19.19036 5.752736
N	2595	2239	2535	2109	2109

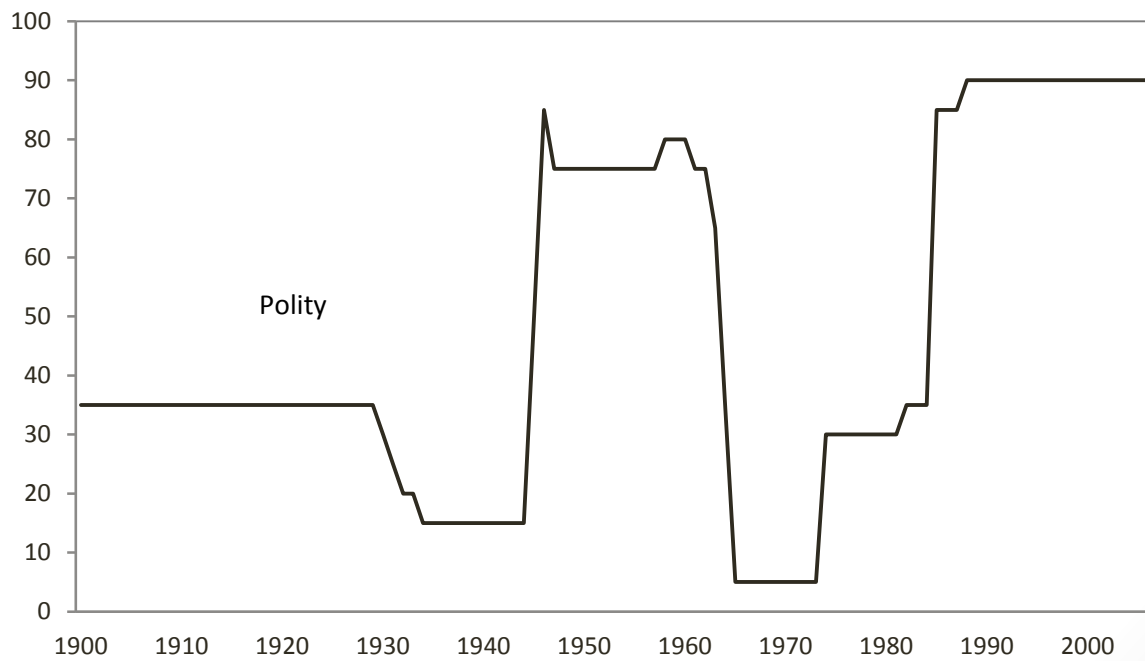
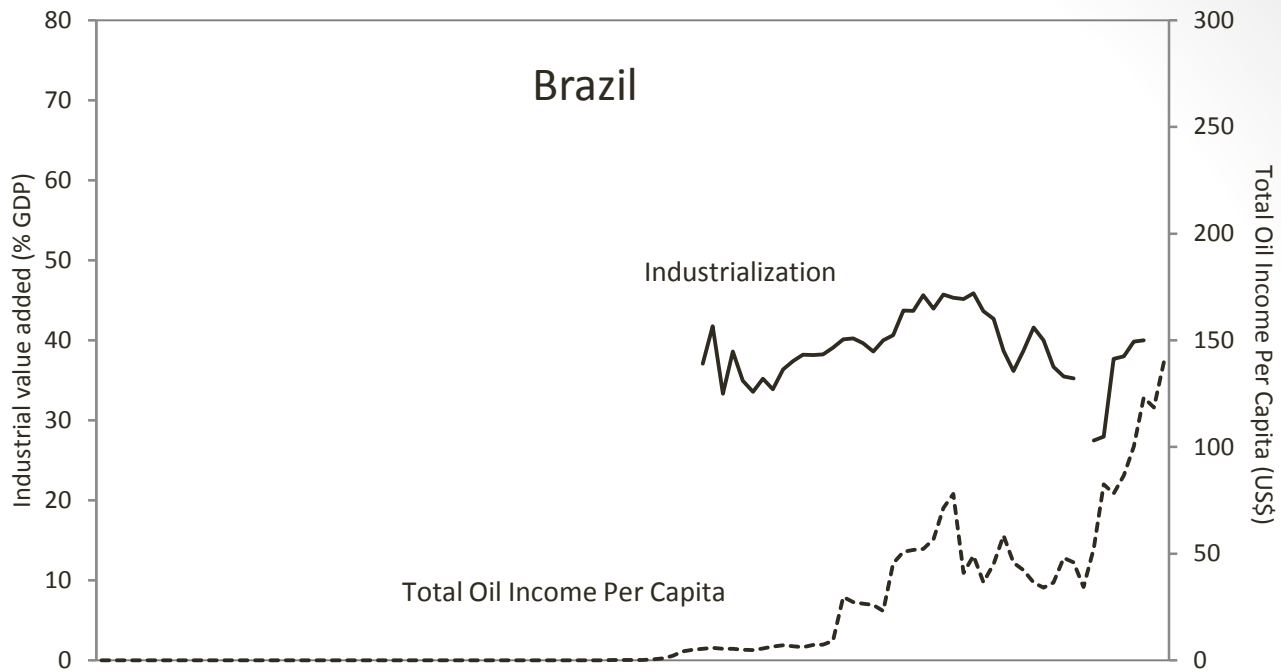
Preliminary Conclusions and Path Ahead

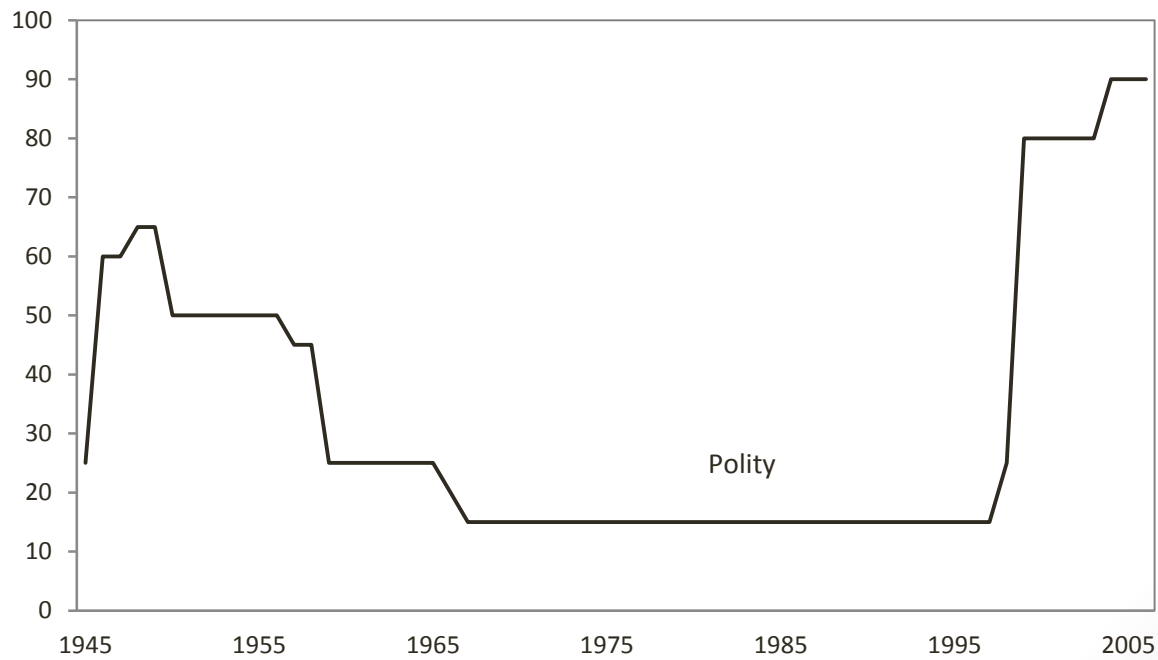
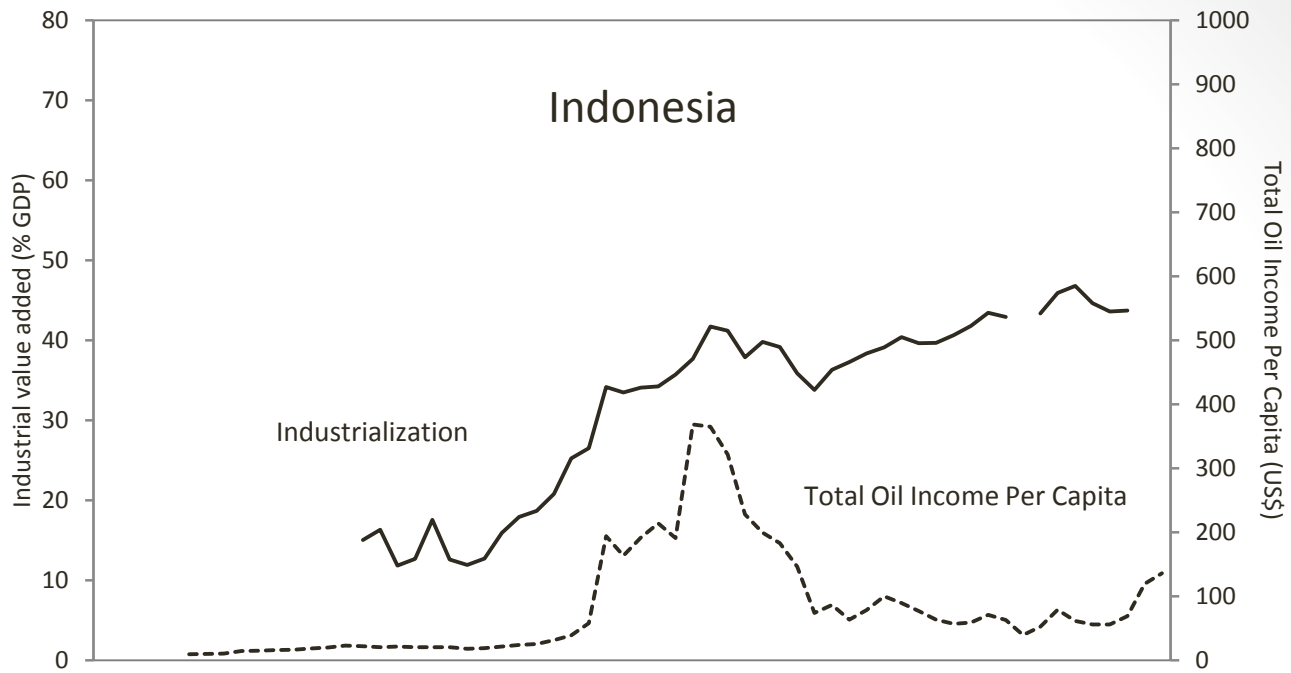
- Natural resource abundance is not necessarily a “curse”
- Resource wealth is endogenous to policy-amenable variables such as industrialization
- Oil and democracy may be compatible...
 - When both arise from industrialization process
 - Accounting for endogeneity, oil is positively related to democracy
- Regime outcomes are interdependent
 - Results are misleading where diffusion is not taken into account
- Next: All oil wealth is not “rent”
 - Cost of production matters: Easy vs. hard-to-get



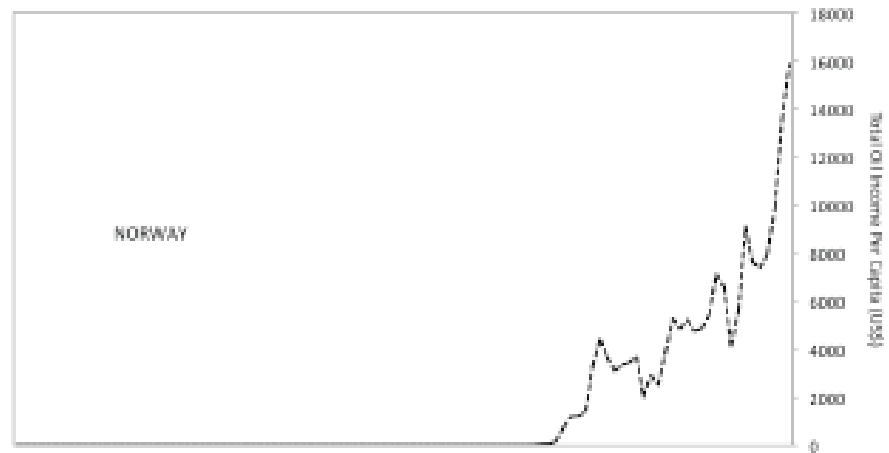
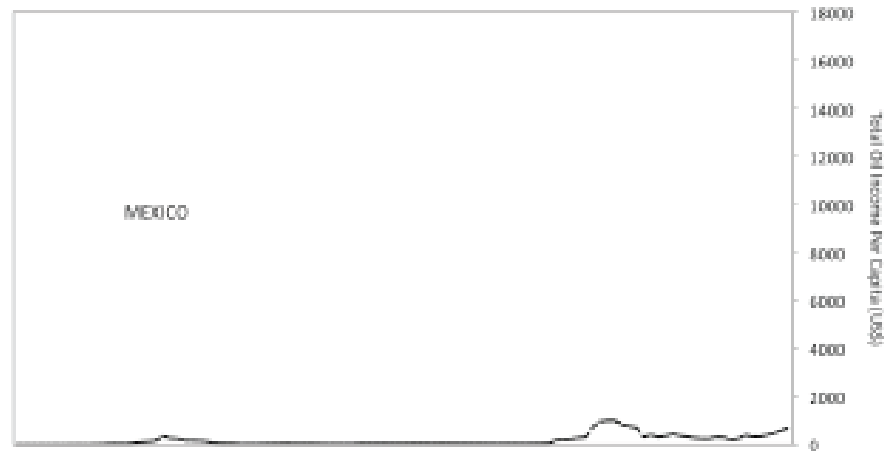


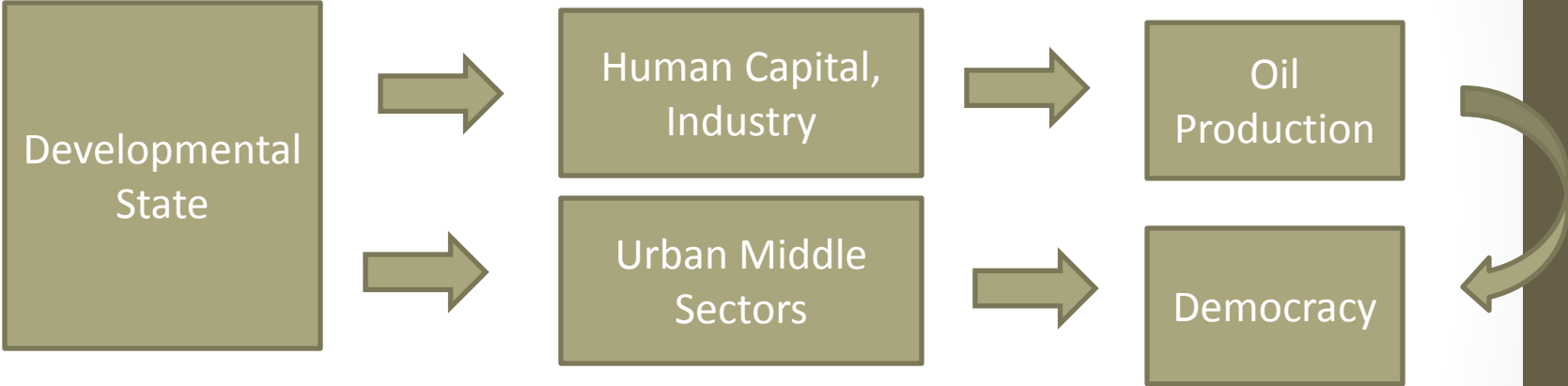




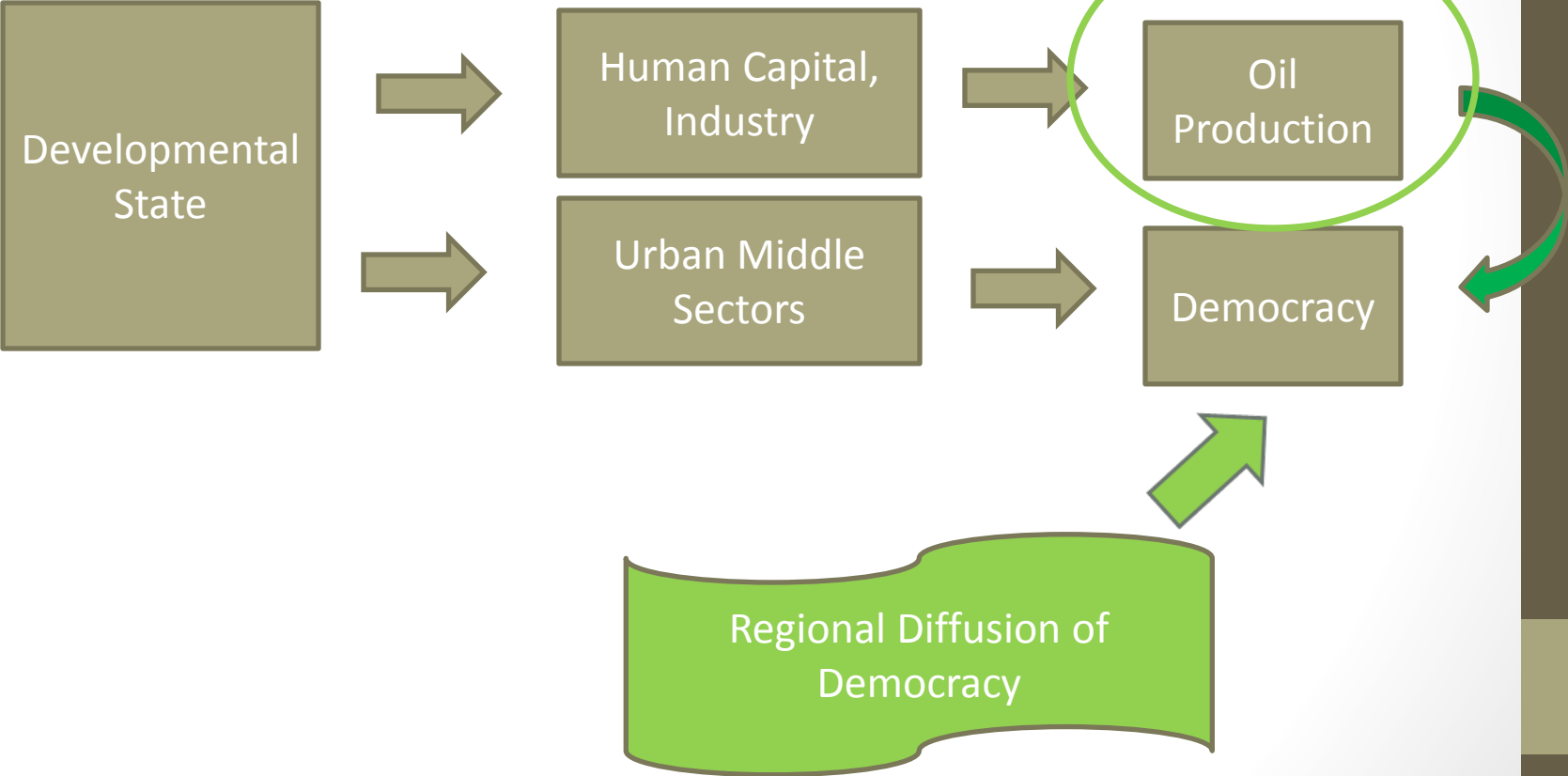


Mexico vs Norway





Endogenous Natural Resource Endowments



Endogenous Natural Resource Endowments

