

Supplementary material for
Autocratic Legislatures and Expropriation Risk

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Summary statistics

Table S-1: *Summary statistics for replication of Jensen et al. (2014)*

Variable	Mean	Std. Dev.	Min.	Max.	N
government risk	3.59	1.37	1	7	51
legislature	0.78	0.42	0	1	51
personalist	0.55	0.5	0	1	51
ln(GDPpc)	6.71	1.32	4.56	10	51
L. America	0.02	0.14	0	1	51
N. Africa & M. East	0.27	0.45	0	1	51
S.S. Africa	0.45	0.5	0	1	51
E. Asia	0.02	0.14	0	1	51
S.E. Asia	0.1	0.3	0	1	51
Pacific	0	0	0	0	51

Table S-2: *Summary statistics for oil expropriation analysis*

Variable	Mean	Std. Dev.	Min.	Max.	N
Oil expropriation	0.02	0.14	0	1	2886
Year	1983.62	12.18	1961	2006	2886
ln(GDPpc)	7.96	1.01	5.73	11.49	2886
ln(population)	15.93	1.25	12.57	19.15	2886
ln(regime duration)	2.64	0.97	0.69	5.58	2886
ln(pc oil rents)	2.05	2.86	0	10.87	2886
Legislature	0.69	0.46	0	1	2886
Personalist	0.4	0.49	0	1	2886

Table S-3: *Data sources for oil expropriation analysis*

Oil expropriation	Guriev et al. (2011), Appendix B
GDP per capita	Maddison (2010)
Population size	Maddison (2010)
Regime duration	Geddes et al. (2014)
Oil rents per capita	Ross (2008)
Legislature	Cheibub et al. (2010)
Personalist	Geddes et al. (2014)

Table S-4: *Countries included in replication of Jensen et al. (2014).*

country name	Geddes et al. (2014) coding	country name	Geddes et al. (2014) coding
Algeria	<i>non-personalist</i>	Madagascar	<i>non-autocracy</i>
Angola	<i>non-personalist</i>	Malawi	<i>non-autocracy</i>
Armenia	<i>personalist</i>	Malaysia	<i>non-personalist</i>
Azerbaijan	<i>personalist</i>	Maldives	<i>non-autocracy</i>
Bahrain	<i>non-autocracy</i>	Mauritania	<i>personalist</i>
Bangladesh	<i>non-autocracy</i>	Moldova	<i>non-autocracy</i>
Belarus	<i>personalist</i>	Morocco	<i>personalist</i>
Bosnia and Herzegovina	<i>non-autocracy</i>	Mozambique	<i>non-personalist</i>
Brunei Darussalam	<i>non-autocracy</i>	Niger	<i>non-autocracy</i>
Burkina Faso	<i>personalist</i>	Nigeria	<i>non-autocracy</i>
Burundi	<i>non-personalist</i>	Oman	<i>personalist</i>
Cameroon	<i>personalist</i>	Pakistan	<i>non-personalist</i>
Central African Republic	<i>non-autocracy</i>	Paraguay	<i>non-autocracy</i>
China	<i>non-personalist</i>	Qatar	<i>non-autocracy</i>
Colombia	<i>non-autocracy</i>	Russia	<i>personalist</i>
Congo, Brazzaville	<i>personalist</i>	Rwanda	<i>non-personalist</i>
Congo, Kinshasa	<i>personalist</i>	Saudi Arabia	<i>personalist</i>
Cote d'Ivoire	<i>personalist</i>	Sierra Leone	<i>non-autocracy</i>
Ecuador	<i>non-autocracy</i>	Singapore	<i>non-personalist</i>
Egypt	<i>non-personalist</i>	Sri Lanka	<i>non-autocracy</i>
Ethiopia	<i>non-personalist</i>	Sudan	<i>personalist</i>
Gabon	<i>non-personalist</i>	Swaziland	<i>personalist</i>
Gambia	<i>personalist</i>	Syria	<i>non-personalist</i>
Guatemala	<i>non-autocracy</i>	Tanzania	<i>non-personalist</i>
Guinea	<i>personalist</i>	Togo	<i>personalist</i>
Guinea-Bissau	<i>non-autocracy</i>	Tunisia	<i>non-personalist</i>
Haiti	<i>personalist</i>	Turkey	<i>non-autocracy</i>
Indonesia	<i>non-autocracy</i>	Turkmenistan	<i>non-personalist</i>
Iran	<i>non-personalist</i>	Uganda	<i>personalist</i>
Iraq	<i>personalist</i>	Ukraine	<i>non-autocracy</i>
Jordan	<i>personalist</i>	United Arab Emirates	<i>personalist</i>
Kazakhstan	<i>personalist</i>	Uzbekistan	<i>non-personalist</i>
Kenya	<i>non-personalist</i>	Venezuela	<i>non-autocracy</i>
Kuwait	<i>personalist</i>	Vietnam	<i>non-personalist</i>
Laos	<i>non-personalist</i>	Yemen	<i>personalist</i>
Lebanon	<i>non-autocracy</i>	Zambia	<i>non-personalist</i>
Liberia	<i>personalist</i>	Zimbabwe	<i>non-personalist</i>
Libya	<i>personalist</i>		

Personalist regimes refer to regimes coded by Geddes et al. (2014) as either personalist or monarchical regimes, while non-personalist regimes denote military or party-based regimes. Non-autocracies are those regimes not coded by Geddes et al. (2014) as autocracies in the year 2002.

When the sample is restricted to autocracies, the following autocracies are missing from the Jensen et al. (2014) sample for 2002: Afghanistan, Chad, Cuba, Eritrea, Georgia, Kyrgyzstan, Nepal, North Korea, Somalia, Tajikistan.

Table S-5: *Legislatures and expropriations in oil expropriation analysis sample.*

	no expropriation (oil)	expropriation (oil)	no expropriation (any)	expropriation (any)
no legislature	857	43	797	103
legislature	1,968	18	1,882	104
N observations	2,886			
years	1961-2006			

Table S-6: *Observations included in oil expropriation analysis.*

country name	min. year	max. year	N years	country name	min. year	max. year	N years
Afghanistan	1971	2001	27	Malawi	1965	1994	30
Albania	1971	1991	21	Malaysia	1961	2006	46
Algeria	1963	2006	44	Mali	1961	1991	31
Angola	1976	2006	31	Mauritania	1961	2006	46
Azerbaijan	1994	2006	13	Mexico	1961	2000	40
Bangladesh	1972	1990	19	Mongolia	1971	1993	23
Belarus	1995	2006	12	Morocco	1961	2006	46
Benin	1961	1990	28	Mozambique	1976	2006	31
Bolivia	1961	1982	21	Nepal	1961	2006	35
Brazil	1965	1985	21	Nicaragua	1961	1990	30
Bulgaria	1971	1990	20	Niger	1961	1999	34
Burundi	1963	2003	38	Nigeria	1967	1999	29
Cambodia	1971	2006	36	Oman	1971	2006	36
Cameroon	1961	2006	46	Pakistan	1961	2006	30
Central African Republic	1961	2006	36	Paraguay	1961	1993	33
Chad	1961	2006	43	Peru	1963	2000	21
Chile	1974	1989	16	Philippines	1973	1986	14
Congo Kinshasa	1961	2006	46	Poland	1971	1989	19
Cote d'Ivoire	1961	2006	46	Portugal	1961	1974	14
Cuba	1971	2006	36	Romania	1961	1989	29
Dominican Republic	1961	1978	16	Russian Federation	1991	2006	14
Ecuador	1964	1979	12	Rwanda	1963	2006	44
Egypt	1961	2006	46	Saudi Arabia	1971	2006	36
El Salvador	1961	1994	34	Senegal	1961	2000	40
Eritrea	1994	2006	13	Sierra Leone	1968	1998	30
Ethiopia	1961	2006	46	Singapore	1966	2006	41
Gabon	1961	2006	46	Somalia	1971	1991	21
Gambia	1966	2006	41	South Africa	1961	1994	34
Georgia	1994	2003	10	South Korea	1962	1987	26
Greece	1968	1974	7	Spain	1961	1976	16
Guatemala	1961	1995	35	Sri Lanka	1979	1994	16
Guinea	1961	2006	46	Sudan	1971	2006	33
Guinea-Bissau	1975	1999	25	Swaziland	1971	2006	36
Haiti	1961	2004	38	Syria	1963	2006	44
Honduras	1964	1981	17	Tajikistan	1994	2006	13
Hungary	1971	1990	20	Tanzania	1965	2006	42
Indonesia	1961	1999	39	Thailand	1961	1992	26
Iran	1961	2006	46	Togo	1961	2006	42
Iraq	1971	2003	33	Tunisia	1962	2006	45
Jordan	1961	2006	46	Turkey	1961	1983	4
Kazakhstan	1994	2006	13	Turkmenistan	1994	2006	13
Kenya	1964	2002	39	Uganda	1967	2006	38
Kuwait	1971	2006	36	United Arab Emirates	1972	2006	35

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country name	min. year	max. year	N years	country name	min. year	max. year	N years
Kyrgyzstan	1994	2006	13	Uruguay	1974	1984	11
Laos	1976	2006	31	Uzbekistan	1992	2006	15
Lesotho	1971	1993	23	Yemen	1990	2006	17
Liberia	1971	2003	26	Zambia	1968	2006	34
Libya	1971	2006	36	Zimbabwe	1981	2006	26
Madagascar	1961	1993	33				

Table S-7: *Nationalizations of Oil Companies in Autocratic Regimes, 1960–2006.*

country name	year	country name	year
Algeria	1970	Kuwait	1972
Algeria	1967	Kuwait	1974
Algeria	1976	Kuwait	1975
Algeria	1971	Kuwait	1973
Algeria	1974	Libya	1972
Angola	1977	Libya	1971
Angola	1978	Libya	1974
Angola	1976	Libya	1973
Bangladesh	1975	Malaysia	1973
Bolivia	1969	Morocco	1975
Chad	2006	Mozambique	1976
Ecuador	1979	Nepal	1973
Ecuador	1977	Nigeria	1976
Ecuador	1973	Nigeria	1979
Ecuador	1976	Nigeria	1971
Ecuador	1974	Nigeria	1974
Ecuador	1972	Nigeria	1973
Egypt	1964	Oman	1972
Egypt	1961	Philippines	1973
Egypt	1962	Russia	2006
Ethiopia	1975	Saudi Arabia	1975
Gabon	1973	Saudi Arabia	1974
Gabon	1976	Saudi Arabia	1972
Indonesia	1965	Saudi Arabia	1976
Iran	1979	UAE	1972
Iran	1973	UAE	1974
Iraq	1972	UAE	1973
Iraq	1973	UAE	1975
Iraq	1977	Uganda	1970
Iraq	1975	Zambia	1980
Kuwait	1977		

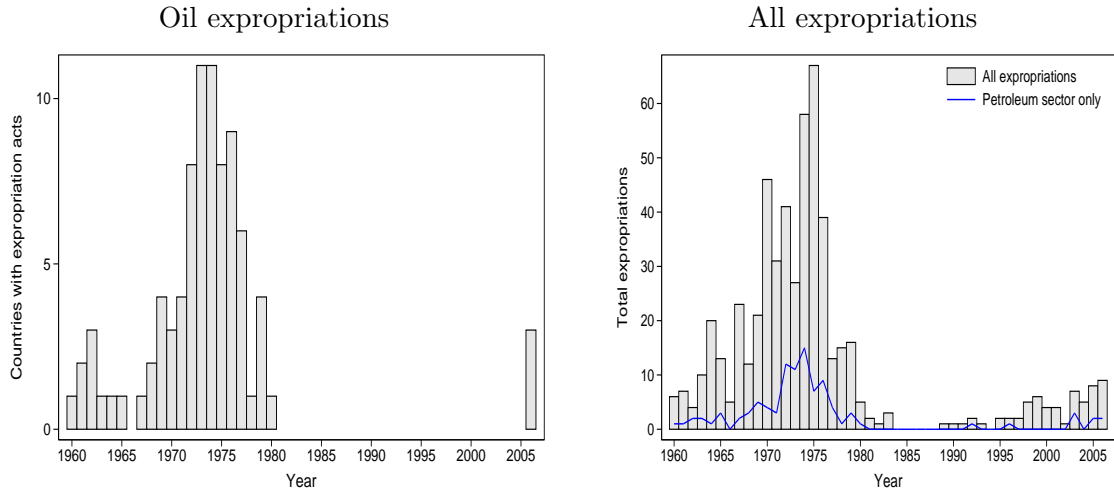


Figure S-1: *Expropriations in autocracies, 1960-2006*. Data in left panel, on oil expropriations, is from Guriev, Kolotilin and Sonin (2011). Data on expropriations in right panel, from all sectors including the oil sector, is from Hajzler (2012). Data on autocracy sample from Geddes, Wright and Frantz (2014).

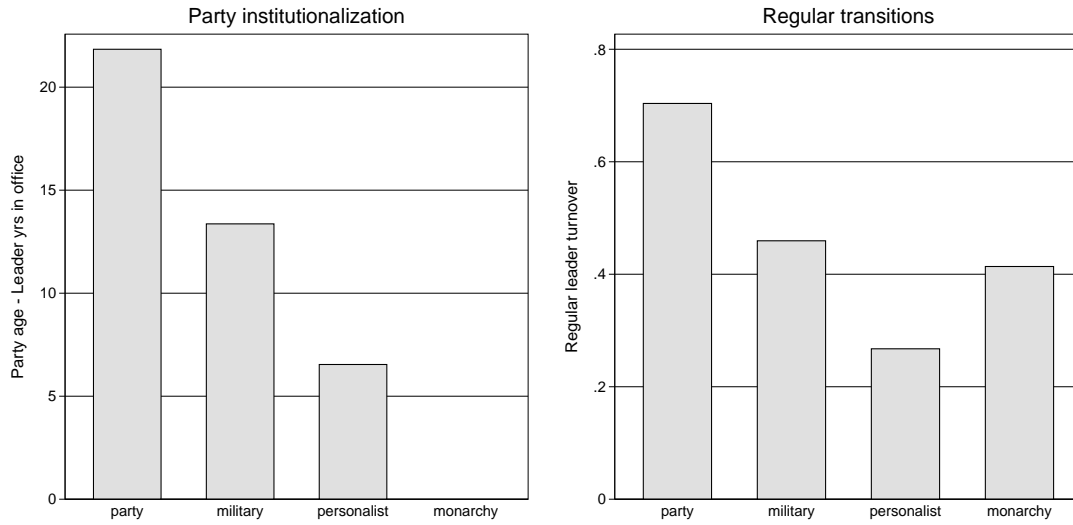


Figure A-1: *Measures of Party institutionalization by regime type.* The left shows the average level of *party institutionalization*, measured as the age of the support party minus the years in office of the current leader (from the Database of Political Institutions), by autocratic regime type, as measured by Geddes, Wright, and Frantz (2014). The right panel shows the share of all leadership changes that are regular leader exits, by autocratic regime type.

Results reported and referenced in main text

Table A-1: *T-test of executive constraints (XCONST), by Legislature.*

	all autocracies		personalist		non-personalist	
	no legislature	legislature	no legislature	legislature	no legislature	legislature
mean	1.634	2.577	1.469	2.178	1.779	2.786
std. err.	0.030	0.028	0.038	0.039	0.043	0.037
difference		-0.943		-0.709		-1.007
Pr(T > t)		0.000		0.000		0.000
N	1008	2447	473	843	535	1604

Table A-2: *Replication of Jensen, Malesky, and Weymouth (2014)*.

	(1) (JMW 2014)	(2) Geddes et al. (2014) autocracies	(3) added variables
legislature	0.170 (0.460)	0.387 (0.558)	1.993 (0.535)***
ln(GDPpc)	0.609 (0.137)***	0.562 (0.143)***	0.533 (0.151)***
personalist			1.606 (0.558)***
leg. x personalist			-1.910 (0.651)***
L. America	-0.214 (0.503)	-0.744 (0.306)**	-0.677 (0.373)*
N. Africa & M. East	0.049 (0.542)	0.318 (0.642)	0.317 (0.702)
S.S. Africa	0.574 (0.379)	0.780 (0.430)*	0.657 (0.430)
E. Asia	0.737 (0.675)	0.127 (0.299)	-0.103 (0.407)
S.E. Asia	0.554 (0.498)	1.269 (0.439)***	1.070 (0.557)*
Pacific			
Intercept	-0.944 (1.176)	-1.034 (1.211)	-2.227 (1.071)**
log-likelihood	-115.976	-78.759	-77.565
R ²	0.284	0.299	0.331
N	75	51	51

standard errors in parentheses; p<0.1 p<0.05** p<0.01****

All observed data

Non-personalist dictatorships (sample N = 56)

	No legislature	Legislature
Low risk	0 (0%)	11 (46%)
High risk	2 (100%)	13 (54%)

Personalist dictatorships (sample N = 56)

	No legislature	Legislature
Low risk	7 (70%)	6 (33%)
High risk	3 (30%)	12 (67%)

Estimating sample

Non-personalist dictatorships (sample N = 51)

	No legislature	Legislature
Low risk	0 (0%)	11 (50%)
High risk	1 (100%)	11 (50%)

Personalist dictatorships (sample N = 51)

	No legislature	Legislature
Low risk	7 (70%)	6 (33%)
High risk	3 (30%)	12 (67%)

Table A-3: **Raw data for government risk model.** Government risk is a 7-point scale where higher values represent lower risk. Low risk is defined as: an imputed government risk score above the median value, which is 3. The same pattern holds if we define low risk as a risk score above and including the median value. Top two panels show risk level by legislature for non-personalist and personalist dictatorships in 56 regimes; this sample includes those dropped when the analysis list-wise deletes observations due to missing data on GDP per capita. The bottom two panels report the cross-tabs for 51 regimes included in the analysis sample (column 3, Table A-2). Column percentages reported in parentheses.

Table A-4: *Kernel regression replicating Jensen, Malesky, and Weymouth (2014).*

legislature	-0.089	(0.160)
ln(GDPpc)	0.061	(0.028) **
L. America	0.037	(0.182)
N. Africa & M. East	0.144	(0.144)
S.S. Africa	-0.065	(0.151)
E. Asia	0.078	(0.182)
S.E. Asia	0.148	(0.177)
N	75	

standard errors in parentheses; p<0.1 p<0.05** p<0.01****

Table A-5: *Pooled analysis of updated ONDD data (2002-2008).*

	(1)	(2)	(3)
Legislature	-0.646 (0.43)	-0.712+ (0.41)	-1.437* (0.61)
Personalist		-0.467 (0.32)	-1.502* (0.73)
Legislature × Personalist			1.232+ (0.73)
GDP per capita (log)	-1.152** (0.16)	-1.186** (0.16)	-1.149** (0.16)
(intercept)	15.208** (1.21)	15.667** (1.22)	16.053** (1.22)
$\beta_{\text{Legislature}+(\text{Legislature} \times \text{Personalist})}$			-0.025 (0.41)
log-likelihood	-555.3	-548.0	-539.8
R ²	0.47	0.49	0.51

clustered standard errors in parentheses; p<0.1 p<0.05** p<0.01****
381 observations in 64 countries

The dependent variable in this analysis is the risk to direct investments of expropriation and government action from Delcredere | Ducroire, obtained on 16 September 2014.¹ This is an index that runs from 7 (high risk of expropriation) to 1 (low risk of expropriation). A negative coefficient estimate means the variable is associated with less risk, while a positive coefficient indicates greater risk.

¹Delcredere | Ducroire is Belgium's public credit insurer and part of the Credendo Group, formerly called the *Office national du Ducroire* | *Nationale DelcredereDienst* (ONDD). For more information, visit <http://www.delcrederecroire.be/en/>.

Table A-6: *Year-by-year model estimates with updated ONDD data.*

Year	<u>Non-personalist</u>			<u>Personalist</u>		
	Share w. legislatures	$\beta_{Legislature}$	SE	Share w. legislatures	$\beta_{Legislature}$	SE
2003	0.85	-1.29	0.74	0.75	-0.14	0.71
2004	0.92	-2.37	0.65	0.78	-0.16	0.42
2005	0.92	-2.18	0.68	0.77	-0.29	0.57
2006	0.89	-1.68	0.88	0.78	-0.29	0.46
2007	0.86	-1.61	0.70	0.82	0.15	0.63
2008	0.89	-1.19	1.03	0.82	0.23	0.60

All observed data

Non-personalist dictatorships (N = 4563)

	No legislature	Legislature
No expropriation	866 (96.0%)	2322 (99.4%)
Expropriation	36 (4.0%)	13 (0.6%)

Personalist dictatorships (N = 4563)

	No legislature	Legislature
No expropriation	488 (96.7%)	802 (98.3%)
Expropriation	22 (4.3%)	14 (1.7%)

Estimating sample

Non-personalist dictatorships (N = 2866)

	No legislature	Legislature
No expropriation	438 (94.6%)	1268 (99.4%)
Expropriation	25 (5.4%)	7 (0.6%)

Personalist dictatorships (N = 2866)

	No legislature	Legislature
No expropriation	419 (95.9%)	700 (98.4%)
Expropriation	18 (4.1%)	11 (1.6%)

Table A-7: **Raw data for oil expropriation model.** Top two panels show observed expropriation by legislature for non-personalist and personalist dictatorships for 4563 observations; this sample includes those dropped when the analysis list-wise deletes observations due to missing data on GDP per capita and oil rents. The bottom two panels report the cross-tabs for 2886 observations in the analysis sample (column 4, Table A-8). Column percentages reported in parentheses.

Table A-8: *Regression of political constraints and oil expropriation in autocracies.*

	(1)	(2)	(3)	(4)	(5)	(6)
	all	personalist	non-pers.	all	personalist	non-pers.
$\ln(\text{GDPpc})_{t-1}$	0.014 (0.02)	0.041 (0.03)	0.024* (0.01)	0.012 (0.02)	0.023 (0.03)	0.033** (0.01)
$\ln(\text{population})_{t-1}$	-0.223*** (0.06)	-0.290*** (0.07)	-0.011 (0.03)	-0.217*** (0.06)	-0.285*** (0.07)	-0.009 (0.03)
$\ln(\text{regime duration})_{t-1}$	-0.008 (0.01)	-0.009 (0.01)	0.000 (0.01)	-0.006 (0.01)	-0.019* (0.01)	0.010 (0.01)
$\ln(\text{pc oil rents})_{t-1}$	0.008* (0.00)	0.015 (0.01)	-0.002 (0.00)	0.009** (0.00)	0.013 (0.01)	0.003 (0.00)
XCONST	-0.000 (0.00)	0.009 (0.01)	-0.012*** (0.00)			
Legislature				-0.018* (0.01)	0.028** (0.01)	-0.057*** (0.02)
Intercept	3.357*** (0.97)	4.778*** (1.41)	0.044 (0.54)	3.290*** (0.93)	4.890*** (1.34)	-0.063 (0.51)
country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
log-likelihood	1716.646	637.797	1208.688	1829.054	689.518	1269.889
R ²	0.205	0.286	0.250	0.203	0.285	0.249
N	2742	1099	1643	2886	1148	1738

standard errors in parentheses; p<0.1 p<0.05** p<0.01****

Table A-9: *Kernel regression estimates. Country means included in the specification as controls for unit heterogeneity*

personalist	0.005	(0.011)
Legislature	-0.018	(0.010)*
$\ln(\text{GDPpc})^{t-1}$	0.009	(0.006)
$\ln(\text{population})^{t-1}$	-0.001	(0.003)
$\ln(\text{regime duration})^{t-1}$	-0.002	(0.004)
$\ln(\text{pc oil rents})^{t-1}$	0.002	(0.002)
time	-0.001	(0.000)***
time ²	0.000	(0.000)***
N	2886	

standard errors in parentheses; p<0.1 p<0.05** p<0.01****

Correlated random effects

A correlated random effects model uses in-sample unit means as ‘proxies’ for country dummy variables to model unobserved unit heterogeneity (Wooldridge, 2002, 487). This approach aids in circumventing separation issues that arise in fixed effects non-linear models when some units have no variation in the dependent variable. (It also circumvents incidental parameters issues in a conditional logit.) In doing so, the interpretation of the explanatory variables in a correlated random effects model is similar to the interpretation from a fixed effects model. To address further unit heterogeneity not captured by the fixed effect proxy (\bar{X}_i), the estimating equation adds random effects. By construction, the estimates of the main variables (i.e. not the unit means) are the same irrespective of whether the time-varying explanatory variables are centered around the mean. The specification is:

$$Y_{i,t} = \alpha_{j[i]} + \beta X_{i,t-1} + \gamma \bar{X}_i + \varepsilon_{i,t}; \quad \alpha_j \sim N(\mu_\alpha, \sigma_\alpha^2); \quad \varepsilon_{i,t} \sim N(0, \sigma_y^2) \quad (1)$$

The results reported in the robustness tests are from a model with a linear link function; and the unit means are calculated using the full sample of personalist and non-personalist regimes (some countries transition from a personalist to a non-personal regime over time). In the replication files we alter the specification in a number of ways but obtain substantively similar estimates as those reported in the robustness section: (1) with unit means but without random effects; (2) with a random effects probit model; (3) adding the mean of the dependent variable to the RHS of the equation; and (4) calculating the unit means for each sub-sample separately.

Table B-1: *Correlated random effects.*

Coefficient estimates for <i>Legislature</i>	Personalist	Non-Personalist
Reported CRE: OLS with \bar{X}_i and $\alpha_{j[i]}$	0.017 (0.013)	-0.064 (0.032)
(1) OLS with \bar{X}_i but no $\alpha_{j[i]}$	0.016 (0.012)	-0.073 (0.001)
(2) probit with \bar{X}_i and $\alpha_{j[i]}$	0.244 (0.344)	-0.868 (0.376)
(3) OLS with \bar{X}_i and $\alpha_{j[i]}$ and \bar{Y}_i	0.015 (0.013)	-0.072 (0.031)
(4) OLS with X_{regime} and $\alpha_{j[i]}$	0.020 (0.015)	-0.062 (0.033)

2SLS estimator

To further address endogeneity concerns, we estimate a 2SLS-IV model in which we use ‘inherited’ legislature as an excluded instrument. This variable is a binary indicator of the whether an elected legislature existed in the year prior to the current autocratic leader gaining power. It is time invariant across each individual leader in the Cheibub, Gandhi and Vreeland (2010) data set.²

As Jensen, Malesky and Weymouth (2014, 25) argue, this type of information can be treated as plausibly exogenous to the investment environment and hence expropriation risk because “[c]ountries with inherited legislatures and opposition parties allow us to more directly trace through the causal implications of a parliament, as it cannot be the case that the parliament was selected by the same set of actors that determine expropriation and investor protection policies.”

²By construction, an autocratic leader who is the first leader of an autocratic regime (as defined Geddes, Wright and Frantz (2014)) that was preceded by a democracy inherited an elected legislature. For autocratic leaders whose predecessors were also autocratic leaders, we code *inherit* according to whether there was an elected legislature in the autocracy on December 31 in the calendar year prior to the current leader gaining power.

While their analysis is purely cross-sectional, for one year, our analysis of observed expropriation in the oil sector draws inferences from changes over time within countries. Thus even without a two-stage model, our approach mitigates against omitted variable bias from country-specific time-invariant factors such as colonial heritage or “different constellations of economic and ethnic actors underlying the strength of the chief executives” in different countries (Jensen, Malesky and Weymouth, 2014, 24) by modeling unit (country and in some models regime-specific) fixed effects.

That said, there may still exist unobserved and un-modeled time-varying factors that introduce bias into our estimates of the influence of authoritarian legislatures. For example, the specific economic interests represented in a dictator’s support coalition can change over time to influence both the investment environment and whether the regime keeps an inherited legislature (or creates one when one is not inherited). Using inherited legislature as an excluded instrument addresses this particular type of omitted variable bias because it uses information about the presence of an elected legislature prior to the current leader taking power. That is, even though economic interests of support coalitions can change over time for a particular autocratic leader, that leader presumably cannot substantially influence whether a legislature exists prior to assuming power.

We urge caution in strongly interpreting these results as causal. Rather, like JMW, we believe that using *inherited legislature* as an instrument means the results are less endogenous to the current dictator’s political decisions about the investment environment than simply using a one-year lag on the legislature variable. Thus, the two-stage results should not be interpreted as necessarily implying that the dictator’s *motivation* for establishing a legislature varies across contexts. This, however, does not rule out the possibility, for example, that authoritarian legislatures in personalist contexts pay for patronage while non-personalistic regimes use legislatures to facilitate power sharing.³ The function of an institution can differ by context even if the original motivation to establish an assembly was similar in different contexts.

We estimate the following equations:

$$Legislature_{i,t-1} = \alpha_1 + \beta_1 X_{i,t-1} + \gamma_1 Inherit_{Leader} + \xi_i + \tau_t + \epsilon_{i,t} \quad (2a)$$

$$Expropriation_{i,t} = \alpha_2 + \beta_2 X_{i,t-1} + \gamma_2 \widehat{Legislature}_{i,t-1} + \xi_i + \tau_t + \epsilon_{i,t} \quad (2b)$$

The equations include country (ξ_i) and year (τ_t) fixed effects, as well as the main control variables (GDP per capita, population size, oil rents per capita, and regime duration). The link function is linear.

³We thank an anonymous reviewer for pointing this out.

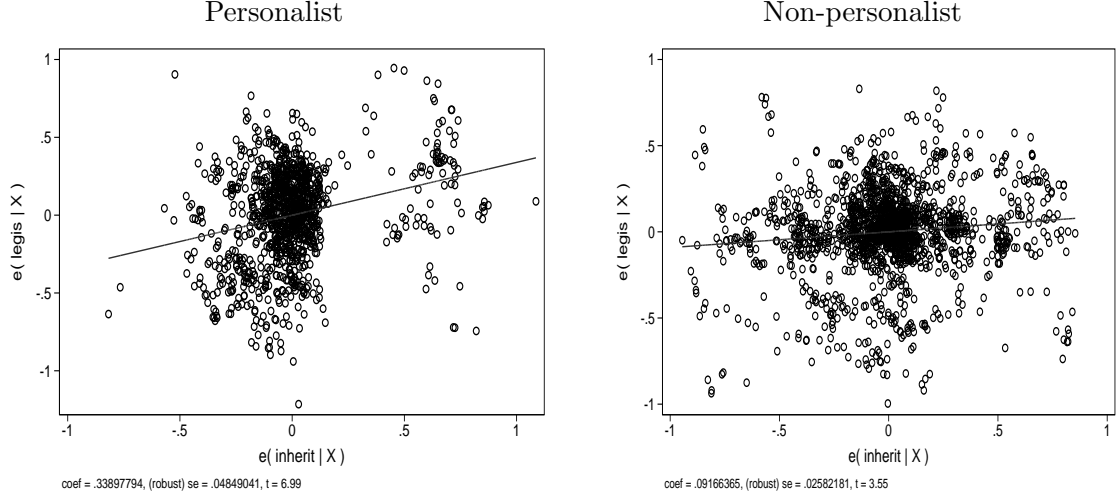


Figure B-1: *Partial correlation between Inherit and Legislature*. The left panel depicts the first stage partial correlation in the personalist sub-sample; the right panel for the non-personalist sub-sample. Years: 1960-2006.

For the full sample, pooling personalist and non-personalist, the Kleibergen-Paap Wald F statistic from the first stage equation is 71.5, well above the 16.4 value calculated as a lower bound for a strong instrument using the Stock-Yogo weak ID test critical values (Stock and Yogo, 2005). This indicates a strong excluded instrument. In our two-stage analysis, however, we split the sample into two categories to allow the estimates for the covariates to differ by regime type. This also allows us to test whether there is heterogeneity in how strongly the excluded instrument correlates with the endogenous variable in each sub-sample. Figure B-1 shows the first-stage partial correlation plots for each sub-sample. The F-statistic in the left panel is 49.7 and in the right panel, 14.1 – both above the convention of 10 and the former well above the Stock-Yogo weak ID test critical value of 16. This indicates that while the excluded instrument is more strongly correlated with the endogenous variable in the personalist sub-sample, it is nonetheless still correlated with *Legislature* in both groups of autocracies.

The first three columns of Table B-2 report the results of three models that include country fixed effects in both stages: the full sample; the personalist sub-sample; and the non-personalist sub-sample. Next, to ensure that our results do not rely on the inclusion of the unit fixed effects, we re-estimate all three models while dropping the unit effects. Again the main pattern remains.

Identification with the Lewbel approach An approach proposed by Lewbel (2012) identifies a two-equation model by using the presence of heteroskedasticity (or a correlation between residuals and some exogenous covariates) in the “first-stage” linear regression. Identification exploits the fact that covariance between the “first-stage” errors and the exogenous variables (X) is not necessarily zero but rather heteroskedastic. Consider the following two-equation model for our application:

$$\begin{aligned} Expropriation &= \beta_1 X + \gamma_1 Legislature + \xi_i + \tau_t + \epsilon^1 \\ Legislature &= \beta_2 X + \gamma_2 Z + \xi_i + \tau_t + \epsilon^2 \end{aligned}$$

The main outcome variable of interest (*Expropriation*) is a function of covariates (X) and (*Legislature*), which is endogenous (mismeasured). If Z is correlated with legislatures but unre-

Table B-2: *2SLS-IV*

Sample	Country FE (1-3)			No FE (4-6)		
	All (1)	Pers (2)	non-Pers (3)	All (4)	Pers (5)	non-Pers (6)
Legislature	-0.137** (0.05)	0.043 (0.05)	-0.274* (0.11)	-0.084** (0.02)	-0.025 (0.03)	-0.226** (0.06)
GDP per capita (log)	0.019 (0.02)	0.021 (0.02)	0.051** (0.02)	0.002 (0.00)	0.010+ (0.01)	0.002 (0.00)
Population (log)	-0.218** (0.06)	-0.279** (0.07)	0.020 (0.04)	-0.000 (0.00)	-0.001 (0.00)	-0.008* (0.00)
Regime duration (log)	0.018 (0.01)	-0.023 (0.02)	0.046* (0.02)	-0.002 (0.00)	-0.016** (0.01)	0.045** (0.02)
Oil rents per capita (log)	0.015** (0.01)	0.011 (0.01)	0.013* (0.01)	0.009** (0.00)	0.009** (0.00)	0.009** (0.00)
Country FE	Y	Y	Y	N	N	N
Year FE	Y	Y	Y	Y	Y	Y
Observations	2886	1146	1735	2886	1148	1738
F-statistic	71.5	49.7	14.1	254.6	122.4	35.6

lated to *Expropriation*, then Z may be used as an “outside” excluded instrument to generate predicted values of *Legislature*. If, however, the $cov(X, \epsilon_2^2) \neq 0$, the “first stage” residuals can be exploited as an “inside” excluded instrument. Because the heteroskedasticity arises from the “first stage”, this does not threaten inferences from the estimate of γ_1 . In practice, the construction of an “internal,” model-based excluded instrument is the following: (1) calculate the residual from a “first-stage” regression ($\epsilon_{i,t}$); (2) calculate the in-sample deviation from the mean for each independent variable in the first stage regression ($X_{i,t} - \mu_X$); and finally (3) multiply the two: $I = \epsilon_{i,t} \times (X_{i,t} - \mu_X)$. Note that we can construct one “inside” instrument from each of the independent variables in the first stage equation. We refer to these “internal” excluded instruments as “Lewbel” instruments.

This approach not only can increase efficiency by adding excluded instruments that strongly correlate with the endogenous variable but it also allows us to estimate an over-identified equation, which in turn permits a test of the exogeneity of the ‘outside’ instrument (*Inherit*), conditional on the assumption that the “inside” instruments meet the exclusion restriction. When we use this estimator, the estimated coefficient (standard error) for *Legislature* in the personalist sub-sample is 0.028 (0.012) and for the non-personalist sub-sample, -0.058 (0.018). These results are almost identical to those reported in the main ‘naive’ model in the manuscript. Perhaps as importantly, the C-test of exogeneity for *Inherit* in the non-personalist sub-sample is 0.143 with a p-value of 0.706 – which indicates that, conditional on the Lewbel instruments meeting the exclusion restriction, *Inherit* is exogenous in the non-personalist sub-sample.

Robustness tests for All expropriations

2SLS estimates In this section, we report results from two-stage models for expropriations in all sectors, again with *inherited legislature* as the excluded instrument. The dependent variable is a binary indicator of at least one expropriation act in a particular country-year observation. Data

on expropriations are from Hajzler (2012). Because the excluded instrument is the same as the one used to examine oil expropriations, the first stage diagnostics are the same. Importantly, the Kleibergen-Paap Wald F statistic from the first stage equations are all greater than the Stock-Yogo weak ID test critical values. This indicates a strong correlation between *inherited legislature* and *legislature*.

Table B-3 shows that pooling all legislatures together yields a negative and statistically significant estimate for *Legislature* (columns 1 and 3). The even-numbered columns report results from specifications that include an interaction term between *Legislature* and *Personalist*. In these models, the estimate for the influence legislatures in non-personalist regimes is obtained from the estimate for *Legislature* (-0.367 in column 2), while the estimate for legislatures in personalist regimes is obtained from the linear combination of *Legislature* plus *Legislature* \times *Personalist*, reported in the bottom panel (-0.119 in column 2). These tests show that the main pattern remains: legislatures are negatively correlated with expropriation in the sample of all autocracies, with the strongest result for the non-personalist group of regimes.

Table B-3: *2SLS-IV: All expropriations*

	(1)	(2)	(3)	(4)
Legislature	-0.265** (0.09)	-0.367** (0.14)	-0.283** (0.10)	-0.397** (0.15)
Legislature \times Personalist		0.248 (0.17)		0.281 (0.18)
Personalist	-0.157 (0.35)	-0.416 (0.41)	0.428 (0.39)	0.066 (0.48)
GDP pc	0.101** (0.02)	0.101** (0.02)	0.128** (0.03)	0.131** (0.03)
GDP pc \times Personalist	-0.068* (0.03)	-0.081** (0.03)	-0.116** (0.03)	-0.126** (0.03)
Population	-0.157* (0.07)	-0.156* (0.07)	-0.145* (0.07)	-0.145* (0.07)
Population \times Personalist	0.038 (0.02)	0.058* (0.03)	0.021 (0.02)	0.047 (0.03)
Duration	0.015 (0.02)	0.035 (0.03)	0.015 (0.02)	0.038 (0.03)
Duration \times Personalist	0.019 (0.02)	-0.039 (0.04)	0.024 (0.02)	-0.043 (0.04)
Oil rents			-0.007 (0.01)	-0.011 (0.01)
Oil rents \times Personalist			0.028* (0.01)	0.024* (0.01)
$\beta_{Legislature} + \beta_{Legislature \times Pers}$		-0.119 (0.09)		-0.116 (0.10)
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	2948	2948	2886	2886
F-statistic	83.5	20.6	72.3	18.1

Estimates by time period Table B-4 reports one-stage models for the All Expropriations dependent variable, by time period. Again the main pattern persists, though the finding for legislatures in non-personalist regimes is stronger in the post-1989 period than in the pre-1990 period. This suggests that the findings are still relevant for expropriation behavior in the past two decades and not simply a product of the high expropriation period in the 1970s.

Table B-4: *Time period results, All expropriations.*

Coefficient estimates for <i>Legislature</i>	Personalist	Non-Personalist
Pre-1990	-0.003 (0.033)	-0.076 (0.033)
Post-1989	-0.031 (0.030)	-0.157(0.073)

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