Power Struggles and the Natural Resource Curse

Francesco Caselli

Technology and endowments

Two periods, 1 and 2

Per period, Per capita, income flow from resources α (exogenous)

Traditional technology $x_t = \rho_x h_t$, $t = 1, 2$

Industrial technology $y_2 = \rho_y h_2$, $\rho_y - \rho_x > 1$

Accumulation: $h_2 = h_1 + I$, h_1 given

Government revenue: α, $\alpha + \tau *$industrial profits

Politics and preferences

Period 1 government: choose I to max. PV of own income

Period 2: potential coup leader decides whether to attempt a coup or not

Coup succeeds with probability γ

If coup succeeds, coup leader gets all period-2 revenues and former government gets nothing

If coup fails, coup leader gets $-D$ and former government keeps all period-2 revenues

If no coup, potential leader becomes entrepreneur

Coup decision

Expected utility with coup

$$\left[\gamma\alpha - (1-\gamma)\, D\right] N$$

Expected utility without coup

$$(1-\tau)\left(\rho_y - \rho_x\right) h_2 N$$

Coup if and only if

$$\begin{aligned} h_2 &< h^* \equiv \frac{\gamma\alpha - (1-\gamma)\, D}{\rho\,(1-\tau)} \\ \rho &\equiv \rho_y - \rho_x \end{aligned}$$

Government problem

$$\max_{I} \ \alpha - I + Z(\alpha + \tau\rho h_2) + (1 - Z)(1 - \gamma)\alpha,$$

where

$$Z = \begin{cases} 1 \text{ if } h_2 \geq h^* \\ 0 \text{ if } h_2 < h^* \end{cases},$$

subject to

$$h_2 = h_1 + I$$

$$I \leq \alpha$$

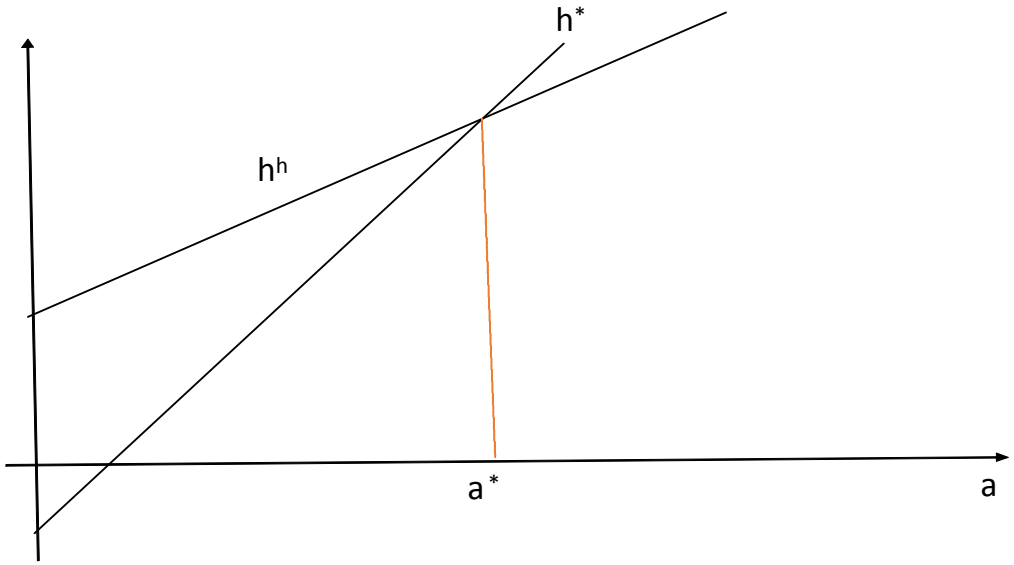
$$h_1, \alpha \quad \text{given}$$

Government decision

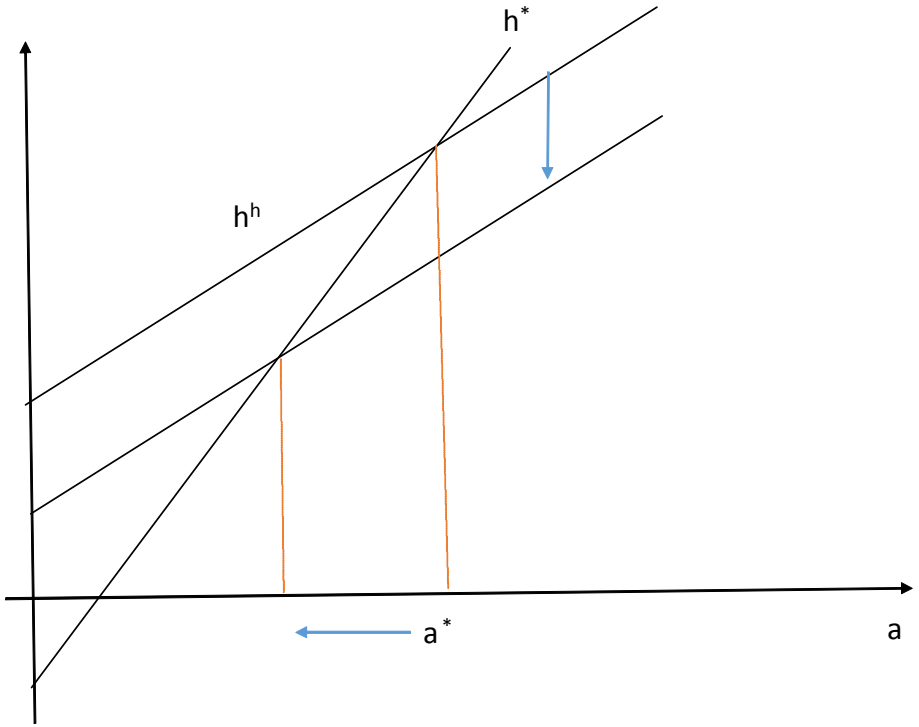
Case 1: $\tau\rho > 1$

Definition: $h^h \equiv \alpha + h_1$

$$I = \begin{cases} \alpha \text{ if } h^h \geq h^* \\ 0 \text{ if } h^h < h^* \end{cases}$$



Parametric Assumption: $\gamma/\left[(1-\tau)\,\rho\right] > 1]$



The Role of h_1

Economic outcomes

Period-2 private citizens' consumption

$$C = \begin{cases} \rho_x (h_1 + \alpha) & \text{if } \alpha \leq \alpha^* \\ \rho_x h_1 & \text{if } \alpha > \alpha^* \end{cases}$$

Period-2 GDP

$$\text{GDP} = \begin{cases} \alpha + \rho_y (h_1 + \alpha) & \text{if } \alpha \leq \alpha^* \\ \alpha + \rho_x h_1 & \text{if } \alpha > \alpha^* \end{cases}$$

Private consumption growth

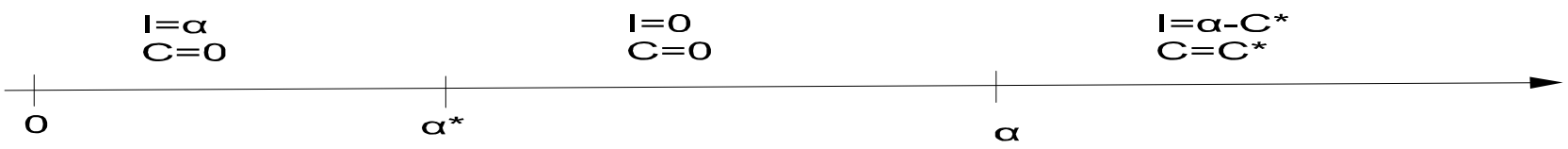
$$\frac{\text{period 2 consumption}}{\text{period 1 consumption}} = \begin{cases} 1 + \frac{\alpha}{\rho_x h_1} & \text{if } \alpha \leq \alpha^* \\ 1 & \text{if } \alpha > \alpha^* \end{cases}$$

$$\frac{\text{period 2 GDP}}{\text{period 1 GDP}} = \begin{cases} \frac{\alpha + \rho_y (h_1 + \alpha)}{\alpha + \rho_x h_1} & \text{if } \alpha \leq \alpha^* \\ 1 & \text{if } \alpha > \alpha^* \end{cases}$$

Endogenous γ

Counterinsurgency spending C :

$$\gamma(C) = \max\left[\gamma_0 - \delta C, 0\right]$$


I=α
C=0
I=0
C=0
I=α-C*
C=C*
0
α*
α

Empirics

$$\text{GDP}_{ct} = \alpha + \beta * \text{Oil Exports}_{ct} + \gamma * \text{Oil Exports}_{ct} * \text{GDP First Discovery}_{c} + \delta_c + \delta_t + \varepsilon_{ct}$$

Table 3

	(1) GDP_t	(2) GDP_t	(3) GDP_t	(4) GDP_t	(5) GDP_t	(6) GDP_t
Oil $Exports_t$	1.760***	0.722*	0.644			
	(0.117)	(0.437)	(0.556)			
Oil $Exports_t$*GDP First Discovery		0.0000917***	0.0000958***			
		(0.0000303)	(0.0000366)			
Oil $Exports_t$*Years since First $Disc_t$			0.000901			
			(0.000922)			
Years since First $Disc_t$			-324.0***			
			(42.41)			
Oil $Exports_{t-1}$				1.767***	0.559	0.500
				(0.158)	(0.468)	(0.600)
Oil $Exports_{t-1}$*GDP First Discovery					0.000104***	0.000107**
					(0.0000351)	(0.0000419)
Oil $Exports_{t-1}$*Years since First $Disc_{t-1}$						0.000738
						(0.000972)
Years since First $Disc_{t-1}$						-314.2***
						(42.83)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	1807	1662	1662	1754	1615	1615

Robust standard errors in parenthesis.
Significance levels: *** p¡0.01, ** p¡0.05, * p¡0.1.

Table 4

	(1) Log GDP$_t$	(2) Log GDP$_t$	(3) Log GDP$_t$	(4) Log GDP$_t$	(5) Log GDP$_t$	(6) Log GDP$_t$
Log Oil Exports$_t$	-0.00125	-0.0467**	-0.0254			
	(0.00215)	(0.0196)	(0.0154)			
Log Oil Exports$_t$*Log GDP First Discovery		0.00567**	0.00225			
		(0.00235)	(0.00172)			
Log Oil Exports$_t$*Years since First Disc$_t$			0.0000786***			
			(0.0000122)			
Years since First Disc$_t$			-0.0590***			
			(0.00219)			
Log Oil Exports$_{t-1}$				-0.00221	-0.0548***	-0.0345**
				(0.00217)	(0.0194)	(0.0156)
Log Oil Exports$_{t-1}$*GDP First Discovery					0.00657***	0.00327*
					(0.00233)	(0.00174)
Log Oil Exports$_{t-1}$*Years since First Disc$_{t-1}$						0.0000772***
						(0.0000120)
Years since First Disc$_{t-1}$						-0.0571***
						(0.00232)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
N	1794	1649	1649	1741	1602	1602

Robust standard errors in parenthesis.
Significance levels: *** p¡0.01, ** p¡0.05, * p¡0.1.

$$\text{GDP}_{ct} = \alpha + \gamma * \text{Oil Price}_t * \text{GDP First Discovery}_c + \delta_c + \delta_t + \varepsilon_{ct}$$

Table7

Dep. Variable: GDP_t	(1) OLS	(2) OLS
Oil $Price_t$*GDP First Discovery	0.00976***	
	(0.00199)	
Adj. Oil $Price_t$*GDP First Discovery		0.00712***
		(0.00148)
Country FE	Yes	Yes
Year FE	Yes	Yes
N	3388	3388

Robust standard errors in parenthesis.
Significance levels: *** p¡0.01, ** p¡0.05, * p¡0.1.

Table 8

Dep. Variable: Log GDP$_t$	(1) OLS	(2) OLS
Oil Price$_t$*Log GDP First Discovery	0.00212***	
	(0.000346)	
Adj. Oil Price$_t$*Log GDP First Discovery		0.00112***
		(0.000317)
Country FE	Yes	Yes
Year FE	Yes	Yes
N	3388	3388

Robust standard errors in parenthesis.
Significance levels: *** p¡0.01, ** p¡0.05, * p¡0.1.