

# The Perils of Unearned Foreign Income: Aid, remittances, and government survival

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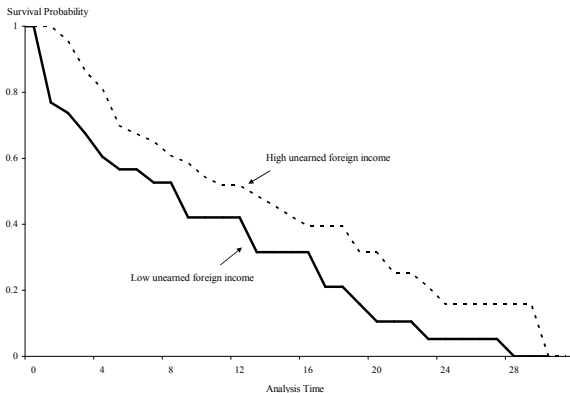
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# Empirical question

- What is the impact of aid and remittance flows on government survival?
- Does this differ by regime type?

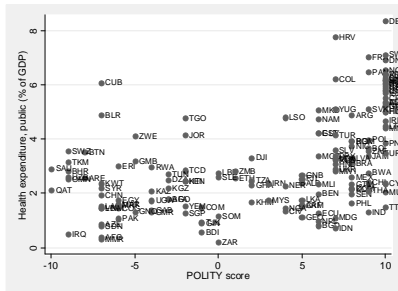
# Empirical trend

Unearned foreign income extends government survival in autocracies



# Conceptual framework

- “Comparative” provision of public and private goods
- Leaders (governments) in *non-democracies* tend to spend less on public services than do democracies because it better ensures their political survival (Bueno de Mesquita et al 2003, Acemoglu & Robinson 2006)
- Mechanism: Divert resources to patronage



# Hypotheses

- How can aid and remittances be harnessed by governments?  
**Not obvious**
- Two effects (from formal model):
  - **Income:** Some aid is spent on patronage
  - **Substitution:** Remittances allow government to shift resources from welfare goods to patronage
  - Both effects increasing in level of autocracy
- **Hypothesis: Survival increasing in interaction of autocracy with unearned foreign income**

# Empirical strategy

- Binary model:

$$\text{Turnover}_{it} = \beta_0 + \beta_1 A_{it} + \beta_2 F_{it} + \beta_3 (A_{it} \times F_{it}) + \beta_4 X_{it} + \beta_5 \kappa_{it} + \beta_6 D_i + \beta_7 D_t + \epsilon_{i,t}$$

- $\text{Turnover}_{it} = 1$  if government in country  $i$  loses office in year  $t$ ; and zero otherwise
- $A_{it}$  is inverse of POLITY index. Lies on  $[0,1]$
- *Increasing* measure of institutionalized autocracy
- **Expect  $\beta_3 < 0$**
- Data: WDI, POLITY, Database of Political Institutions
- Sample: 96 developing countries, 1974-2004

# Baseline results

Dependent variable	Turnover			
	(1)	(2)	(3)	(4)
Aid and remittances (% GDP)	0 [0.002]	0.003 [0.003]		
Autocracy		-0.411 [0.277]	-0.364 [0.214]*	-0.711 [0.280]**
Autocracy* Aid and remittances (% GDP)		<b>-0.031</b> <b>[0.018]*</b>		
Aid (% GDP)			0.001 [0.002]	
Autocracy*Aid (% GDP)			-0.012 [0.012]	
Remittances (% GDP)				0.008 [0.009]
Autocracy*Remittances (% GDP)				-0.081 [0.072]
Time-varying characteristics	Y	Y	Y	Y
Duration dummies	Y	Y	Y	Y
Country dummies	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y
Number of observations	1639	1639	2032	1966
Pseudo-R squared	0.22	0.24	0.22	0.22

Notes: Probit model of government turnover. Standard errors, clustered by government reported in brackets.

\*=significant at 10%, \*\* = significant at 5%, \*\*\* = significant at 1%.

Coefficient estimates are marginal effects, calculated at the means of each covariate.

Time-varying characteristics: growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, inflation, and dummy variables for finite term and incidence of civil war.

# Robustness

- **Alternate dependent variables**

- Unearned foreign income received in autocracies lowers the probability of internal political discontent and the probability of regime collapse

- **Endogeneity**

- Natural experiment: Oil price driven driven aid and remittances flows from the Persian Gulf
- Identification:

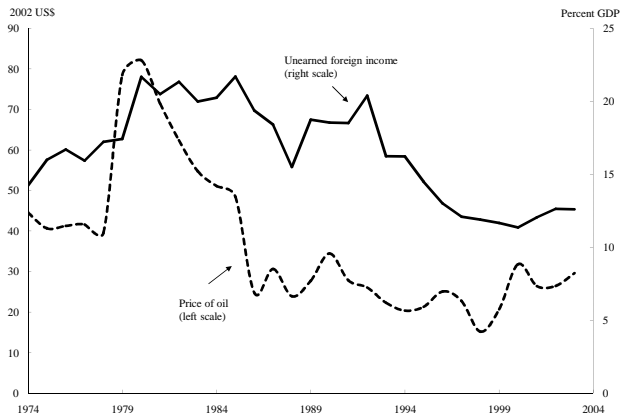
$$\textit{First Stage} : F_{it} = \alpha + \beta \textit{MUSLIM}_i \times p(\textit{oil})_t + \gamma X_{it} + \delta Y_t + \kappa D_i + \epsilon_{it}$$

$$\textit{Second Stage} : \textit{TURNOVER}_{it} = a + b \times F_{it} + c \times X_{it} + d \times Y_t + f \times D_i + u_{it}$$



# Exogenous variation

Price of oil and unearned foreign income (% GDP) in poor, non-oil producing Muslim countries



# IV results

Dependent variable	Aid and remittances		Turnover	
	OLS	Probit	IV Probit	IV Probit
Method of estimation	(1)	(2)	(3)	(4)
Muslim*p(oil)	<b>0.097</b> [0.024]***			
Aid and remittances (% GDP)		0.02 [0.017]	<b>-0.046</b> [0.022]**	
Aid and remittances (% GDP) x Autocracy				<b>-0.294</b> [0.135]**
Time varying controls	Y	Y	Y	Y
Duration time polynomial	Y	Y	Y	Y
Year dummies	Y	Y	Y	Y
Continent dummies	Y	Y	Y	Y
Number of observations	1639	316	1639	1639
Pseudo R-squared (or Log Likelihood)	0.53	0.17	-6209.8	-3981.2
F-stat on excluded instrument	17			

Notes: Robust standard errors, clustered by government are reported in brackets.

\* = significant at 10%; \*\* = significant at 5%; \*\*\* = significant at 1%.

Column 1 is the first stage OLS model where the dependent variable is aid and remittances (% GDP).

Column 2 is a probit model of government turnover restricted to observations from poor, non-oil producing Muslim countries. Columns 3 and 4 report the second stage IV estimates for unearned foreign income.

# Regime type and government expenditures

- Unearned foreign income permits governments in autocracies to reduce expenditures on welfare goods
- Correlation between aid share of unearned foreign income and government expenditures:

	Government transfers (% expenditures)	Public health expenditures (% GDP)
Autocracies	-0.09	-0.10
Democracies	0.46	0.03

Notes: Sample restricted to poor, non-oil producing countries.

# Income and substitution effects

- Government's optimal welfare goods provision

$$g^* = (t - \alpha)y + \omega - \alpha(\omega + R)$$

Dependent variable	Government transfers (% expenditures)	
	(1)	(2)
Aid (% GDP)	<b>0.491</b> [0.275]*	<b>1.259</b> [0.465]***
Autocracy* Aid and remittances (% GDP)	<b>-5.474</b> [1.211]***	<b>-7.105</b> [3.708]*
Log GDP per capita (1995 US\$)	3.982 [2.385]*	5.074 [2.428]*
Aid and remittances (% GDP)		-0.624 [0.468]
Autocracy		49.129 [68.584]
Constant	4.005 [17.768]	-5.565 [20.423]
No. observations	315	315
R-squared	0.2	0.24

Notes: OLS regressions. Sample restricted to poor, non-oil producing countries.

Robust standard errors, clustered by government are reported in brackets.

\* = significant at 10%; \*\* = significant at 5%; \*\*\* = significant at 1%.

# Conclusion

- Governments in *autocracies* can harness aid and remittances to survive longer
- Achieved through greater patronage
- Robust cross-country evidence
  
- Other research:
- Strategies of survival (repression, corruption), FDI and political stability

# Alternate dependent variables

Dependent variable	High political discontent	Regime collapse
	(1)	(2)
Aid and remittances (% GDP)	0.007 [0.004]	0.003 [0.001]***
Autocracy	0.323 [0.190]*	-0.24 [0.085]***
Autocracy x Aid and remittances (% GDP)	<b>-0.035</b> <b>[0.017]**</b>	<b>-0.025</b> <b>[0.007]***</b>
Time-varying characteristics	Y	Y
Year dummies	Y	Y
Country dummies	Y	Y
Number of observations	1260	1545
Pseudo-R squared	0.31	0.12

Notes: Probit model of political instability. Standard errors, clustered by government reported in brackets.  
 \* = significant at 10%; \*\* = significant at 5%; \*\*\* = significant at 1%.

Coefficient estimates are marginal effects, calculated at the means of each covariate. Both regressions control for the following time-varying characteristics: indicator for finite term, growth in GDP per capita (% annual), log GDP per capita (1995 US\$), log population, inflation, dummy variables for the incidence of civil war. The regression in column 2 also controls for 2 additional covariates: the incidence of low and high internal discontent.

# Model: Overview

- Mechanism:
  - A fraction of aid finances patronage
  - Remittances permit government to reduce welfare goods provision in favor of higher government patronage
  - Combined effect is larger in more autocratic polities
- Setup:
  - 2 actors: Representative household, Government
  - 2 goods: Private consumption ( $c, k$ ), welfare goods ( $p, g$ )
  - Solution strategy: Stackelberg game

# Household problem

- Representative household with log utility function
- Household optimization:

$$\begin{aligned} \text{Max } U(c, p, g) &= \lambda \log(c) + (1 - \lambda) \log(p + g) \\ \text{subject to } c + p &= (1 - t)y + R \end{aligned}$$

- Household's optimal provision of welfare goods:

$$p^* = (1 - \lambda)[(1 - t)y + R] - \lambda g$$

- Increasing in remittances (R), decreasing in government's welfare good provision (g), increasing in income (y)



# Government problem

- Government provides welfare ( $g$ ) and patronage ( $k$ ) goods. It must provide some welfare goods to stay in power, but wants to keep as much for itself as possible
- Government optimization:

$$\phi(k, U) = \alpha \log(k) + (1 - \alpha)U(c, p, g)$$

$$\text{subject to } ty + \omega = k + g$$

where  $0 < \alpha < 1$ , measures institutionalized autocracy,  $\omega$  is foreign aid,  $ty$  is tax revenue.

# Solution strategy

- Assume households cannot coordinate to play Nash bargaining with government.
- Stackelberg game.
- Government moves first.

# Equilibrium

- Government's optimal welfare goods provision

$$g^* = (t - \alpha)y + (1 - \alpha)\omega - \alpha R$$

- Political survival

$$k^* = \alpha(y + \omega + R)$$

Does not depend on tax-rate, but increasing in revenue base ( $y$ ), aid, and remittances.

$k$  increasing as institutionalized autocracy ( $\alpha$ ) increases