

DEMOCRATIZATION AND REAL EXCHANGE RATES

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INTRODUCTION & MOTIVATION

- ▶ Revival of interest in determinants of real exchange rates
 - Financial and currency crises since 2007
 - 'Unfair' exchange rates & disequilibrium in financial markets
 - e.g. China

- ▶ Previous studies primarily focus on economic variables
 - Terms of trade, net foreign assets, real interest rates etc.

- ▶ Political variables have hardly been considered so far
 - Political decision-makers are able to systematically undervalue their currency
 - e.g. expansionary monetary policy, fixed exchange rates etc.
 - Does democratization influence the real exchange rate?

PREVIOUS LITERATURE

- ▶ Purchasing power parity theory (see Taylor & Taylor 2004)
 - Nominal exchange rate should be equal to the ratio of aggregate price levels
 - Real exchange rate should be constant over time at the 'fair' value (or at least mean-reverting)
 - Positive effect of GDP p.c. on real exchange rates (Bergstrand 1991)

- ▶ Trade-related impact factors
 - Most studies use (panel) cointegration methods
 - Productivity growth and oil prices (MacDonald 1998)
 - Trade balance (Lane & Milesi-Ferretti 2002) and net foreign assets (Faruquee 1995)
 - Openness (Candelon et al. 2007)

PREVIOUS LITERATURE

- ▶ Democratic peace theory: democracies do not fight one another (Doyle 1983)
 - institutional constraints
 - democratic norms and culture

- ▶ Relation between democracy and trade
 - Economic interdependence (Frankel & Romer 1999)
 - Democracies trade more (Bliss & Russett 1998)
 - Liberalizing trade agreements (Mansfield, Milner & Rosendorff 2002)

HYPOTHESIS

- ▶ Relation between democracy and real exchange rates
 - Democratic politicians have to consider preferences of their voters
 - Autocratic leaders do not depend on voters' preferences
 - Central banks tend to be less independent in autocracies (Bagheri/Habibi 1998)
 - Autocratic (less democratic) states rather tend to undervalue their currency to boost exports

- ▶ **Hypothesis:** Democratization leads to an appreciation of the real exchange rate

DATA

- ▶ Treatment is a significant change towards democratization
 - Positive jump of at least 3 points in the Polity 2 index within 3 years
 - Exclusion of the treatment if a country's index decreases in the following three years
 - Index provided by the Polity IV Project
- ▶ Outcome variable is the change of the real effective exchange rate (REER) by IFS
 - Nominal effective exchange rate adjusted for relative changes in consumer prices
 - Measure of a currency against a weighted average of several foreign currencies
 - Five year period prior to and after the treatment
 - Data set covers a period from 1985 to 2002
- ▶ Matching variables proposed in previous literature on the determinants of democratization
 - e.g. Muller (1995), Barro (1999), Papaioannou and Siourounis (2008)

DESCRIPTIVE STATISTICS

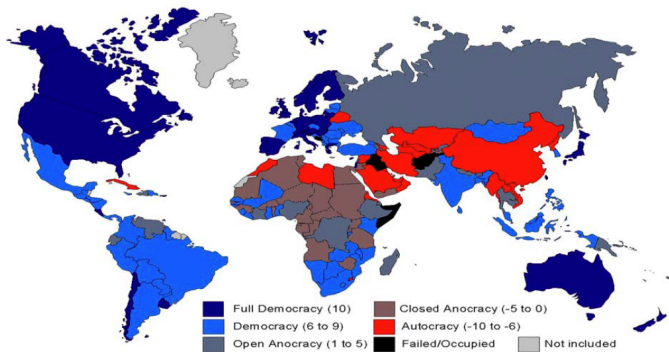


FIGURE : democracy distribution

(Source: Global Report 2009)

DESCRIPTIVE STATISTICS

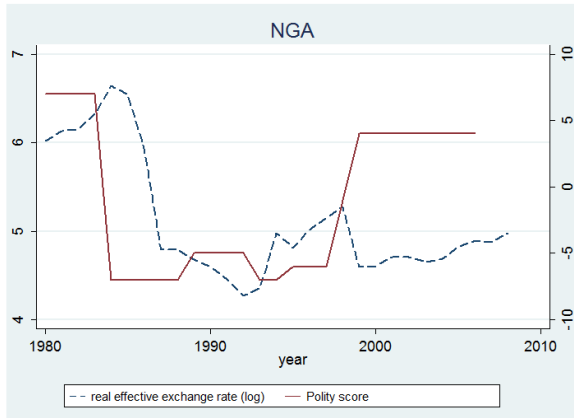


FIGURE : Abacha

DESCRIPTIVE STATISTICS

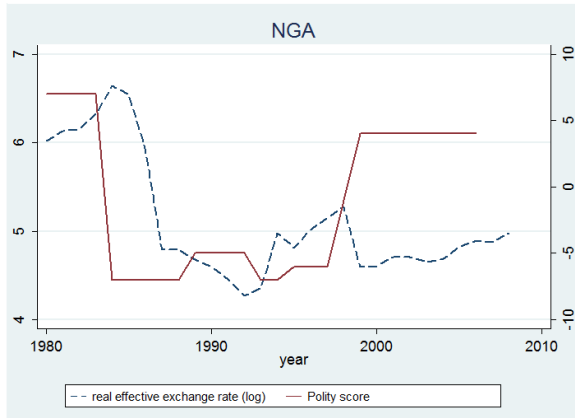


FIGURE : Abdulsalami

SPECIFICATION

- ▶ Estimation of an average treatment effect of democratization on the real exchange rate
- ▶ Difference-in-difference and matching estimation (MDID) proposed by Heckman et. al.(1997)
- ▶ Setup allows for to test for differences in pre to post treatment changes
- ▶ Also allows to control for unobserved and time-invariant heterogeneity across
- ▶ To determine the appropriate control group we use propensity score matching

SPECIFICATION CTD.

- ▶ The treatment variable d is '1' if a country is treated, else '0'
- ▶ The potential outcome y_{it} observed for a country is

$$y_{it} = (1 - d_{it})y_{it}^{(0)} + d_{it}y_{it}^{(1)}$$

- ▶ The propensity score given a set of characteristics X is

$$p(x_{it}) = \Phi(\mathbf{x}'_{i,t-1}\beta)$$

SPECIFICATION CTD.

- Formally, the ATT is defined as

$$ATT = E(y_{it}^{(1)} - y_{it}^{(0)} | d_{it} = 1)$$

- The average treatment combined with the DID estimator yields to

$$ATT = E[y_{it}^{(1)} | d_{it} = 1, p(x_{it})] - E[y_{it}^{(0)} | d_{it} = 0, p(x_{it})] = E[\tilde{y}_{it}^{(1)} - \tilde{y}_{it}^{(0)} | p(x_{it})]$$

SUMMARY STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
Democratizing countries					
Δ REER	128	0.070	0.269	-0.174	-1.719
Polity 2 (1980)	128	-5.031	5.026	-9	7
Polity 2	128	3.156	4.720	-6	10
log GDP per capita (1975)	128	6.888	1.235	4.645	9.014
log Oil production	128	1.829	2.304	0	7.722
Oil exporter status	128	0.102	0.303	0	1
log Oil production * exporter status	128	0.705	2.120	0	7.722
Leader Change	128	0.281	0.451	0	1
Non-democratizing countries					
Δ REER	1,000	0.022	0.128	-0.194	2.252
Polity 2 (1980)	1,000	2.225	7.978	-9	10
Polity 2	1,000	4.645	6.853	-9	10
log GDP per capita (1975)	1,000	8.104	1.644	4.645	10.505
log Oil production	1,000	2.624	2.808	0	9.102
Oil exporter status	1,000	0.059	0.236	0	1
log Oil production * exporter status	1,000	0.362	1.470	0	7.665
Leader Change	1,000	0.184	0.388	0	1

ESTIMATION RESULTS PROBIT

Variable	Full sample	Excluding non sustainable	Consecutive democratization
Polity 2 (1980)	-0.064*** (0.011)	-0.056*** (0.012)	-0.061*** (0.014)
Polity 2	0.081*** (0.015)	0.091*** (0.016)	0.093*** (0.018)
GDP per capita (1975)	-0.163** (0.079)	-0.226*** (0.084)	-0.211** (0.094)
Oil production	-0.011 (0.041)	-0.020 (0.043)	-0.015 (0.049)
Oil exporter status	-3.348** (1.645)	-3.313** (1.644)	-3.511* (1.907)
Oil production * exporter status	0.625*** (0.244)	0.637*** (0.247)	0.669** (0.286)
Leader change	0.325** (0.153)	0.204 (0.164)	0.442** (0.176)
Time effects ^a	41.95***	41.95***	38.33***
Regional effects ^b	27.91***	28.53***	114.62***
McFadden's-R ²	0.31	0.33	0.34
Observations	1,128	1,059	1,029

Notes: Parameter estimates are reported. The dependent variable *democratization* equals one if a country increases its polity 2 index by a minimum of 3 points over a time period of 3 years and zero otherwise. Parameter estimates of the constant are not reported. Robust standard in parentheses. *, **, *** denote 10%, 5% and 1% significance levels, respectively. ^a Tests for joint significance are based on F-tests with 17, 17 and 17 degrees of freedom, respectively. ^b Tests for joint significance are based on chi²-tests with 6 degrees of freedom.

RESULTS ATT

Baseline results for real effective exchange rates (REERs)

	ATT	Std. Err.
Full sample (n=125, 3 off support)		
Nearest Neighbour	0.061**	(0.028)
Neighbour 3	0.062**	(0.026)
Neighbour 5	0.059**	(0.026)
Kernel	0.058**	(0.026)
Excluding non sustainable (n=113, 1 off support)		
Nearest Neighbour	0.048	(0.032)
Neighbour 3	0.051*	(0.030)
Neighbour 5	0.055*	(0.030)
Kernel	0.060**	(0.029)
Consecutive democratization (n=84)		
Nearest Neighbour	0.068*	(0.036)
Neighbour 3	0.075**	(0.034)
Neighbour 5	0.073**	(0.033)
Kernel	0.064*	(0.033)

Notes: The dependent variable *democratization* equals one if a country increases its 3 polity 2 index by a minimum of points over a time period of 3 years and zero otherwise. Bootstrapped standard errors with 500 replications reported. *, **, *** denote 10%, 5% and 1% significance levels, respectively.

ROBUSTNESS

Robustness analysis for alternative definitions of democratization

	Full sample	Excluding non sustainable	Consecutive democratization
Robustness 1: One point increase in polity 2 during three years			
Nearest Neighbour	0.032* (0.019)	0.051** (0.021)	0.046** (0.022)
Nearest Neighbour 3	0.027 (0.018)	0.048** (0.019)	0.047** (0.021)
Nearest Neighbour 5	0.032* (0.017)	0.046** (0.018)	0.042** (0.020)
Kernel	0.041*** (0.015)	0.044*** (0.017)	0.050*** (0.019)
Robustness 2: Four points increase in polity 2 during three years			
Nearest Neighbour	0.078** (0.035)	0.092** (0.041)	0.066 (0.044)
Nearest Neighbour 3	0.068** (0.033)	0.076* (0.039)	0.078* (0.043)
Nearest Neighbour 5	0.070** (0.032)	0.076** (0.039)	0.077** (0.042)
Kernel	0.069** (0.031)	0.076** (0.038)	0.075* (0.043)

Notes: Bootstrapped standard errors with 500 replications reported. *, **, *** denote 10%, 5% and 1% significance levels, respectively.

ROBUSTNESS CTD.

Robustness analysis for alternative democracy index

Robustness 3: Alternative democratization classification, Cheibub et al. (2010)				
Nearest Neighbour	0.084	-	-	-
	(0.056)	-	-	-
Nearest Neighbour 3	0.092*	-	-	-
	(0.055)	-	-	-
Nearest Neighbour 5	0.090*	-	-	-
	(0.055)	-	-	-
Kernel	0.090*	-	-	-
	(0.054)	-	-	-

Notes: Bootstrapped standard errors with 500 replications reported. *, **, *** denote 10%, 5% and 1% significance levels, respectively.

RESULTS

- ▶ 125 treated observations on common support
- ▶ All treatments show a significant positive impact on the outcome variable
- ▶ Considerable treatment effect of around 6%
- ▶ Democratization leads to an appreciation of the real exchange rate