

DO REGULATORY REFORMS' SEQUENCES MATTER FOR TELECOM SECTOR PERFORMANCES?

EVIDENCES FROM MENA COUNTRIES

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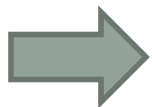
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The importance of the study

How to liberalize, privatize, re-regulate?
When?

- No single way to proceed, especially in developing countries
- Pre-requisite for high economic growth.
- Need to take into account MENA specificities
- A still neglected issue in MENA research agenda



Need to empirically investigate

Contribution of the paper

- Empirical contribution:
 - No econometric study for MENA countries.

 - The only reference studies: Wallsten (2003) and Fink et al. (2003).

 - Original data collection
 - ITU
 - Different regulators and operators' websites
 - World development Indicators
 - The center for systemic Peace.
 - The CIA World Factbook.



Research question

- Does the sequence, by which different reforms are introduced in the telecom market for MENA countries, matter for the sector performance?
 1. What is the optimal sequence, if any?
 2. Under which institutional circumstances?

Regulation-privatization sequence

- Spiller (1993), Shapiro and Willig (1990) and Wallsten (2003).

Hypothesis 1.

- A separate regulatory authority in place prior to the privatization process:
-  penetration and productivity
-  prices

Regulation-competition sequence

- Laffont (2005), Laffont and Tirole (2001), Estache *et al.*, (2006)

Hypothesis 2.

- A separate regulatory authority established before allowing the entry of new operators:
 - ↗ penetration
 - ↘ prices

MENA specificities

- Institutional, economic and political factors matter and have an effect on the adoption of different reforms: Levy and Spiller (1994), Ros (1999)...

Hypothesis 3.	IRA	Privatization	Competition
Level of democracy Giuliano et al. (2012), Giavazzi and Tabellini (2005), Djankov and Amin (2009) and Quinn (2000)	(+)	(+)	(+)
Legal origin: civil law country La Porta et al. (2008), Gual and Trillas (2006), La Porta et al. (2006), (La Porta et al. 2002), Djankov et al. (2001), Botero et al. (2004).	-----	(-)	(-)
Total natural resources rents (as % of GDP) Goldstein, (2002)	(-)	(-)	(-)
Independence year from colonization	(-)	-----	-----

Empirical strategy (1)

- Empirical analysis on MENA countries (17 developing countries) from 1995-2010 to explore the impacts of:

1. Regulation-Privatization sequence
2. Regulation-Competition sequence

on the telecom sector performance in the voice market for fixed and mobile segments.

- We instrument our endogenous reforms variables by using political, economic and institutional variables.

Empirical strategy (2)

- We use IV-2SLS to estimate

$$Y_{it} = \beta_0 + \beta_1 R_{it} + \beta_2 X_{it} + Z_t + u_{it}$$

Where:

Y_{it} is one of the four performance indicators;

R_{it} are reforms and reforms sequences dummies variables;

X_{it} is a vector of control variables (GDP per capita and Population density);

Z_t are year dummies;

u_{it} are the disturbance term.

Data (1)

Y

Access

Productivity

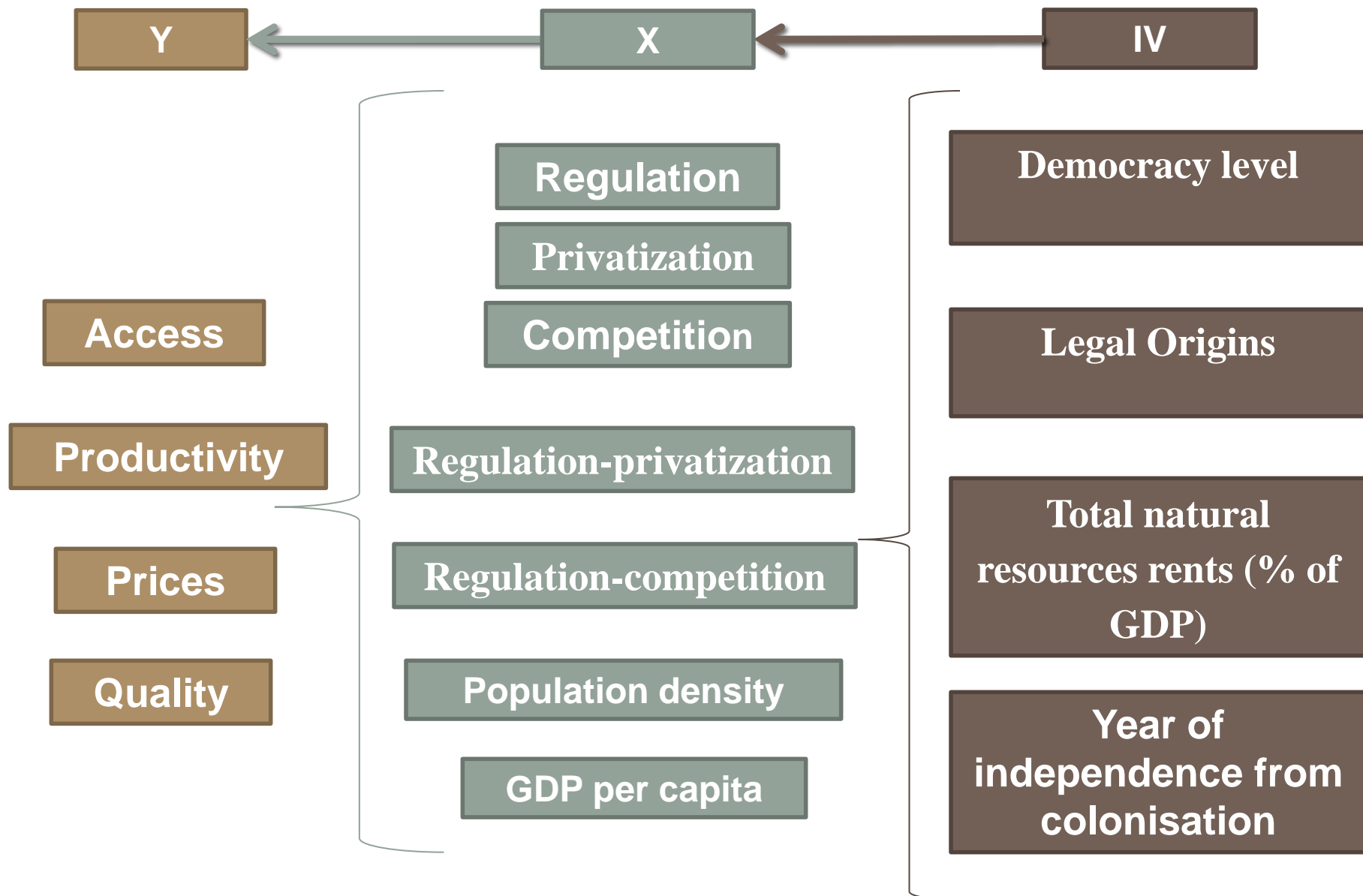
Prices

Quality

DATA (2)

Dependent Variable	Description
Access	Log (the number of fixed lines in a country for each 100 inhabitants)
	Log (the number of mobile lines in a country for each 100 inhabitants)
Productivity	Log {the number of telephone subscribers in fixed and mobile telephone per employee (Total full-time Telecommunication employee)}
Prices	Fixed-Price basket
	Mobile-Price basket
Quality	Log (the waiting list for fixed lines)
	Log (Faults per 100 fixed lines per year)
	Log (the percent of fixed telephone faults cleared by next working day)

Data (1)



First stage estimation for reform variables

Parameters' estimates for reform variables using OLS estimation

VARIABLES

	Establishment of a separate regulator	Privatization of the incumbent operator	Competition index
Polity IV indicator	-0.387* (0.23)	-1.518*** (0.14)	-0.633* (0.34)
Civil law	--- ---	-0.229*** (0.07)	-0.165* (0.09)
Total natural resources rents of (% of GDP)	-0.015*** (0.002)	-0.0199*** (0.003)	-0.006 (0.004)
Independence year	-0.007*** (0.002)	--- ---	--- ---
Population density in log	-0.02 (0.027)	-0.011 (0.02)	0.048 (0.03)
GDP per capita in constant 2000 US\$ (PPP) in log	0.066* (0.04)	0.129*** (0.03)	-0.05 (0.05)
Observations	218	250	250
R-squared	0.37	0.46	0.43

Robust standard errors in parentheses, including year dummies (not reported), *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Our results are robust when we eliminate the control variables (Population density and GDP per capita) from the

	ACCESS	PRODUCTIVITY	AFFORDABILITY			QUALITY			
VARIABLES	Fixed per 100 inhabitants (in log)	Total number of Lines per employee (in log)	Monthly subscription for residential telephone service	Price of a 3-minute fixed telephone local call (peak rate)	Price of a 3-minute fixed telephone local call (off-peak rate)	Fixed Price basket	Waiting list for fixed lines	Faults per 100 fixed lines per year	Percent of fixed telephone faults cleared by next working day
Separate regulator	-2.35 (2.15)	3.25** (1.45)	-1.014 (1.31)	-2.01*** (0.69)	-2.06*** (0.74)	-0.597 (1.09)	9.58** (3.97)	- 10.3*** (3.78)	0.587*** (0.21)
Privatization_incumbent	-0.996** (0.47)	-0.265 (0.55)	0.24 (0.32)	0.64 (0.39)	0.78* (0.45)	0.23 (0.31)	-4.34** (1.897)	1.859 (1.67)	0.029 (0.12)
Regulation-Privatization	5.326* (2.84)	-2.51 (1.696)	2.12 (1.32)	2.135*** (0.71)	2.51*** (0.7)	1.40 (0.98)	-21.4*** (7.44)	7.61* (4.01)	-0.53*** (0.199)
Population density	0.197*** (0.07)	0.054 (0.12)	-0.05 (0.08)	-0.34** (0.14)	-0.302** (0.15)	-0.02 (0.07)	0.77 (0.74)	-0.84 (0.59)	0.088** (0.04)
GDP per capita	0.96*** (0.12)	0.22* (0.11)	0.27*** (0.09)	0.599*** (0.159)	0.62*** (0.175)	0.19*** (0.07)	-0.60 (0.51)	- 1.007** (0.46)	0.015 (0.04)
Observations	218	173	184	164	153	171	105	134	98

Robust standard errors in parentheses. Estimations include year dummies (coefficients estimates not reported). Variables used as instruments are: "The Polity IV democracy indicator", "Legal origin dummy variable", "total natural resources rents (% of GDP)" and "independence year from colonization". *** p<0.01, ** p<0.05, * p<0.1.

	ACCESS		PRODUCTIVITY	AFFORDABILITY						QUALITY			
VARIABLES	Fixed per 100 inhabitants	Mobile per 100 inhabitants	Total number of Lines per employee	Monthly subscription for residential telephone service	Price of a 3-minute fixed telephone local call (peak rate)	Price of a 3-minute fixed telephone local call (off-peak rate)	Fixed-Price Basket	Mobile cellular prepaid price of 3minute local call (peak)	Mobile cellular prepaid price of 3minute local call (off-peak)	Mobile Price basket	Waiting list for fixed lines	Faults per 100 fixed lines per year	Percent of fixed telephone faults cleared by next working day
Separate regulator	2.1***	0.569	1.678***	-0.69	0.144	0.449	0.333	0.775	0.45	0.59	-2.735	-4.9***	0.25
	(0.59)	(0.45)	(0.37)	(1.34)	(0.37)	(0.42)	(0.85)	(0.52)	(0.48)	(0.53)	(4.13)	(0.93)	(0.19)
Competition Index	-0.97	0.87	0.005	-1.22**	-2.45***	-2.6***	-1.5***	-1.8**	-1.39**	-1.6**	6.46	-0.64	0.226*
	(0.98)	(0.65)	(0.35)	(0.55)	(0.45)	(0.53)	(0.36)	(0.69)	(0.54)	(0.69)	(4.13)	(0.81)	(0.13)
Regulation-Competition	-2.62***	0.14	-1.07*	3.71*	4.37***	4.91***	1.82	0.26	0.087	0.125	-17.8***	4.7***	-0.26***
	(0.80)	(0.70)	(0.59)	(2.13)	(0.91)	(1.06)	(1.41)	(0.89)	(0.795)	(0.87)	(6.71)	(1.06)	(0.09)
Population density	0.235**	0.195**	0.05	0.006	0.059	0.17	0.06	0.3***	0.26***	0.3***	-1.128*	0.006	0.013
	(0.11)	(0.09)	(0.06)	(0.09)	(0.099)	(0.12)	(0.05)	(0.09)	(0.07)	(0.08)	(0.63)	(0.197)	(0.03)
GDP per capita	0.65***	1.015***	0.225***	0.22***	-0.088	-0.23	0.14***	-0.12	-0.15**	-0.11	-1.48***	-0.61**	0.07***
	(0.08)	(0.08)	(0.05)	(0.06)	(0.16)	(0.19)	(0.05)	(0.08)	(0.07)	(0.08)	(0.33)	(0.26)	(0.02)
	218	213	173	184	164	153	171	175	165	163	105	134	98

Robust standard errors in parentheses. Estimations include year dummies (coefficients estimates not reported). Variables used as instruments are: "The Polity IV democracy indicator", "Legal origin dummy variable", "total natural resources rents (% of GDP)" and "independence year from colonization". *** p<0.01, ** p<0.05, * p<0.1.

Conclusion

- The prior establishment of IRA matters, BUT it should be appropriately designed and with the relevant agenda !!
- The importance of institutions to set the market rules:
 - The incumbent: a high barrier for new entrants by preventing interconnection, by capturing the regulator in place...
- Policy makers in MENA developing countries:
 - Setting rules for the regulatory framework is a priority,
 - The efficiency of the “independent” regulatory institutions.

THANK YOU FOR YOUR ATTENTION