

The impact of privatization of fixed-line telecommunications - Empirical evidence on worldwide differences

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Outline

- 1 Motivation
- 2 What have we learned from the impact of privatization?
- 3 Data and methodology
- 4 Results and conclusion

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Should privatization apply equally across countries?

Privatization implemented across countries

- OECD and, with support of International Financial Institutions (IFIs), LAC and Africa, have engaged on privatization

However, investors' incentives differ across countries

- On the supply side..
 - ..population distribution
 - ..geographical location
 - ..initial status of the sector
- On the demand side..
 - ..wealth of the population
 - ..natural resource endowments
 - ..geographical location
 - ..initial status of the sector

One step further

What do we know?

- From demand and supply (Bates et al., 2008)
 - On population distribution:
OECD > LAC >> Africa RR - Africa RSC >> Africa RSL
 - On wealth of the population:
OECD >> LAC >> Africa RR - Africa RSC >> Africa RRL
 - On natural resource endowments:
LAC - Africa RR >> Africa RSC - Africa RSL
 - On geographical location:
LAC - Africa RSC >> Africa RSL
 - On initial status of the operator:
OECD >> LAC >> Africa
- From the empirical literature
 - Ambiguous impact, aggregated data sets

Privatization outcomes across regions

Objective

- Estimate the extent to which the privatization of the fixed-line telecommunications incumbent has translated into an improvement of the outcomes of the industry
- Identify differences between OECD, Latin America and The Caribbean, Africa resource rich, Africa resource scarce coastal and Africa resource scarce landlocked

Hypotheses

- Privatization outcomes are dependent on..
 - ..the initial status in the sector
 - ..wealth and natural resource endowments
 - ..geographical location and population distribution

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The empirical literature

Impact of telecommunications reforms

- Positive impact of (aggregated) competition and a separate regulator on outcomes (Fink et al., 2002, Gutierrez, 2003, Ros, 1999, 2003, Li and Xu, 2004)
- However, an ambiguous impact of privatization
 - Positive in LAC (Banerjee and Ros, 2000, Gutierrez, 2003, Ros, 2003), in non-OECD (Fink et al., 2002) and worldwide (Li and Xu, 2004)
 - Negative worldwide (Ros, 1999, McNary, 2001).
 - Privatization improves its outcomes when coupled with a separate regulator in Africa and LAC (Wallsten, 2001), in LAC (Gutierrez, 2003, Ros, 2003) and worldwide (Fink et al., 2002)
- We argue that differences are due to data sets excessively aggregated or narrow that fail to capture regional disparities

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Data

Samples

A TSCS data set for 1985-2007 on

- OECD: 23 countries
- Non-OECD: 85 countries (25 from LAC, 43 from Africa, 6 from Middle East and 11 from Asia and Pacific)
 - LAC: 25 countries
 - Africa: 43 countries
 - Africa resource rich: 15 countries
 - Africa resource scarce coastal: 16 countries
 - Africa resource scarce landlocked: 13 countries

Variables and sources (I)

Telecommunications outcomes

Variable	Source(s)
OUTPUT	
• Mainline penetration	-ITU
• Cellular subscription	-ITU
EFFICIENCY	
• Mainlines per employee	-ITU
PRICE	
• Monthly subscription to fixed	-ITU
• Price of cellular	-ITU

Variables and sources (II)

Telecommunications reforms

Variable	Source(s)
<ul style="list-style-type: none"> Privatization 	<ul style="list-style-type: none"> -Various authors (Ros, 1999, 2003, Bortolotti et al., 2001, McNary, 2001, Li and Xu, 2004, Fink et al., 2002). -ITU World Telecommunications Regulatory database. -Operators and regulators websites. -Clark et al. (2004). -Private Participation in Infrastructure (PPI) Project World Bank database. -IPANeT Privatization Transactions database (World Bank).

Variables and sources (III)

Telecommunications reforms

Variable	Source(s)
<ul style="list-style-type: none"> • Competition in cellular 	<ul style="list-style-type: none"> -Various authors (Ros, 1999, 2003, Bortolotti et al., 2001, McNary, 2001, Li and Xu, 2004, Fink et al., 2002). -Trends in Telecommunication Reform 1999: Convergence and Regulation. ITU. -ITU World Telecommunications Regulatory database. -Operators and regulatory authorities websites. -Clark et al. (2004). -http://www.gsmworld.com.
<ul style="list-style-type: none"> • Creation of a regulatory agency 	<ul style="list-style-type: none"> -Trends in Telecommunication Reform 1999: Convergence and Regulation. ITU. -ITU World Telecommunications Regulatory database.

Variables and sources (IV)

Political and risk indices

Variable	Source(s)
• Democratic accountability	-ICRG risk ratings
• Political risk	-Idem
• Financial risk	-Idem
• Economic risk	-Idem

Variables and sources (V)

Other variables

Variable	Source(s)
• Rural population	-World Bank Indicators
• GDP per capita	-World Bank Indicators
• Africa resource rich	-Bates et al. (2008)
• Africa resource scarce coastal	-Idem
• Africa resource scarce landlocked	-Idem

Preliminary analysis (I)

On supply and demand factors

Descriptive statistics

	<i>gdp</i>	<i>rural</i>	<i>e_risk</i>	<i>f_risk</i>	<i>p_risk</i>	<i>demo</i>	<i>reg</i>	<i>comp_cel</i>
OECD	23,253.8	25.2	39.7	41.9	66.1	5.7	0.53	0.59
N-OECD	2,135.6	55.4	31.4	30.6	57.1	3.2	0.39	0.46
LAC	3,488.0	38.6	31.2	31.5	60.3	3.8	0.45	0.44
Africa	978.2	65.1	30.4	28.7	54.7	2.9	0.38	0.43
-RR	1,362.3	56.9	32.0	28.7	54.3	2.8	0.28	0.37
-RSC	1,216.8	60.7	30.0	30.8	58.5	3.2	0.44	0.52
-RSL	225.1	80.1	28.0	25.9	50.3	2.5	0.41	0.40

Preliminary analysis (II)

Privatization and outcomes

Descriptive statistics

	<i>priva</i>	<i>ml</i>	<i>cel</i>	<i>eff</i>	<i>p_res</i>	<i>p_cel</i>
OECD	0.6	49.9	35.3	181.8	19.9	1.3
Non-OECD	0.3	6.1	7.6	66.7	8.2	0.8
LAC	0.4	11.4	11.0	102.7	8.4	1.1
Africa	0.3	2.5	4.8	40.6	8.3	0.8
-RR	0.3	2.2	5.5	40.1	6.5	0.8
-RSC	0.3	4.3	6.9	51.1	7.9	0.7
-RSL	0.1	0.51	1.2	25.9	10.4	0.9

Preliminary analysis (III)

Privatization and outcomes

Correlation coefficients

Privatization	<i>ml</i>	<i>cel</i>	<i>eff</i>	<i>p_res</i>	<i>p_cel</i>
OECD	0.08	0.48	0.30	0.07	-0.21
Non-OECD	0.19	0.25	0.20	0.10	-0.03
Latin America and the Caribbean	0.08	0.19	0.18	0.22	-0.03
Africa	0.26	0.35	0.30	0.05	-0.12
Africa resource rich	0.48	0.35	0.45	0.42	-0.17
Africa resource scarce coastal	0.12	0.30	0.11	0.10	-0.04
Africa resource scarce landlocked	0.08	0.33	0.22	0.07	-0.13

Estimations

Continuous dependent variable model

- Random and fixed-effect models (causal effect)
- + time-specific effects when goodness-of-fit improves
 - Captures, among others, the 1995 “Tequila” crisis, the 1997 South-asian crisis, the 1998-1999 financial breakdown, and technological progress (digital systems)
- + dynamics (fixed effects)
 - Differenced-GMM (Arellano and Bover, 1995) for panel data and applied TSCS (Beck and Katz, 2004) outperformed by random and fixed-effect models
- + endogeneity (fixed effects)
 - Differenced-GMM outperformed by random and fixed-effect models

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Results (I)

Impact of privatization on outcomes: Fixed effects

Privatization	<i>ml</i>	<i>cel</i>	<i>eff</i>	<i>p_res</i>	<i>p_cel</i>
OECD	NS	NS	+ (*)	NS	NS
Non-OECD	NS	NS	NS	+ (***)	NS
LAC	NS	NS	NS	NS	NS
Africa	- (***)	+ (***)	- (**)	+ (***)	NS
Africa RR	- (***)	+ (***)	- (***)	+ (*)	NS
Africa RSC	NS	+ (***)	+ (***)	+ (***)	NS
Africa RSL	NS	- (***)	- (**)	NS	NS

Results (II)

Impact of privatization on outcomes: Random effects

Privatization	<i>ml</i>	<i>cel</i>	<i>eff</i>	<i>p_res</i>	<i>p_cel</i>
OECD	NS	NS	+ (***)	NS	NS
Non-OECD	NS	+ (*)	NS	+ (***)	NS
LAC	NS	- (*)	+ (**)	+ (**)	NS
Africa	- (***)	+ (***)	- (***)	+ (***)	NS
Africa RR	- (***)	+ (***)	- (***)	+ (**)	NS
Africa RSC	NS	+ (***)	+ (***)	+ (***)	NS
Africa RSL	NS	- (***)	- (***)	NS	NS

Results (III)

OECD vs non-OECD

Privatization has..

- ..a significant positive effect on labor efficiency in OECD, while a significant positive effect on tariffs in non-OECD
- ..no perceptible effects on network expansion both in OECD and non-OECD

LAC vs Africa: Privatization and tariffs

Privatization is associated with..

- ..increases in tariffs in LAC and in African resource rich and resource scarce coastal countries
- ..no impact on tariffs in Africa resource scarce landlocked countries

Results (IV)

LAC vs Africa: Privatization and labor efficiency

Privatization is associated with..

- ..increases in labor efficiency in Latin America and The Caribbean and African resource scarce coastal countries
- ..decreases in African resource rich and resource scarce landlocked countries

LAC vs Africa: Privatization and cellular sector

Privatization is associated with..

- ..with higher output in cellular penetration in African resource rich and resource scarce coastal countries
- ..lower output in Latin America and The Caribbean and African resource scarce landlocked countries

Conclusion

Investment incentives are crucial

- African resource scarce landlocked and resource rich countries have the worst outlooks in terms of demand and supply factors
-- > worst impacts on outcomes (efficiency and deployment)
- Africa resource scarce coastal and LAC countries are largely governed by trade patterns
-- > mitigated results on outcomes (efficiency vs deployment)
- OECD countries are better off on demand and supply factors
-- > positive impact on outcomes (efficiency)

Should privatization still be encouraged in Africa?

Thank you for your attention