Infrastructure, Reforms, and the Poor in Latin America*

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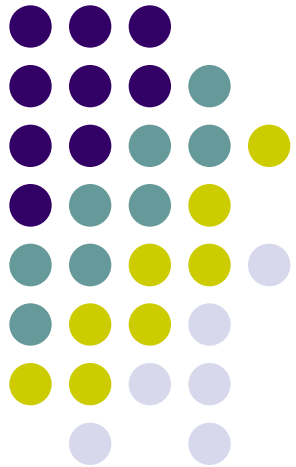
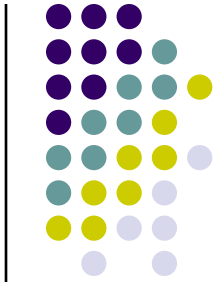


*Draft. Comments welcome

Objective

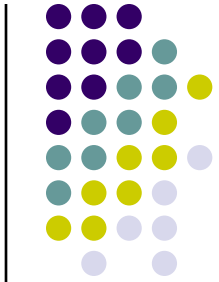
- The main purpose of this paper is to assess if the main infrastructure reforms of the 1990s in Latin America have been effective in terms of price and access
- The paper present also a survey of the evidence available from various analytical sources

Overview 1



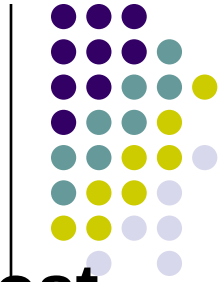
- **1. The paper provides:**
  - **Overview of the access rate to infrastructure services in terms of:**
    - **Average by sectors**
    - **Income distribution: quintiles**
    - **Inequality rates: Gini**
    - **Average by countries**
    - **Rural and urban areas**
  - **Overview of affordability to infrastructure services in terms of:**
    - **Average by sectors**
    - **Rural and urban areas**

Overview 2



- **2. We want to answer two questions: Econometric model**
  - **Which is the effects on access rates and on prices of the policy changes of the 1990s in Latin America? Model 1**
  - **How does Latin America treats its infrastructure? Model 2**
- **3. We present the results with a econometric analysis**
  - **A simple econometric assessment**
  - **Focus on residential users**
  - **The messy data problems**
- **4. Finally some concluding comments**

Motivation



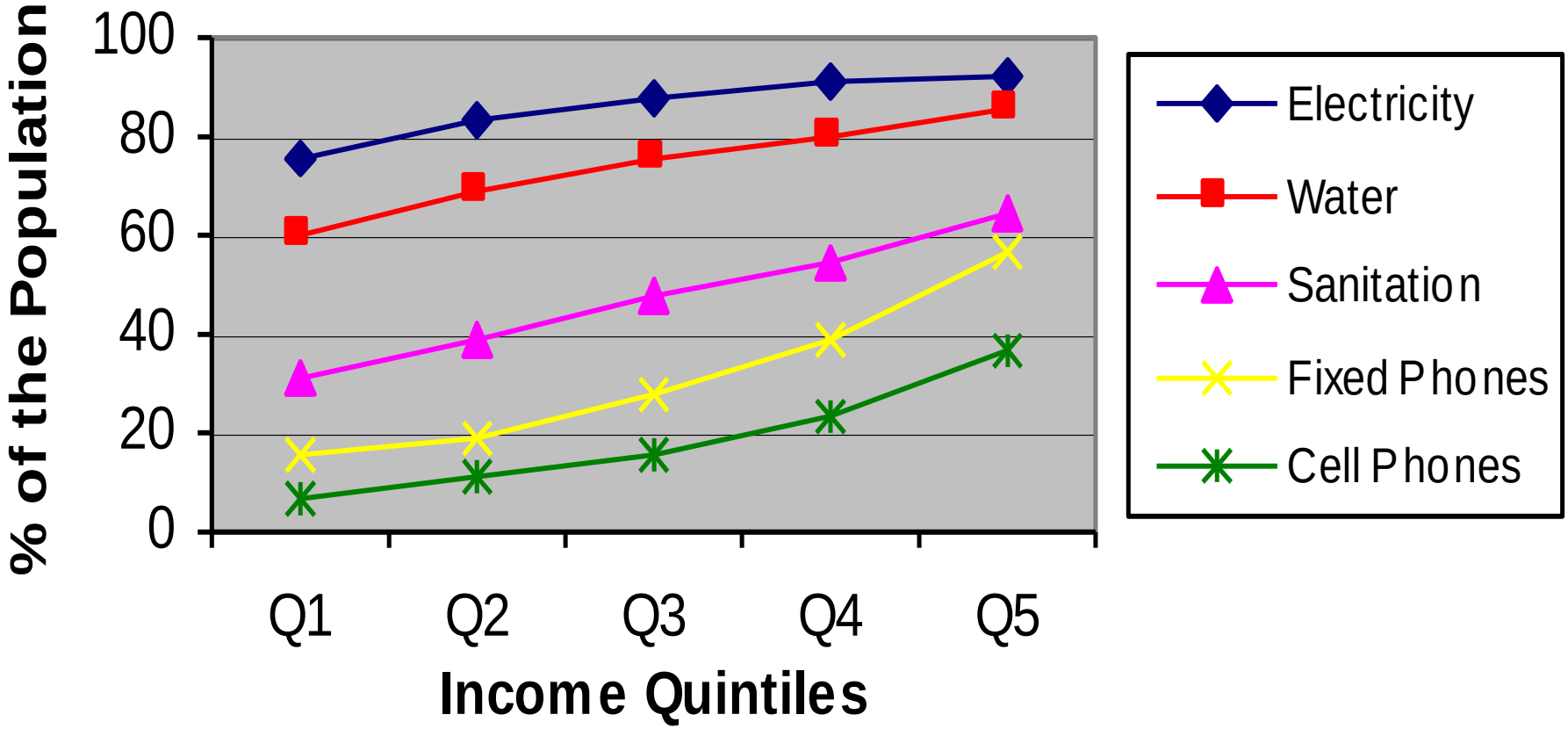
- **Infrastructure services include some of the most politically sensitive public services.**
- **Infrastructure reforms vs. privatization as sources of conflict.**
- **Major policy problems explained by poor incidence of infrastructure reforms.**
- **While there is evidence on the efficiency gains from the 1990s reforms, the incidence on the users, in particular the poor, has received much less detailed attention.**
- **For this reason we try to analyze the impact of the reform.**

Access Rate. Average by sectors

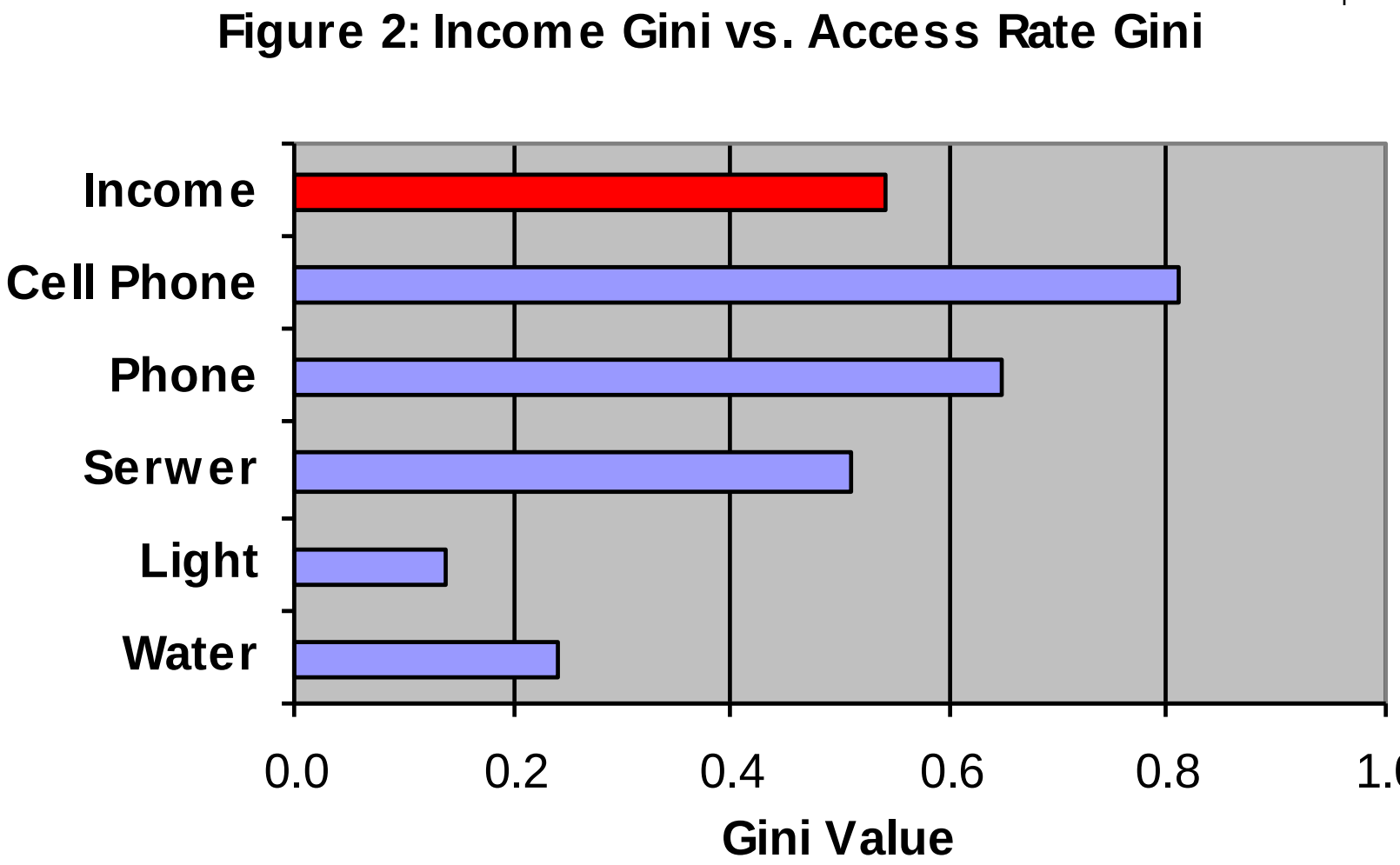
- **Global view of infrastructure coverage gaps in Latin America (% of households without the service)**
  - **+/- 20% in electricity (credible)**
  - **+/- 25% in water (60-70 million people)**
  - **+/- 50% in sanitation (140-150 million people)**
  - **+/- 70% in fixed lines**
  - **+/- 80% in cell phones**
- **Huge variance across countries**
- **Rural areas much worse than urban areas**
- **Problem is not just access: it is also affordability**

Access Rate. Income distribution

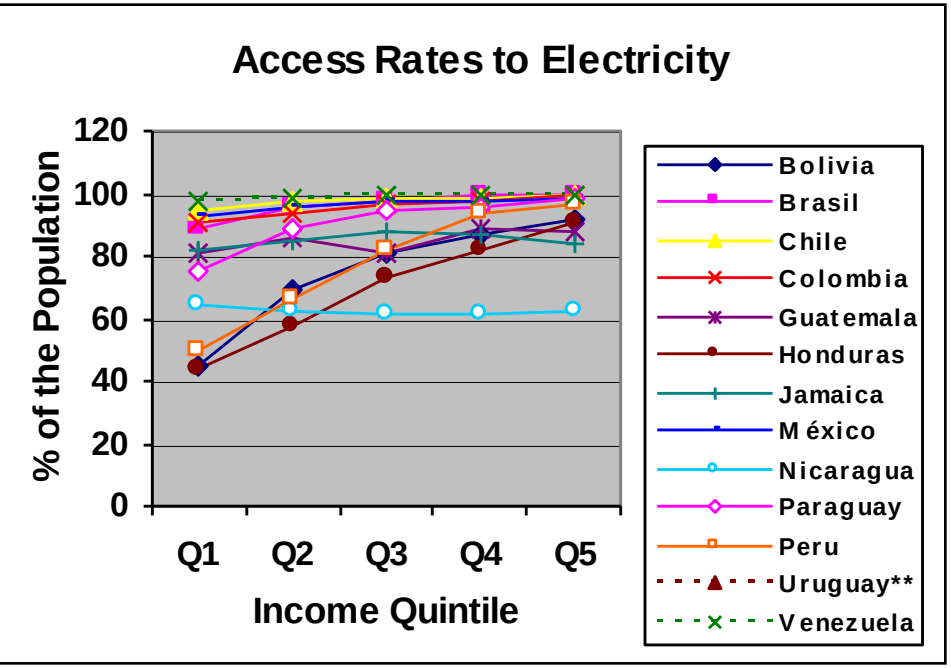
Figure 1: Access Rate Per Quintile Per Sector

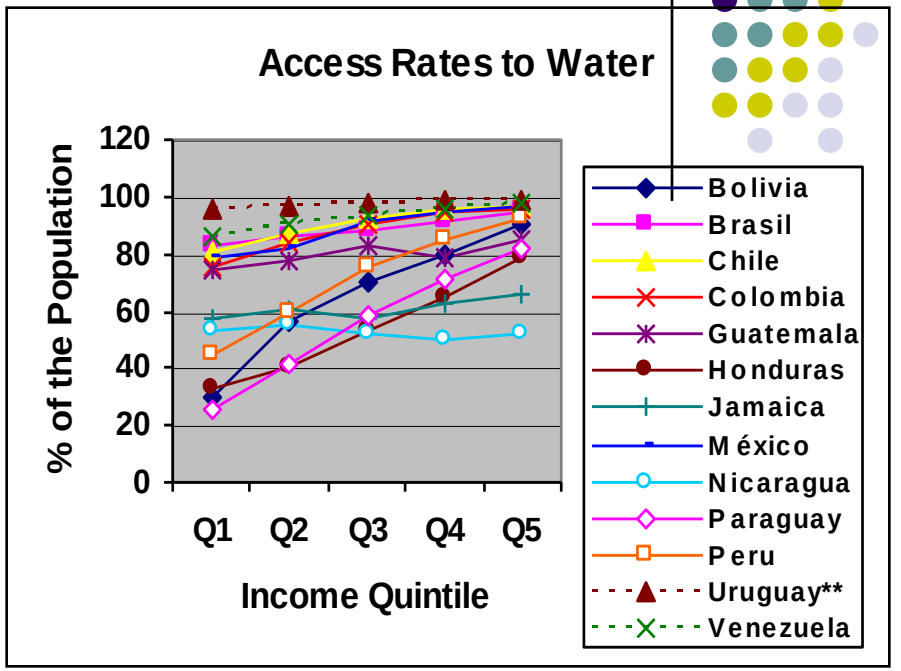


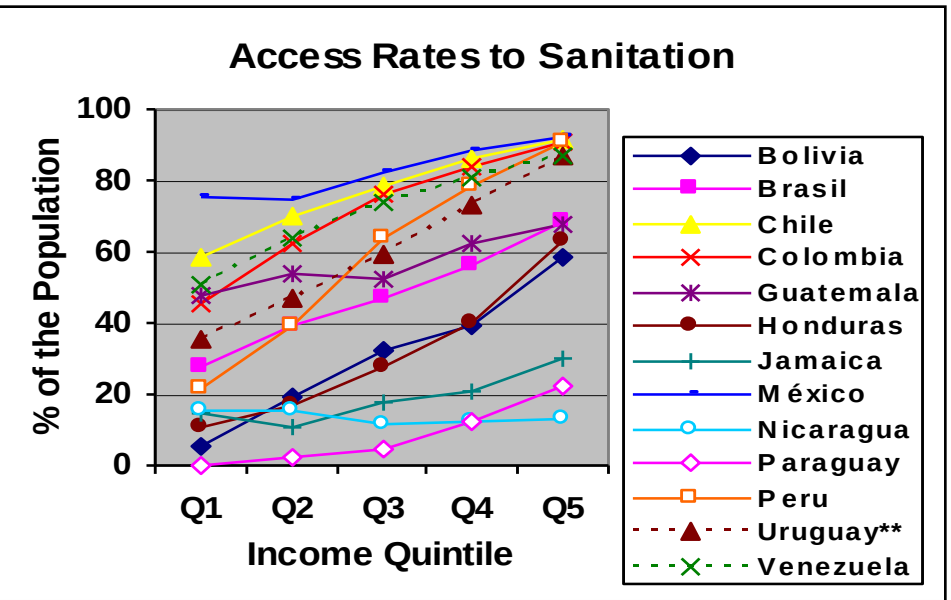
Access Rate. Inequality indices

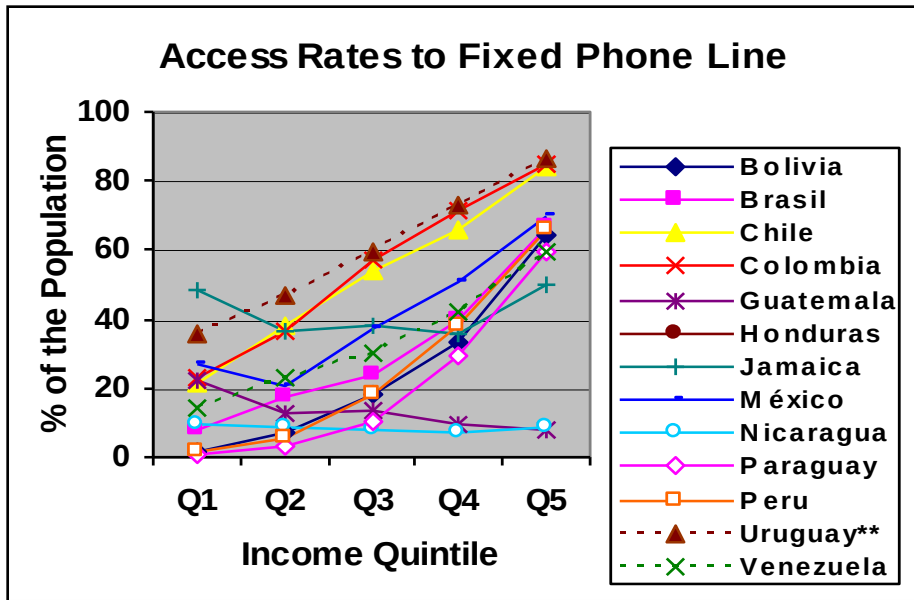


Access Rate. Average by countries



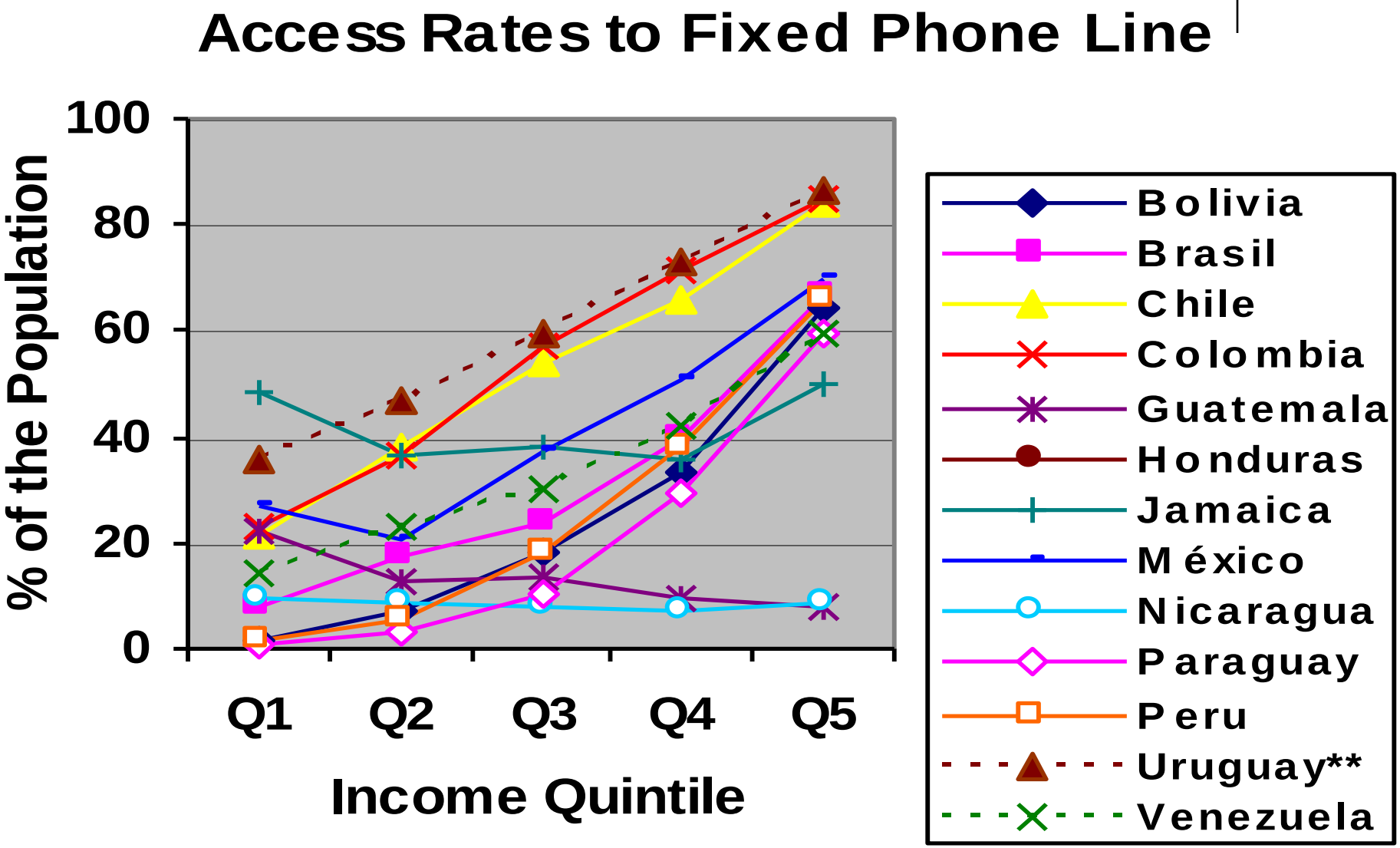






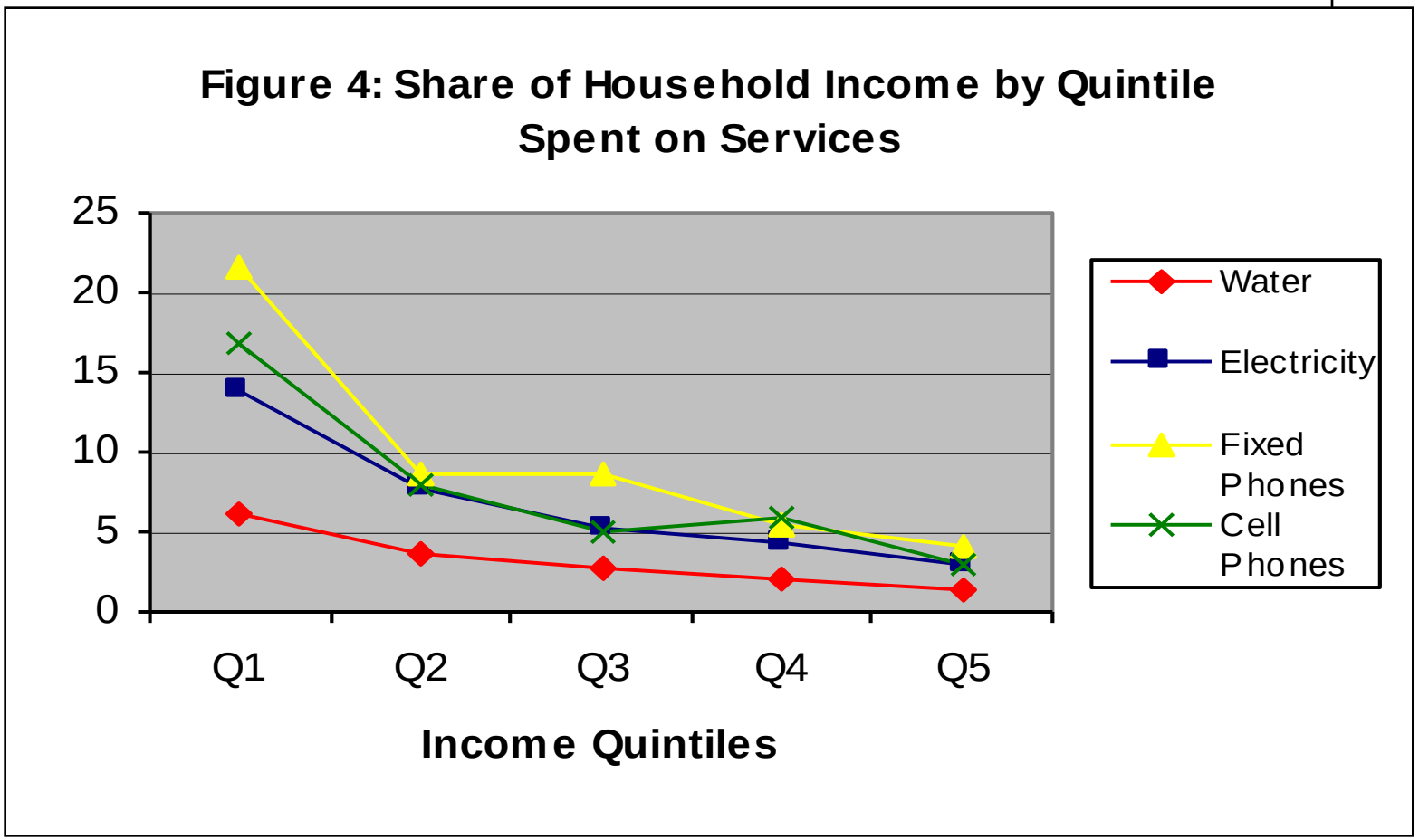
Access Rate. Average by countries.

Focus in telecom

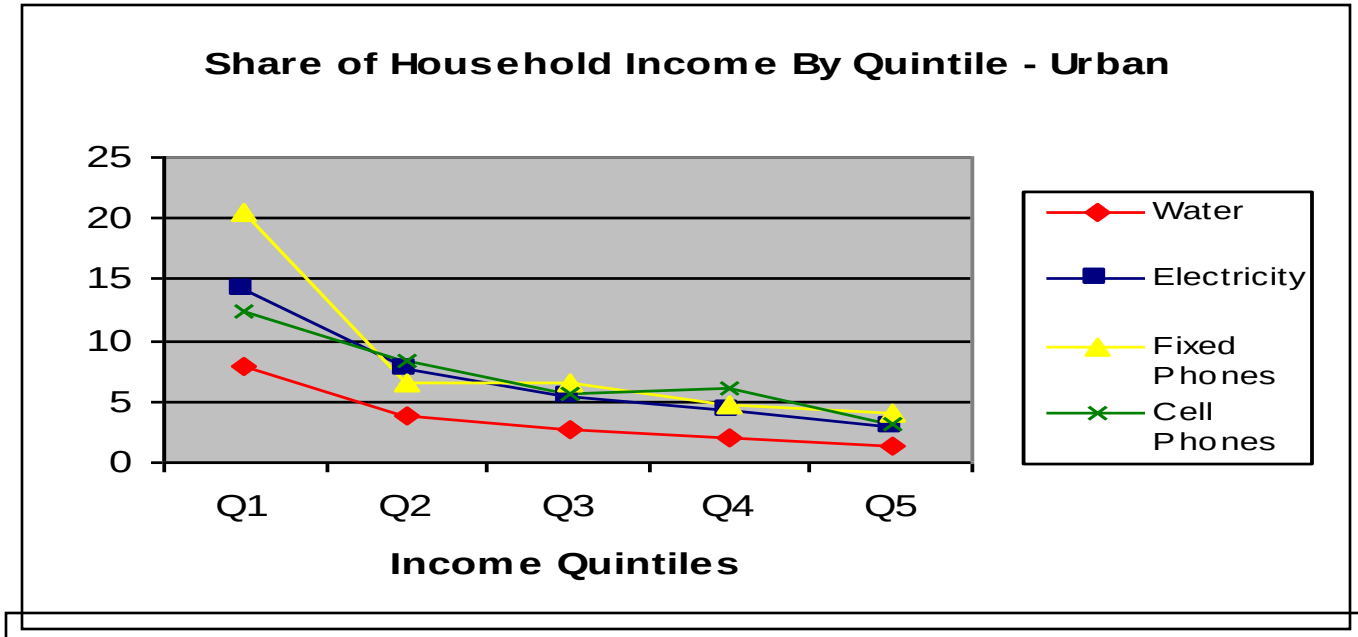


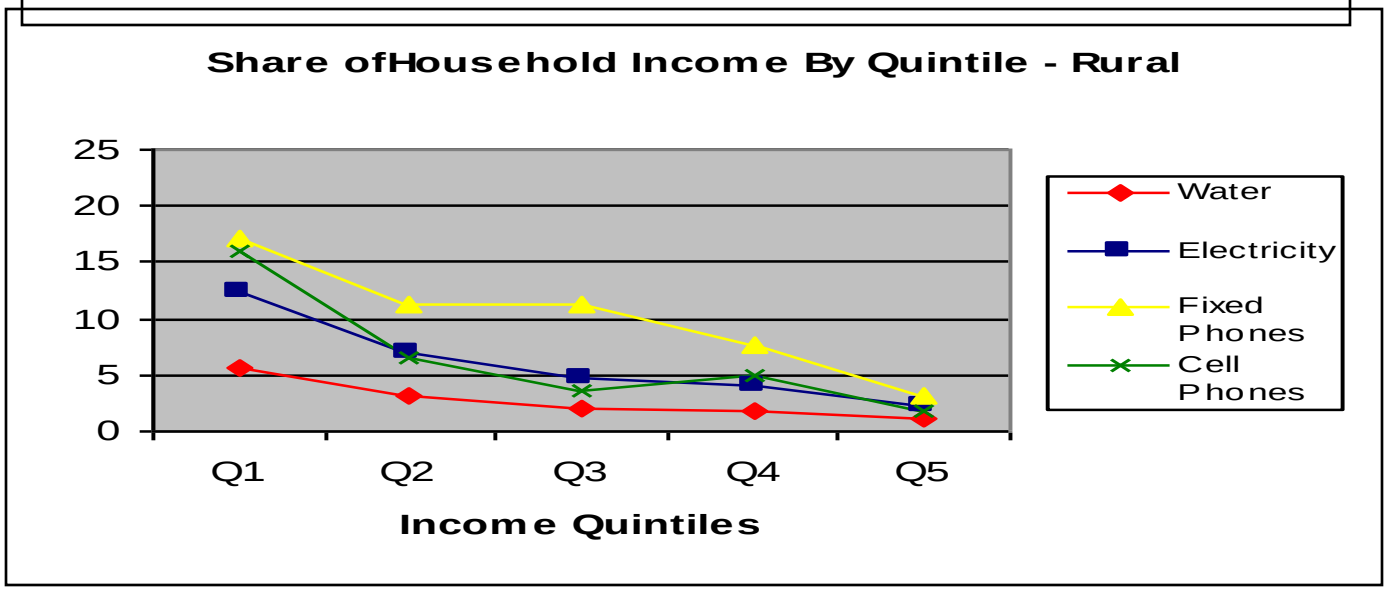
Affordability. Average by sectors

But fair access does not mean fair affordability



Affordability. Rural and urban areas

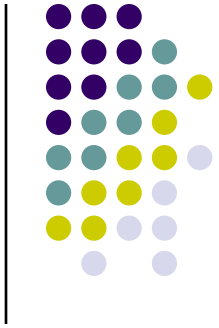




Access vs. Affordability

Services	*Access rate to service*		*Share of expenditures allocated to service*	
	Urban	*Rural*	*Urban*	*Rural*
Electricity	**92.8**	**72.0**	**4.37**	**5.02**
Water	**86.5**	**48.1**	**2.12**	**2.28**
Sanitation	**60.9**	**17.3**	**n.a.**	**n.a.**
Fixed Telecoms	**42.4**	**12.1**	**5.48**	**8.80**
Cell Phones	**21.7**	**6.4**	**4.90**	**5.90**

Econometric Model



- **Model 1:**

  $Y_{it}=b_0+ b_1\ POL_{it} + b_2 CORR_{it} + (POL_{it}* CORR_{it})b_4 + b_5\ X_{it}+ d(t) + d_i + u_{it}$

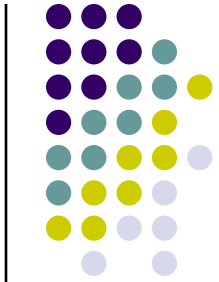
  to see if reform helped

- ***Model 2:***

  $YW_{it}=b_0+b_1\ POLW_{it} + b_2\ (POLW_{it}* LAC_t) + b_3 CORRW_{it} + b_4\ (POLW_{it}* CORRW_{it}) + b_5\ XW_{it} + d(t) + d_i + u_{it}$

- **Where**
  - **Y and YW a performance indicator in Latin America and in the World (i.e. price or quantity/access); do so for electricity, telecoms and water**
  - **POL and POLW: vectors of policy reforms (IRA, PPI and their interaction) respectively in Latin America and in the world**
  - **CORR and CORRW: corruption (from 0 to 1)**
  - **X and XW: additional relevant variables (cst GDP/capita, urbanization, agricultural value added)**
  - **d(t)= linear time trend**
  - **d_i = country fixed effect**
- **Estimate with 1990-2002 (unbalanced panel)**

Variables definition



Access indicators:

- **Electricity use** refers to apparent consumption,.
- **Telephone subscribers:** A proxy for access to telephone that measures the number of wired telephone plus cellular subscribers per 1000 inhabitants.
- **Access to "Improved" water** refers to apparent consumption and water supply technologies.

***Affordability indicators**:*

- **Electricity End User Price (constant 2000 US cents/kWh):** includes transport costs to the consumer; are prices actually paid,.
- **Cost of Local Phone Call:** a proxy for affordability that measures the price of a 3 minute local phone call in constant 2000 US cents. International Telecommunication Union.
- **Monthly Residential/Business Phone Subscription Fee (2000 US$):** recurring fixed charge for a residential/business subscriber to the public switched telephone network.

***Corruption*.**

- The measure of corruption used here is a corruption index published by the International Country Risk Guide.

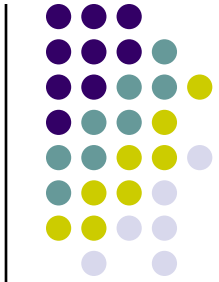
All other variables

- GDP, Agricultural indicators and urbanization rate are from the World Development Indicators of the World Bank.

Impact of reforms on residential users. Marginal and interactive effects. Model 1

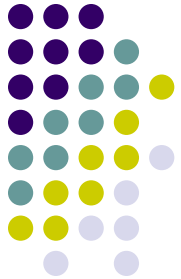
	Fixed Telecoms			Electricity		Water
	Access rate	Avg Tariff	Subsc. cost	Access rate	Avg residtl tariff	Access rate
IRA	-	+	+	+	n.s.	n.s.
PRIV	+	-	+	n.s.	+	+
CORR	-	n.s.	n.s.	n.s.	n.s.	n.s.
IRA*PRIV	n.s.	-	-	+	n.s.	n.s.
IRA*CORR	+	n.s.	-	n.s.	n.s.	n.s.
PRIV*CORR	n.s.	-	n.s.	n.s.	n.s.	n.s.

Lessons from the Latin American Sample. Model 1



- **IRA impacted:**
  - **Access (-) and prices (+) in telecoms**
  - **Access only in electricity (+)**
  - **Nothing on water**
- **PPI impacted:**
  - **Access (+) and prices (-avg/+ fixed) in telecoms**
  - **Prices (+) in electricity**
  - **Access (+) in water**
- **So…prices increased in telecoms and elec.**
- **So…net effect on access is unclear in telecoms but increase in elect. and water**

Is Latin America different in terms of outcomes from reform?. Model 2



- **Not really in water and electricity**
- **Strong differences in telecoms**
  - **Stronger impact in LAC on subscription fees**
  - **IRA and PPI offset each other more in Latin America in terms of access rates**
  - **Corruption hurts more access in Latin America**
  - **IRA reinforces corruption in LAC while it reduce the impact elsewhere..but it is good news because it opened doors!**
- **=> no reason for Latin American poor to be more upset than others…since many don't have access to telecoms**

Concluding comments

- **Main points**
  - **Some evidence of reasons for unhappiness by the poor**
  - **Latin America does not react differently to reforms but it is losing group to its pairs (East Asia) and the rest of the world in terms of access (i.e. investment follows population growth and no more)**
  - **The poor are those who lose the most in access and affordability**
  - **Strong access catching still to do in telecoms**
  - **Rural areas face bigger access problems**
  - **Poor urban areas face affordability problem**
  - **There are policy and technological solutions**
  - **As long as these are not adopted…the poor with be hurt and the politicians will suffer…**