Mobile Phone Diffusion and Corruption in Africa

Liberation Technologies Seminar Series
Stanford University
October 14, 2010

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A woman provides for her family by selling the fish she catches from the river.

She does not own a freezer. So, if she can not find customers quickly enough, the fish putrefy and an entire day of work is wasted.

Then she buys a mobile phone. Customers can now call her to tell her if they plan to buy her fish that day, which she keeps tethered in the river until they arrive.

Now she knows exactly how many fish she is likely to sell that day, enabling her to provision her time and energy more efficiently (LaFraniere, 2005).
A 45-year-old farmer needs to know how much to sell his fruit for on a given day.

Some days he spends hours trudging around in pursuit of a working public pay phone to call the markets and learn how to best price his fruit.

Then the farmer buys a mobile phone.

Now, not only can he quickly learn the best price to maximize that day’s sales, but he can also reliably and instantly connect with customers, brokers, and the market (Ngowi, 2005).
A man wants to open a bank account.

Keeping money in his home makes his family a target for robbery, and it is simply too difficult to amass any sort of savings that way. But, there is no bank branch in his remote village. And, even if there were, he surely could not afford the fees associated with a traditional account.

Then the man gets a mobile phone.

Using his mobile phone and a government-issued identity number, the man calls into a mobile phone banking system. Now it doesn’t matter that there is no bank branch for many miles around. And, with no start-up fees or monthly charges (only a small fee per transaction), the man can now afford to keep his money in a bank account.
Mobile phones are changing daily life in Africa. Anecdotes are already pouring out of the continent, highlighting the many ways that mobile phones have reconfigured and streamlined various daily activities—particularly those in the economic domain.

Map showing the growth of mobile and fixed-line telephone subscribers in Africa from 2001 to 2005. The graph indicates a significant increase in mobile phone subscribers compared to fixed-line subscribers over the period 1999-2007.

Graph:
- Mobile Phone Subscribers (blue line)
- Fixed-Line Subscribers (yellow line)

Data sources:
- GSMworld.com
Corruption is widely defined as behavior that “deviates from the formal duties of a public role because of private-regarding (personal, close family, private clique) pecuniary or status gains; or violates rules against the exercise of certain private-regarding behavior” (Klitgaard, 1988, p. 23).
Most Common Forms of Corruption

- Misappropriation of aid from international donors and NGOs
- Misappropriation of government resources
- Rent-seeking
  - “Bribes” for licenses, basic services, special policy, administrative assistance, etc.
- Clientelist Politics
  - Vote-buying
- Payments and favors to ethnic co-patriots
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Consequences of Corruption

Scholars have identified corruption as contributing to:

- Fiscal deficits
- Income inequality
- Market distortion
- Lack of investment
- Inefficient public services
- Low growth rates
- Authoritarianism
- Political instability
- State collapse
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Corruption “is not markedly worse than in many other parts of the developing and former communist world. . . . Yet corruption in Africa is universally perceived, by external observers and by local reformers alike, as being ‘catastrophic’ in its impact on development” (Szetfel, 2000, p. 427).
TWO BASIC PREMISES TEND TO UNDERGIRD MOST THEORIES REGARDING THE CAUSES OF CORRUPTION IN AFRICA

1. Corruption prefers the shadows and abhors transparency.

2. Individuals weigh the likely benefit to be gained from the corrupt act against the potential cost of committing the act—particularly, the likelihood of detection and punishment.
ELITE MONOPOLY OVER TELEPHONIC COMMUNICATION: INCREASES THE OPPORTUNITIES AVAILABLE TO COMMIT CORRUPT ACTS AND DECREASES THE LIKELIHOOD OF DETECTION AND/OR PUNISHMENT.
DIFFUSION OF TELEPHONIC COMMUNICATION TO MASSES: DECREASES OPPORTUNITIES AVAILABLE TO COMMIT CORRUPT ACTS:
♦ ELITES NO LONGER EXCLUSIVE CHANNEL FOR COMMUNICATION
♦ SPREAD OF MOBILE BANKING SERVICES
DIFFUSION OF TELEPHONIC COMMUNICATION TO MASSES:
INCREASES ABILITY TO DETECT AND/OR PUNISH CORRUPT ACTS:
    ♦ HOTLINE NUMBERS TO REPORT CORRUPTION
    ♦ INVALUABLE TOOL TO JOURNALISTS, REFORMERS, AND VIGILANT AID AGENCIES TO DETECT AND THEN RESPOND TO CORRUPT ACTS
HOWEVER, FOR MOBILE PHONES TO DECREASE CORRUPTION, AT LEAST ONE OF THE FOLLOWING CONDITIONS MUST BE PRESENT:

- Free and Vigilant Press
- Responsible International Aid Agencies
- Sincere Reform Effort
- Public Awareness Campaign
Also, there is a specific sub-set of corrupt acts that will actually increase with spread of mobile phones:

As opposed to the previous examples, in which elites benefit to the detriment of the masses, corrupt acts that directly benefit (at least in the short-term) the masses should increase with the spread of mobile phones.

- e.g. Vote-buying, favors to ethnic co-patriots
NEVERTHELESS, THE NET EFFECT OF THE DIFFUSION OF MOBILE PHONES ON CORRUPTION WILL BE NEGATIVE

The majority of corrupt acts are a result of the collusion between elites to the detriment of the masses. And, long before the diffusion of mobile phones, elites possessed the telephonic resources to orchestrate and commit those acts.
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The majority of corrupt acts are a result of the collusion between elites to the detriment of the masses. And, long before the diffusion of mobile phones, elites possessed the telephonic resources to orchestrate and commit those acts.

Therefore, the diffusion of mobile phones will only minimally enhance the capacity for elites to collude for the purposes of corruption. But, by weakening elites’ monopoly over communication and information, it will decrease the number of opportunities available to commit corrupt acts as well as augment the potential to detect and punish corrupt behavior.
METHODS

Test #1: Fixed effects multiple regression, 1999 to 2006
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Test #1: Fixed effects multiple regression, 1999 to 2006

- Independent Variable: Mobile Phone Subscribers in a Nation (Logged)
  - Log because the number of individuals with access to mobile phones reaches much higher once the friends, family, and neighbors are taken into account.
  - Second, the “value of a telephone network increases with the square of the number of users,” since the n + 1st user benefits from being able to communicate with all n prior users, and each of them gains from being able to communicate with her or him (Daly, 2000, p. 288).
METHODS

Test #1: Fixed effects multiple regression, 1999 to 2006

- Dependent Variable: Transparency International’s Corruption Perceptions Index (CPI)
  - Perceived corruption because reliable and valid “objective” data measuring corruption is difficult (impossible?) to obtain.
  - Second, corruption is culturally variable, and CPI does not force each nation to conform to the same cookie-cutter formula of corruption,
METHODS

Test #1: Fixed effects multiple regression, 1999 to 2006

This model also controls for a handful of factors that are correlated with both mobile phone penetration and corruption.

- GDP per Capita
- Strength of Democracy
- Privatization of Telecommunications Industry
## RESULTS

Test #1: Fixed effects multiple regression, 1999 to 2006

<table>
<thead>
<tr>
<th></th>
<th>Slope</th>
<th>Standard Error</th>
<th>95 % Conf. Interval</th>
<th>Statistical Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log of Mobile Phone Penetration (Base 10, mean = .53, sd=.82)</td>
<td>-.47</td>
<td>0.1</td>
<td>-.68 to -.27</td>
<td>0.001***</td>
</tr>
<tr>
<td>GDP per Capita (US$, mean = 1,512, sd=2,084)</td>
<td>.00004</td>
<td>0.00006</td>
<td>-.0001 to .0001</td>
<td>0.55</td>
</tr>
<tr>
<td>Strength of Democratic Practices (%-tile ranking, mean = 33, sd=21)</td>
<td>-.02</td>
<td>0.006</td>
<td>-.03 to -.006</td>
<td>0.004***</td>
</tr>
<tr>
<td>Regulatory Quality (%-tile ranking, mean = 35, sd=19)</td>
<td>-.004</td>
<td>0.006</td>
<td>-.02 to .008</td>
<td>0.48</td>
</tr>
<tr>
<td>Intercept</td>
<td>9.7</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Number of cases: 219
Adjusted r-square: 92%
RESULTS

Test #1: Fixed effects multiple regression, 1999 to 2006

In substantive terms, Cameroon’s increase in mobile penetration from under 1 subscriber in 1999 to 24 subscribers per 100 individuals in 2006 predicts a decrease in that country’s perceived level of corruption by .7—an 8-percentage point improvement across the CPI scale.
METHODS

Test #2: Individual-level 2SLS-Auxiliary Variable Regression
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Why Namibia?

- Surveys in 1999 and 2006 both included questions with reasonably similar wording.
- Namibia experienced neither too little nor too great mobile phone signal expansion during this period.
- The geographical size of the provinces is not so small as to invite concern regarding the pixel quality of the GSM map.
METHODS

Test #2: Individual-level 2SLS-Auxilliary Variable Regression

- Independent Variable: Degree of Mobile-Signal Coverage across the 13 Namibian Provinces
  - To construct, laid a grid over a 2005 map of mobile phone signal coverage across the Namibian provinces.
    - Addresses endogeneity concerns that the previous regression could not resolve.
    - Also controls for province-specific variables that may be difficult to detect or measure.
METHODS

Test #2: Individual-level 2SLS-Auxilliary Variable Regression

- Dependent Variable: Afrobarometer survey responses to three questions pertaining to individuals’ perception of corruption:
  - Perception of corruption in presidential administration
  - Perception of corruption among local government officials
  - Whether individual paid a bribe in the past year
METHODS

Test #2: Individual-level 2SLS-Auxilliary Variable Regression

By comparing 1999 to 2006, this model tests whether living in a state with a high degree of mobile signal coverage was correlated with a greater decline in perceived corruption in 2006 (when mobile phones were actually present) than in 1999 (when mobile phones were not yet being widely used).
METHODS

Test #2: Individual-level 2SLS-Auxilliary Variable OLS Regression

This analysis also controls for several demographic variables.

- Gender
- Age
- Education
- Employment Status
- Urban /Rural Residency
RESULTS

Test #2: Individual-level 2SLS-Auxilliary Variable Regression

- Change in average perception of presidential corruption
- Change in average perception of local government corruption
- Change in likelihood of paying bribes for water or electricity
MOVING FORWARD

Is there a problem with using perceived corruption measures?
  • Can we do better?

To what degree is some combination of public information campaigns, a vigilant press, sincere reform efforts, and/or responsible aid agencies a necessary requisite?
  • Moreover, what is the relative influence of each of these factors?

Will mobile phones actually increase the incidence of specific types of corrupt acts?
  • Particularly vote-buying and kinship demands?

Is this effect time-sensitive?