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Transparency and Accountability in Bolivia: Does Voice Matter?

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1. INTRODUCTION

The scope and determinants of corruption have been poorly studied in Bolivia. Although public theft, patronage, clientelism and nepotism have been routinely denounced in government policy statements and cited in international donor reports, little hard evidence has pointed to the costs or effects of corrupt public practice. The recent wave of state reforms that has swept through the region suggests the importance of “getting institutions right”, by changing the way in which the public policy is designed, implemented and monitored (Burki and Perry 1998; Graham and Naim 1998; Picciotto and Wiesner 1998). In the Bolivian case, reformers have placed decentralization and citizen participation at the heart of the policy reform agenda (Burki et al. 1998; Peterson 1997; Campbell 1997). Over the past five years, the framework for social service delivery has witnessed a radical overhaul designed to increase citizen voice and heighten public accountability. Despite these ambitious efforts, public sector performance is still perceived as being widely heterogeneous and subject to particularistic interests (Gray-Molina and Molina 1997, Gray-Molina 1997). How can the spotty record of “success” and “failure” observed in the field be accounted for?

In this study we analyze the institutional factors that affect public accountability and corruption by focusing on the incentive structure faced by providers and users of health services in Bolivia. The Bolivian Popular Participation and Administrative Decentralization reforms, implemented since 1994, provide a unique scenario by which to study the comparative effects of institutional incentives over policy performance. We analyze the effectiveness of hierarchical controls and voice/exit factors in deterring public corruption at the municipal level. Three questions are analyzed through a survey of thirty municipal hospitals.

First, we analyze perceptions on corrupt practice within municipal hospitals. We find that the public health sector is perceived as being one of the least corrupt from an array of public and private institutions. Respondents suggest that, within the public sector, the most frequent forms of corruption are related to bureaucratic red-tape and public works corruption. Within the health sector, doctors and nurses point to theft of medical supplies, patient misdirection to the private sector and payments over operation scheduling as being

the most frequent practices. Finally, most respondents believe that corruption in the health sector has decreased over the past five years.

Second, we analyze the determinants of informal payments to municipal health service providers (medical, nursing and administrative staff). We find that approximately 40% of clients have made informal payments to service providers at the municipal level. Voice and exit variables (health board activism and private health provider) are significant deterrents to informal payments. Hierarchical controls (personnel hiring and supervision systems) are less significant in our analysis, but point in the right direction.

Third, we describe the variations of input prices for four homogenous inputs (dextrose 5%, physiological solution, sterilized cotton and alcohol) and analyze the determinants of prices for a single input. We find that, although official input prices are set at the Ministry of Health, actual price variations are significant. Key determinants of price variation are voice (proxied by health board activism) and administrator characteristics (education, job tenure). Hierarchical control variables are barely significant in deterring input overpricing.

Fourth, we contrast hard and soft measures of corruption for our sample of municipal hospitals. We find that perceptions of corruption generally mirror high actual incidences of informal payments and input overpricing. The strongest correlation is observed in capital cities and large municipalities.

In the following pages we survey the Bolivian case of health service delivery, and present a conceptual framework for analyzing corruption. We then describe the data and present findings on the determinants of informal payments, input overpricing and hard/soft data comparisons. The final section summarizes findings and discusses implications for the analysis of transparency and corruption in the region.

2. THE BOLIVIAN CONTEXT

2.1 The Health Sector

The health sector in Bolivia accounts for a significant size of social service expenditures, equivalent to \$US 284 million in 1998, or \$US 44 per capita and 4.7% of GDP (Cárdenas and Darrás 1997). Health services are financed primarily by user fees (35%), followed by

private sector funds (34%) international cooperation (14%), and direct government subsidies (13%). The destination of financing is mixed, with 38% directed to private sector delivery services 33% to social security services, and 29% to public sector delivery services. This contrasts with the coverage of services, which according to the most recent census, was predominantly public (44%, 30% of which was met by public sector providers and 14% by the social security system). Private coverage of services accounted for 30% of total coverage, while 24% reported not being covered by either forms formal health coverage (INE 1992).

Table 2.1
Health Indictors

	National	Urban	Rural
Public Sector Coverage			
Births	42	62	21
Prenatal Controls	53	68	36
Family Planning	18	25	7
Immunization	37	44	28
Mortality Rates			
Infant (x 1,000)	75	69	106
Child (x 1,000)	116	104	162
Maternal (x 100,000)	390	274	524
Disease Incidence			
Pneumonia (IRAs)	19	19	17
Diarrhea (EDAs)	20	11	29

Sources: Encuesta Nacional de Demografia y Salud 1994, Censo Nacional de Poblacion y Vivienda 1992.

Public sector health coverage is low by regional standards, and concentrated mainly in urban areas. Mortality rates, particularly child and maternal rates, are among the highest in Latin America despite important advances in recent years. Urban/rural differentials continue to pose a significant challenge to increased public sector coverage for immunization, family planning and pre- and post-natal attention. Pneumonia, diarrhea and other infectious and respiratory diseases account for the most significant proportions of infant and child mortality in the country (see table 2.1).

2.2 Decentralization and Popular Participation

The delivery of health services in Bolivia has undergone significant changes since the implementation of the Popular Participation and Administrative Decentralization reforms. The following points summarize the institutional framework in which health services are provided:

a) *Central government:* The Ministry of Health is the line agency charged with national policymaking in the health sector. The Ministry is in charge of designing and overseeing the implementation of medium and long-term national health strategies. It also manages an array of national programs (for the prevention of cholera, malaria, tuberculosis, and other epidemiological groups) funded through international cooperation and implemented by decentralized prefectural offices or private voluntary organizations. Intergovernmental transfers for public health investments are administered by the Social Investment Fund, under the Ministry of the Presidency. In recent years, the Ministry has focused almost exclusively on policy formulation (sectoral decrees and regulations) and has shifted policy implementation responsibilities to the prefectural and municipal levels. The central government today handles approximately 90% of total health recurrent expenditures (made up mostly by salaries), but only 30% of public investments.

b) *Prefectures:* The central government delegates administrative responsibilities and resources to nine prefectures. These departmental-level administrations are charged with payroll administration and management of national programs designed and funded at the central level. They play an essentially passive role in policy-making and act as a hinge between the municipal and the central government levels.

c) *Municipal Governments:* Municipal governments hold administrative and fiscal responsibilities over infrastructure maintenance and equipment of first and second level health centers. Level I centers include community health and sanitary posts, while Level II centers refer to basic service hospitals, which oversee general medicine, surgery, pediatrics and gynecology/obstetrics. Municipalities today account for approximately 70% of new public investments in health infrastructure and equipment, as well as 10% of recurrent expenditures (mostly maintenance services).

d) *Sub-Municipal:* Besides the formal distribution of responsibilities and resources between the central, prefectural and municipal levels, the Popular Participation law provides

for the establishment of Local Health Directories (DILOS) in each municipality. The DILOS is a participatory planning and monitoring board that oversees first- and second-level health centers. It is made up of three key actors: community-level user groups, municipal-level officials and prefectural-level health officials. While DILOS have been slow in forming, they have been reported as being more effective than all-purpose oversight committees established for citizen voice and oversight (Ruiz and Giussani 1997, Gray-Molina and O'Neill 1998).

The introduction of intergovernmental grants for locally-based programs has marked an important shift in the pattern of health service financing. The most important of these is the *Seguro Materno Infantil*, which provides free care for mothers and infants in post and pre-partum attention and child care (pneumonia and diarrhea). The *Seguro* is financed by a 3% earmarked municipal contribution coupled by central government grants for personnel, supplies and medication. Since its introduction, in 1996, it has been one of the most successful programs in expanding health care coverage, particularly in rural areas. A recent study documents a 70% increase in the total number of prenatal controls, a 31% increase in institutionalized child birth, a 266% increase in pneumonia treatment and an 85% increase in diarrhea treatment (Dmytraczenko 1998). The greatest increases in coverage have occurred at Level I (health posts) and Level II (basic service hospitals) health centers, administered at the municipal level (see table 2.2)

Table 2.2
Coverage figures for the Seguro Materno Infantil (1995-1997)

	1995	1996	1997	% 95-97
Total Child Births	27,622	28,087	36,362	31.6
Level III General Hospitals	24,902	24,535	30,949	24.3
Level II Basic Hospitals	2,619	3,365	4,691	89.4
Level I Health Centers	101	187	432	327.7
Prenatal Controls	61,149	73,390	104,310	70.6
Level III General Hospitals	47,393	55,557	75,394	59.1
Level II Basic Hospitals	10,911	14,133	23,401	114.5
Level I Health Centers	2,845	3,700	5,515	93.8
Pneumonia (children < 6)	1,682	2,446	6,165	266.5
Level III General Hospitals	670	596	1,511	125.5
Level II Basic Hospitals	812	1,406	3,856	374.9
Level I Health Centers	200	444	798	299
Diarrhea (children < 6)	13,885	17,657	25,811	85.9
Level III General Hospitals	5,432	5,871	12,313	127.1
Level II Basic Hospitals	6,456	7,986	9,487	46.9
Level I Health Centers	2,006	3,800	4,011	100

Source: Dmytrazcenko et al. (1998)

3. ANALYZING CORRUPTION

In a majority of cases... corruption ordinarily refers to the use of public office for private gain, where an official (the agent) entrusted with carrying out a task by the public (the principal) engages in some sort of malfeasance for private enrichment, which is difficult to monitor for the principal. (Bardhan 1997: 1321).

Building on Bardhan's definition, we focus on three sub-types of corruption: informal user payments, overpricing of homogeneous medical inputs, and public perceptions on absenteeism, medical supplies theft and the private use of public facilities. We sketch out a basic analytical model to help approximate the incentive structure faced by health providers and users. Incentives are loosely defined by their agency and voice/exit characteristics.

3.1 Agency Problems

In the basic principal-agent problem, the key obstacle to coordinated action is related to the observation that principals and agents often have dissimilar objectives as well as different sources and types of information. While both problems induce shirking on the part of the agent, the first is typically addressed by pursuing monitoring and sanctioning strategies that maximize the principal's objectives, and the second, by shaping incentives that are in line with the agent's own interests (Pratt and Zeckhauser 1984). As noted by Banerjee (1997) and Bossert (1997), the basic agency problem is made more complex in the context of decentralized decision-making, particularly in developing countries. Decentralization policies typically expand the range of "formal" and "informal" choice in ways that are not strictly accounted for by the basic principal agent model. Bossert uses the concept of "decision space" to capture this difference.

"Decision space" [is defined] as the range of effective choice that is allowed by the central authorities (the principal) to be utilized by local authorities (the agents). This space can be formally defined by laws and regulations. [It] defines the specific "rules of the game" for decentralized agents. The actual (or "informal") decision space may also be defined by lack of enforcement of these formal definitions that allows lower level officials to "bend the rules". (Bossert 1997: 12).

This modified principal-agent approach allows for a mapping of agency problems at different levels of decision-making (prefectural, municipal, service provider) and for different functions within each level (finance, service organization, human resources). While the municipal range of effective decision space for personnel hiring or firing may be limited, for example, the decision space for the procurement of equipment may be wide. Likewise, with hierarchical relations, where the effective range of public oversight might be weak at the municipal level, but strong at the clinic or health post level. While in some instances decision space is likely to promote opportunities for beneficial policy innovations in local practice, in others it may actually widen the scope of corrupt, unaccountable or discretionary decision-making. The nature of this trade-off will be made more apparent in section III, when we address a particular instance of local decision-making.

3.2 Voice and Exit Problems

Hierarchical systems of administrative control over public service providers are often made more effective by user monitoring at the local level. Some analysts have modeled this accountability-building mechanism as a “voice” and “exit” problem (Hirschman 1970; Paul 1994; Picciotto 1997). Public service users assess their approval or disapproval of services through voice (protest) or exit (finding alternative sources of supply). Under this model, public accountability is maximized when users exercise a voice option in their assessment of services. Voice is most effective when exit is unavailable and there are no informational, legal or institutional barriers hindering voice. In practice, however, many of these restrictive conditions prevail in developing countries, particularly for the rural poor. How can user groups overcome these obstacles to effective public service monitoring?

Paul (1992) considers four strategies for gaining leverage over voice, in the context of dispersed and monopolistic public service provision for the poor: first, establishing independent monitoring groups (such as comptrollers or ombudsmen) with direct access to official sources of information and records; second, establishing participatory boards at the local government level that allow user groups to scale up the scope of their collective action; third, promoting linkages with NGOs and Churches that promote external oversight mechanisms, and fourth, introducing public hearings/referenda to allow grievances to be made in the public forum. Bottom-up voice strategies are expected to promote public accountability by exposing agency problems related to hidden action. The “voice accountability performance response” model, however, is premised on the expectation that bottom-up mechanisms actually lead to top-down policy responses, which again calls into play the agency problems discussed above. Whether voice is effective or not is ultimately an empirical question, to be assessed on a case-by-case basis.

3.3 An Analytical Model

We propose a simplified analytical model to account for the agency problems that characterize public service delivery. While “corruption” cannot be directly observed, we can observe variations from expected service prices. We approximate these variations by accounting, first, for individual and municipal-level characteristics, second, for effective

administrative discretion at the municipal level (discretion in personnel hiring and management), and third, for the degree of voice exercised by service users (proxied by the degree of citizen health board activism). The choice of engaging in corrupt public practice can be modeled in terms of the incentive structure facing potential corrupters. If a public official can be assumed to maximize his or her expected income:

$$E(Y) = (1-p)(Bc + W) + p(Cc)$$

Where $E(Y)$ is expected income, Bc is the expected benefit accruing from corruption, W is wages, Cc is the expected penalty from being caught and p is the probability of being detected. The probability of detection can itself be modeled in terms of the institutional incentives faced the corrupter.

$$p = p(\text{Voice, Discretion})$$

In this model voice and administrative discretion are observed characteristics of the municipal decision-making environment. Voice deters corruption by raising the probability of detection and therefore decreasing the expected income from engaging in corruption. Hierarchical controls deter corruption through two channels, both subject to agency problems. The first is backward looking, restraining the discretion with which agents operate; the second is forward looking, signaling the sanctioning credibility of hierarchical controls if acts of corruption are detected.

We hypothesize that voice is likely to be effective for practices directly involving service users (such as bribes), while hierarchical controls are likely to be important for practices relating to hidden action (such as petty theft). We also expect voice and discretion factors to interact along a range of outcomes. In theory, four possible scenarios are relevant to our analysis (see table 2.1). While extreme scenarios (high voice/narrow discretion and low voice/wide discretion) suggest fairly predictable outcomes, the mixed scenarios are likely to be of most interest, because they suggest the differential weight of market/hierarchical interactions.

Table 3.1
Outcomes, Voice and Discretion

	WEAK Voice	STRONG Voice
NARROW Administrative Discretion	+/- Accountability Depends on agency incentives. “Passive” service provider “Passive” service user	+ Accountability Strong top-down and bottom-up incentives for public accountability.
WIDE Administrative Discretion	- Accountability Weak top-down and bottom-up incentives for public accountability.	+/- Accountability Depends on agency incentives. “Activist” service provider “Activist” service user

4. A STUDY OF MUNICIPAL HOSPITALS

4.1 Data

We use data from a municipal hospital survey conducted in November 1998. Thirty hospitals from 24 municipalities were surveyed on informal payments, input pricing and perceptions on absenteeism, supply and equipment theft, and inappropriate use of public facilities.¹ The sample was selected in two steps: First, municipalities were ranked according to an index of administrative discretion, as reported by the 1997 Census of Municipal Governments. “Highly” discretionary systems were defined by the absence of (1) a competitive hiring system, (2) an investment planning system and (3) an internal auditing system. “Low” discretionary municipalities were defined by the presence of one or more of these. Second, twelve “highly” discretionary municipalities and twelve “low” discretionary municipalities were selected for canvassing, from three clusters of municipalities located around the cities of La Paz, Cochabamba and Santa Cruz. The final sample included thirty municipal hospitals. Twenty-eight of the hospitals surveyed were Level II municipal

¹ The survey was carried out by Encuestas y Estudios, an affiliate of Gallup Polls in Bolivia.

hospitals charged with four areas of health attention: general medicine, surgery, pediatrics and gynecology. Two hospitals were Level III, charged with more specialized services (see table 4.1 for general characteristics of the sample).

Table 4.1
Characteristics of Level II Basic Service Hospitals

	No. of Level II Hospitals	No. of Beds	No. Of Doctors	No. of Nurses	No. of Administrative Personnel
UNIVERSE	188	2,985	434	689	433
SAMPLE	30	853	220	405	173
El Alto	1	52	18	14	12
Achacachi	1	15	5	8	8
Patacamaya	1	4	3	11	1
Viacha	1	30	4	20	3
Montero	1	56	9	20	8
Punata	1	32	9	11	14
Quillacollo	1	27	7	10	7
Capinota	1	22	5	6	4
Sipe Sipe	1	16	2	7	1
Tiquipaya	1	12	1	2	0
Copacabana	1	12	2	4	2
Pucarani	1	9	3	10	4
Sacaba	1	6	4	4	3
Ayo Ayo	1	10	1	0	2
Mineros	1	6	3	11	7
Batallas	1	12	3	5	2
San Carlos	1	47	5	11	7
El Torno	1	14	1	6	1
Yapacani	1	3	1	0	0
Cotoca	1	18	4	5	3
Buena Vista	1	12	3	7	2
La Paz (a)	3	189	57	72	32
Cochabamba (b)	3	96	32	81	24
Santa Cruz	3	153	38	60	26

(a) La Paz was sampled for two Level II (basic services) and one Level III (general services) hospital.

(b) Cochabamba was sampled for two Level II (basic services) and one Level III (general services) hospital.

Sources: Censo Municipal, Ministerio de Desarrollo Sostenible y Planificación y Ministerio de Hacienda (1999); Secretaria Nacional de Salud – DOSSME (1997).

Although the sample covers only a sixth of the total number of Level II hospitals, it accounts for nearly two-thirds of the nurses, half of the doctors and a third of the bed

capacity of basic service hospitals in the country. We collect data from four different sources: patients (301 observations), nurses (60 observations), doctors (55 observations) and hospital administrators (24, observations). We also use administrative and citizen participation data from the 1998 Municipal Census to construct explanatory variables on voice/exit and hierarchical controls.

4.2 Perceptions on Corruption

Three types of perceptions on corruption were collected. First, we asked patients, doctors and nurses to assess health and non-health sector institutions on a continuum from least to most corrupt. We assess differences for an array of public and private sector institutions, including patients' assessment of their own workplace. Second, we asked the same groups to assess an array of corrupt practices, most of which deal with health services. Finally, we ask doctors and nurses to assess the frequency of corrupt practices within their workplace. This includes an evaluation of absenteeism, theft and misuse of public facilities for private gain. We also ask for comparisons between past and present corruption in the health sector. First we report on health and non-health sector comparisons for patients, nurses and doctors (see table 4.2). A general pattern emerges for comparisons across groups: the police and customs are perceived as being the *most* corrupt institutions, while the Church, public schools and public hospitals are seen as the *least* corrupt. Patients score Church-related corruption a 1.83, public school corruption a 2.62 and public hospital corruption a 2.63, on a five-point scale between 1 (never corrupt) and 5 (always corrupt).

Once we move to comparisons within groups, patients see the police and customs as being most corrupt and the Church and public hospitals as being least corrupt. Doctors, on the other hand, see police, customs and the presidency as being more corrupt than patients do. The Ministry of Health is scored a 2.64 by nurses, 2.84 by patients and a 3.48 by doctors. The ministry is judged to be "always" corrupt by 18% of doctors, 16% of nurses and 6% of patients. Most respondents rate the ministry as being "sometimes" corrupts (24% of patients, 34% of doctors and 23% of nurses). A third and relevant perception relates to municipal governments. Municipal governments were given a score of 4.17 by doctors, 3.89 by patients and 3.48 by nurses. Approximately 28% of patients, 40% of doctors and 46% of

nurses see municipal government as being “always” corrupt, suggesting a relatively dismal perception of local government in the wake of decentralization reforms.

Table 4.2
How frequent is corruption in the following places?

	Never =1	A Little =2	Some =3	A Lot =4	Always =5	No Respon.	Total	Average Score (a)
PATIENTS								
Presidency	1.66	4.65	10.3	33.89	24.58	24.92	100	4.00
Customs	1	3.65	8.97	29.57	38.87	17.94	100	4.24
Supreme Court	3.32	6.98	9.63	25.25	25.25	29.57	100	3.88
Municipal Government	2.66	6.31	16.94	31.23	28.57	14.29	100	3.89
Public Utilities	6.98	17.94	19.93	14.95	8.64	31.56	100	3.00
Public Schools	14.62	19.6	32.89	10.96	3.32	18.6	100	2.62
Police	1.66	2.99	10.96	24.25	47.84	12.29	100	4.29
Catholic Church	38.64	15.28	11.96	5.65	1	27.57	100	1.83
Ministry of Health	9.97	17.94	24.58	14.29	5.98	27.24	100	2.84
Public Hospitals	15.28	25.58	19.93	11.63	7.31	20.27	100	2.63
DOCTORS								
Presidency	7.27	1.82	7.27	29.09	40	14.55	100	4.08
Customs	0	0	1.82	32.73	58.18	7.27	100	4.60
Supreme Court	1.82	3.64	21.82	34.55	30.91	7.27	100	3.96
Municipal Government	0	5.45	12.73	38.18	40	3.64	100	4.17
Public Utilities	5.45	14.55	25.45	18.18	18.18	18.18	100	3.35
Public Schools	20	21.82	30.91	5.45	7.27	14.55	100	2.51
Police	1.82	3.64	7.27	21.82	61.82	3.64	100	4.43
Catholic Church	38.18	21.82	18.18	1.82	1.82	18.18	100	1.86
Ministry of Health	3.64	9.09	34.55	21.82	18.18	12.73	100	3.48
Public Hospitals	9.09	30.91	36.36	16.36	1.82	5.45	100	2.69
NURSES								
Presidency	0	0	13.33	30	33.33	23.33	100	4.26
Customs	3.33	0	6.67	23.33	50	16.67	100	4.40
Supreme Court	0	3.33	16.67	26.67	30	23.33	100	4.09
Municipal Government	0	3.33	23.33	20	46.67	6.67	100	3.48
Public Utilities	6.67	13.33	30	6.67	16.67	26.67	100	3.18
Public Schools	20	20	23.33	10	3.33	23.33	100	2.43
Police	6.67	0	6.67	20	50	16.67	100	4.28
Catholic Church	53.33	16.67	3.33	3.33	0	23.33	100	1.43
Ministry of Health	23.33	13.33	23.33	16.67	6.67	16.67	100	2.64
Public Hospitals	16.67	23.33	33.33	13.33	13.33	0	100	2.83

(a) Average Score: Weighted average, where 1= “never”, 2= “a little”, 3= “some”, 4= “a lot”, 5= “always”. Excludes “no responses”.

Source: Municipal Hospital Survey (Encuestas y Estudios 1998)

Respondents were also asked to rate the frequency of corrupt practices within the public sector (see table 4.3). Bribes related to red-tape paperwork are seen as being most frequent (average score of 4.25 for doctors, 4.24 for nurses and 3.91 for patients), followed by public works corruption (4.01, 4.00 and 3.75) and municipal theft of supplies and equipment (3.77, 3.82 and 3.68). Doctors are generally more critical of public sector corruption than patients. Forty-three % of doctors say red-tape bribes happen “always” compared to 33% of nurses and 26% of patients. In addition, 36% of doctors say public works corruption occurs “always”, compared to 30% of nurses and 20% of patients. The least corrupt actions reported by respondents relate to hospital bribes (score of 2.57 for doctors, 2.20 for nurses and 2.71 for patients) and municipal absenteeism (3.26, 3.04 and 3.23). The highest rates of “no response” are recorded by patients (32% on municipal absenteeism, 25% on public works corruption) and nurses (27% on municipal theft).

Table 4.3
How frequent are the following acts?

	Never =1	A Little =2	Some =3	A Lot =4	Always =5	No Respon.	Total	Average Score (a)
PATIENTS								
Bribes-paperwork	1.33	5.55	18.27	33.55	26.25	14.95	100	3.91
Municipal public works	1.99	5.98	20.93	26.25	20.27	24.58	100	3.75
Municipal theft	2.33	8.31	21.59	24.25	20.93	22.59	100	3.68
Municipal absenteeism	4.65	11.96	23.92	17.94	9.63	31.89	100	3.23
Bribes-hospitals	16.28	20.27	20.93	17.28	5.98	19.27	100	2.71
DOCTORS								
Bribes-paperwork	0	1.82	14.55	38.18	43.64	1.82	100	4.26
Municipal public works	1.82	5.45	18.18	30.91	36.36	7.27	100	4.02
Municipal theft	0	14.55	14.55	27.27	25.45	18.18	100	3.77
Municipal absenteeism	3.64	12.73	34.55	23.64	9.09	16.36	100	3.26
Bribes-hospitals	25.45	21.82	21.82	18.18	7.27	5.45	100	2.57
NURSES								
Bribes-paperwork	0	6.67	0	43.33	33.33	16.67	100	4.24
Municipal public works	0	6.67	16.67	26.67	30	20	100	4.00
Municipal theft	0	6.67	16.67	33.33	16.67	26.67	100	3.82
Municipal absenteeism	6.67	33.33	10	23.33	13.33	13.33	100	3.04
Bribes-hospitals	5.40	16.67	3.33	20	3.33	16.67	100	2.20

(a) Average Score: Weighted average, where 1= “never”, 2= “a little”, 3= “some”, 4= “a lot”, 5= “always”. Excludes “no responses”.

Source: Municipal Hospital Survey (Encuestas y Estudios 1998)

Doctors and nurses were also asked to assess the frequency of corrupt acts within their workplace (see table 4.4). The most frequent practices identified by both groups were theft of hospital supplies, patient direction to private practice and paying for operation scheduling. Doctors gave operation scheduling a score of 4.26, followed by supply theft 4.17 and patient misdirection 4.04. Forty-four percent of doctors believe payments for operations scheduling “always” occurs, followed by supply theft (44%). Doctors see medical supply procurement as being least corrupt (score of 3.22). Nurses, on the other hand, see supply theft as most important (score of 4.44), followed by misdirection of patients to private practice (score of 4.16). Nurses see medical supply procurement as being least corrupt (score of 2.88), followed by cleaning service procurement (score of 3.52). The highest rates of “no response” were, for doctors, questions of supply theft (25%) and construction procurement (24%), and for nurses, questions of supply procurement (43%) and operation turns (37%).

Table 4.4
How frequent are the following acts?

	Never =1	A Little =2	Some =3	A Lot =4	Always =5	No Respon.	Total	Average Score (a)
DOCTORS								
Procurement-cleaning	5	9	18	9	40	19	100	3.84
Procurement-construction	7	13	18	11	27	24	100	3.50
Procurement-catering	9	7	22	11	31	20	100	3.59
Procurement-supplies	9	16	22	13	20	20	100	3.22
Turns for operations	0	5	15	16	49	15	100	4.27
Patient misdirection	2	9	11	27	38	13	100	4.04
Theft of supplies	2	9	7	13	44	25	100	4.17
NURSES								
Procurement-cleaning	16	7	7	3	37	30	100	3.52
Procurement-construction	7	10	7	23	23	30	100	3.66
Procurement-catering	7	7	17	7	33	30	100	3.76
Procurement-supplies	17	7	13	7	13	43	100	2.88
Turns for operations	7	7	3	7	40	37	100	4.05
Patient misdirection	7	0	13	13	47	20	100	4.17
Theft of supplies	3	7	7	17	50	17	100	4.44

(a) Average Score: Weighted average, where 1= “never”, 2= “a little”, 3= “some”, 4= “a lot”, 5= “always”. Excludes “no responses”.

Source: Municipal Hospital Survey (Encuestas y Estudios 1998)

Finally, respondents were asked to assess how health sector corruption compares to non-health sector corruption and whether it has increased over the past five years, following the implementation of decentralization reforms (see table 4.5). Patients respond that health sector corruption is less frequent than elsewhere in society (50%). They also assess it to be less frequent than five years ago (41%). When asked whether health sector corruption was greater or smaller than corruption in their own workplace, most patients chose not to answer (43%). Doctors declare that health sector corruption is overwhelmingly less frequent than non-health sector corruption (63%) and are evenly balanced on whether corruption has increased or decreased over the past five years. Approximately 7% of doctors declare that there is no corruption in the health sector. Nurses are more optimistic. Close to 73% say that health sector corruption is less frequent than in other public sector institutions. Most nurses declare that health sector corruption has decreased over the past five years (36%).

Table 4.5
How do you assess health sector corruption today?

	Greater	The Same	Lesser	No Corruption	No Response	Total
PATIENTS						
Compared to other institutions	3.99	21.59	50.17	0	24.25	100
Compared to your workplace	5.88	17.65	32.94	0	43.53	100
Compared to five years ago	13.62	22.59	41.53	0	22.26	100
DOCTORS						
Compared to other institutions	23.64	1.82	63.64	7.27	3.64	100
Compared to five years ago	36.36	20	34.55	5.45	3.64	100
NURSES						
Compared to other institutions	0	6.67	73.33	13.33	6.67	100
Compared to five years ago	16.67	23.33	36.67	10	13.33	100

Source: Municipal Hospital Survey (Encuestas y Estudios 1998)

The perceptions reviewed in this section portray a comparatively benign picture of corruption in the health sector. Most respondents suggest that the health sector is one of the three least corrupt from a list of ten other public and private institutions. When asked to assess the frequency of corrupt acts in the public sector, most respondents identify red-tape and public works related corruption as being most frequent. Within the health sector itself, doctors and nurses point to theft of medical supplies, patient misdirection to the private

sector and payments over operation scheduling as being the most prominent. Finally, most respondents believe that health-related corruption has decreased over the past five years. Patients are particularly optimistic about recent improvements. In more general terms, 65% of doctors, 71% of patients, and 80% of nurses believe the health sector is less or as corrupt as other institutions in society.

4.3 Determinants of Informal Payments

The “informality” of informal payments is difficult to conceptualize, let alone measure. While not all informal payments are unethical or illegal (some may supplement medical treatment initiated elsewhere; others may be regarded as ex-post service gratuities), we restrict our analysis to those informal payments which *are* illegal and explicitly proscribed by existing legislation and regulations under the Bolivian *Seguro Materno Infantil*. We collect data on informal payments relating to hospitalization, surgery, medication, materials and supplies, laboratory work, x-rays and other treatments for services covered by the Seguro. By restricting our analysis to this subset, our dependent variable measures only *illegal* informal payments, and hence does not capture other forms of bribery which may skirt the lines between ethical norms and formal rules and regulations. We expect this measure to underestimate the extent of informal payments between patients and service providers. Approximately 40% of surveyed clients (112 of 281) reported making illegal payments under one of the *Seguro's* three sub-programs. Considering approximately two thirds of our respondents considered hospitals to be less or equally prone to corruption than other institutions in society, this result would suggest a high degree of tolerance to petty bribery. We address this question in section 4.5, when contrasting “hard” and “soft” measures of corruption.

Does citizen voice matter for corruption prevention? We hypothesize that voice deters corruption by raising the probability that illegal payments are detected, thus increasing the expected cost of engaging in corrupt practice. We also hypothesize that hierarchical controls that detect and sanction corruption act as deterrents to public wrong-doing. In principle, hierarchical controls can be analyzed at many levels of aggregation (hospital controls, municipal controls, ministry auditing, comptroller auditing, administrative and civil

justice courts, and so on). In this section we focus exclusively on municipal-level hierarchical controls related to local hospital administration.

Table 4.6
Determinants of Illegal Informal Payments (a)

	(1)	P > t	(2)	P > t	(3)	P > t
	OLS		OLS Adjusted		TOBIT Censored	
CONTROL VARIABLES (b)						
Municipal poverty rate	-1.23	0.017	-1.23	0.003	-6.68	0.000
Client heard of <i>Seguro Materno</i>	-0.17	0.523	-1.79	0.080	-0.37	0.537
Client waiting hours	27.20	0.000	27.20	0.004	59.54	0.000
HIERARCHICAL CONTROLS						
Municipal competitive hiring	-3.32	0.716	-3.32	0.789	-54.42	0.021
Municipal personnel supervision	-15.37	0.223	-15.37	0.164	-14.41	0.668
VOICE/EXIT						
DILOS participates (voice)	-26.91	0.002	-26.91	0.004	-144.82	0.000
Private hospital in town (exit)	-0.01	0.000	-0.00	0.000	-73.27	0.063
CONSTANT						
Number of observations	281		281		281	
Clusters	0		24		11 (o)	
Pseudo R2	0.134		0.159		0.045	

- (a) Dependent variable: Informal payments (in \$Bs.) made by patients under the Seguro Materno Infantil. In-hospital payments for hospitalization, surgery, medication, materials and supplies, laboratory work, x-rays or other services covered by the Seguro, were included under this measure. Voluntary payments and out-of-hospital payments were excluded.
- (b) Independent variables: MUNICIPAL POVERTY RATE is the basic needs index reported at the municipal level; CLIENT WAITING HOURS is a dummy variable (1= more than 4 hours of waiting, 0= less than four hours); CLIENT HEARD SEGURO is a dummy variable (1= yes, 0=no); MUNICIPAL COMPETITIVE HIRING is a dummy variable measuring health personnel hiring discretion (1=competitive, 0=non-competitive); MUNICIPAL PERSONNEL SUPERVISION is a dummy variable measuring health personnel supervision (1=supervised, 0=unsupervised); DILOS PARTICIPATES is a dummy variable measuring DILOS participation in the annual participatory planning process (1=activist, 0=non-activist); PRIVATE HOSPITAL is a dummy variable signaling alternative suppliers of health services (1=exit option, 0=no exit option).

Source: Municipal Hospital Survey (Encuestas y Estudios 1998).

Three alternative specifications were run to test whether hierarchical or voice/exit factors could account for illegal informal payments (see table 4.6). The first specification is an OLS regression, that measures the impact of hierarchical and voice variables over payment

amount, after controlling for individual and municipal level characteristics. In the second OLS regression, we control for heteroscedasticity (using robust standard errors) and aggregation bias (clustering individual observations into municipal clusters) from the use of multilevel data pooled in the same regression. The third specification is a tobit regression that controls for lower bound censoring of non-negative illegal payments. We believe the tobit specification best tests the empirical relation between voice and bribery. A combination of voice and hierarchical controls could potentially offer more- than-perfect-anti-corruption protection, yet illegal payments will never drop to non-negative figures.

The OLS specifications suggest three main results. First, the level of municipal poverty (POVERTY RATE) and client waiting hours (CLIENT WAITING HOURS), are significantly correlated with informal payments. The higher the poverty rate, the lower the payments; the higher the waiting hours the higher the payments. Second, after controlling for individual and municipal characteristics, citizen health board activism (DILOS PARTICIPATES), proxied by DILOS participation in municipal participatory planning, is significantly correlated to lower payments, particularly when matched by an exit option in the form of private health service provision (PRIVATE HOSPITAL). Although both voice and exit variables are statistically significant, only the voice variable shows a non-negligible coefficient. After controlling for an array of individual and municipal controls the existence of an active citizen health board deters informal payments by \$B. 26. The third result is that hierarchical control variables (COMPETITIVE HIRING SYSTEM and PERSONNEL SUPERVISION SYSTEM) are negatively correlated to informal payments but less significant than voice/exit variables. Hierarchical controls appear to be less important than the voice/exit variables in deterring corruption.

The tobit model ratifies the OLS regression results, but suggests the impact of voice and exit variables is larger once we control for lower bound censoring. After controlling for an array of individual and municipal characteristics, citizen board activism (DILOS) would account for \$Bs. 144 less of informal payments. The existence of a private health service provider (PRIVATE HOSPITAL) also diminishes the amount of average informal payments by \$Bs. 73. Under the tobit model one hierarchical control variable (COMPETITIVE HIRING SYSTEM) acts as a deterrent to corruption, while the other (PERSONNEL MANAGEMENT SYSTEM) remains statistically insignificant.

All specifications suggest that voice and exit variables are significantly and negatively related to informal payments once hierarchical and other control variables are taken into account. As suggested by the recent literature on voice and exit, the voice option is most likely to be significant where service users enter into direct contact with service providers, by raising the probability of detection (Bossert 1997). The significance of the exit option would also suggest the importance of competition in curtailing public sector corruption (see Ades and Di Tella 1997, and Ades and Di Tella 1995). When public providers face competition from private providers *and* depend on user-cost recovery for recurrent financing, exit effectively raises the price of non-compliance. How effective is the voice option? While average informal payments are \$Bs. 40 per service user, voice accounts for \$Bs. 27 (or two-thirds of their value) per user. Our survey of patients under the Seguro Materno Infantil would suggest the voice option is a powerful deterrent to illegal informal payments.

4.4 Determinants of Input Overpricing

The analysis of supply prices provides a more direct yardstick on the degree of corrupt or particularistic behavior in the health sector. We collected prices for four relatively homogeneous and widely available inputs: dextrose 5%, physiological solution, sterilized cotton and alcohol.² Input prices are nominally set at the Ministry of Health, but show wide variations in the field (see table 4.7). While the official price of dextrose, for example, is set at 5 Bs./liter, municipal receipts in 24 municipalities show variations between 2.04 and 8.75 (see table 3.5). We hypothesize that part of this variation is due to overpricing at the municipal level. In order to test this hypothesis, and analyze the determinants of price variations, we ran alternative regressions on the ratio of actual input price receipts collected at the hospital level to the officially regulated input prices. The ratio captures the average variation from actual to official prices for dextrose.

² Prices were copied from official purchase receipts provided by municipal hospital administrators. Prices were later standardized to comparable units of analysis.

Table 4.7
Input Prices

	N	Min	Max	Mean	Variance
Dextrose 5%	24	2.04	8.75	6.39	3.75
Physiological Solution	18	1.20	18.50	7.64	6.02
Cotton	16	0.8	28.6	15.64	65.24
Alcohol	13	1.30	8.00	5.39	3.11

Source: Municipal Hospital Survey (Encuestas y Estudios 1998).

Two OLS regressions measure the effects of administrator characteristics and the presence or absence of hierarchical controls and citizen voice over input prices (see table 4.8). The variables that best explain variations in input prices relate to the personal characteristics of the hospital administrator (TENURE and EDUCATION) and voice (DILOS). Job tenure is negatively related to corruption. The longer the time on the job, the lower the ratio between actual and official prices. In a context of politicized and discretionary administration, we view job tenure as a proxy for job security and institutionalized hiring practices. The negative correlation would support this view. The second variable, however, is more problematic. Controlling for length of tenure, we find that education is positively correlated to input overpricing. The positive sign would suggest that well-educated administrators are more effective in covering up corrupt practice. While this makes intuitive sense, it also suggests that, given the current incentive structure, policies designed to hire more qualified administrators are more likely to promote rather than deter public sector corruption. Are agency problems a driving factor behind this result? While we expected personnel supervision and access to local distribution centers to be negatively and significantly correlated to input overpricing, we find that hierarchical control variables are not significant deterrents of corruption. Personnel supervision (PERSONNEL) is only weakly correlated to overpricing and the presence of a local input distribution center (INPUT) is not significant at all. The only other significant and negatively correlated variable is voice (DILOS). The presence of an activist citizen health board is, in fact, the most important deterrent of input overpricing. Citizen voice accounts for approximately 40% the variation between actual and official prices. Other control variables are not significant in explaining input price variations.

Table 4.8
Determinants of Input Prices

	(1)	P> t	(2)	P> t
CONTROL VARIABLES				
Administrator tenure	-0.014	0.007	-0.015	0.010
Administrator education	0.016	0.033	0.016	0.039
Municipal poverty rate	-0.006	0.242	-0.005	0.416
HIERARCHICAL CONTROL				
Personnel supervision system	-0.345	0.202	-0.372	0.103
Input distribution center			0.092	0.674
VOICE/EXIT				
DILOS participates	-0.426	0.040	-0.404	0.064
Oversight committee participates			0.203	0.345
CONSTANT				
Number of observations	24		24	
Adjusted R2	0.303		0.270	

- (a) Dependent variable: Ratio of input price receipts to official input prices (dextrose). Official input prices provided by the Ministry of Health. Receipts standardized by purchase volume.
- (b) Independent variables: ADMINISTRATOR AGE describes the age of the hospital administrator; ADMINISTRATOR EDUCATION, describes years of schooling; MUNICIPAL POVERTY RATE is the basic needs index reported at the municipal level; PERSONNEL SUPERVISION is a dummy variable measuring municipal personnel supervision of health staff (1=supervision, 0=no supervision); INPUT DISTRIBUTION is a dummy variable to signal whether an input distribution center exists in the municipality (1=exists, 0=does not exist); DILOS PARTICIPATES is a dummy variable measuring health board participation in annual participatory planning (1=participates, 0=does not participate); OVERSIGHT COMMITTEE PARTICIPATES is a dummy variable signaling participation in participatory planning (1=participates, 0=does not participate).

Source: Municipal Hospital Survey (Encuestas y Estudios 1998).

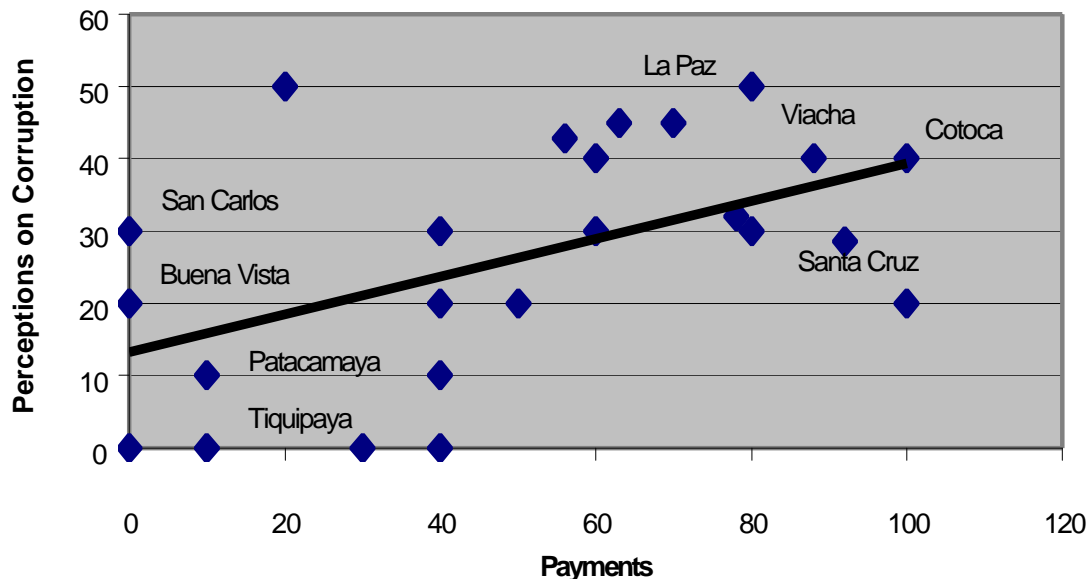
What role do voice mechanisms play in deterring hidden action? Controlling for administrator characteristics and hierarchical control variables, our estimates suggest voice mechanisms are remarkably effective. Citizen activism accounts for approximately 40 percent of the variation between official and purchased prices. Given the low levels of significance of hierarchical control variables, perhaps the more relevant question is what role do administrative controls play in deterring and sanctioning corrupt practice? Our analysis suggests a qualified answer. While hierarchical control variables are not significantly correlated to corruption deterrence, we do find administrator job tenure to be significantly and negatively correlated to overpricing. To the extent that tenure length is construed as a proxy of institutional stability, factors that promote stable employment can be regarded as additional deterrents to corrupt practice. The low R2 on both specifications also suggests

that there is much that goes unexplained in our model, including political and administrative deterrents of corruption working at beyond the local level (prefectural or line ministry controls).

4.5 Hard and Soft Data Comparisons

Much of the literature on transparency and accountability has analyzed data derived from public opinion surveys and polls. Few studies have collected empirical data on the scope and determinants of corruption; fewer have compared both types of data for the same sample. In this section we present a municipal comparison of “hard” and “soft” corruption indices. We compare municipalities with high levels of corruption, as evidenced by informal payments and input overpricing, to municipalities where corruption is perceived to be high, as suggested by public opinion collected in user surveys.

Graph 4.1
Correlation between informal payments and perceptions on corruption



- (a) The y-axis describes the percentage of service users who described hospital corruption to be greater or equal to corruption elsewhere in the public or private sector.
- (b) The x-axis describes the percentage of service users who made illegal informal payments.

The correlation between informal payments and perceptions on corruption is positive and significant (0.551). In general terms, the perception that hospitals are more (or equally) corrupt to other public or private sector institutions is positively correlated with a higher incidence of informal payments. The strongest incidences of actual and perceived corruption occur in the capital cities and relatively large municipalities; the weakest incidence in small rural municipalities. How can this pattern be explained? One possibility is that perceptions and acts of corruption are highly sensitive to the scale of health service delivery. Although the hospitals in our sample are roughly of the same size, we find evidence to suggest that larger hospitals do in fact show a higher incidence of both actual and perceived corruption. A second possibility is that the market for informal payments, contrasted, for example with the market for petty theft or input overpricing, is more sensitive to the “large hospital” effect. This may account for substantial differences in informal payments in one-doctor hospitals (in which they are largely absent), to multi-level hierarchical organizations (in which they are more significant). Agency problems, enhanced by size, might be made the main culprit.

What can be learnt from hard/soft data comparisons? The positive correlations suggest that perceptions on corruption generally mirror the available evidence on public sector corruption. It should be noted, however, that the correlation for services in which users are directly involved is higher than when discretionary actions go unobserved. As suggested earlier, the use of citizen voice is likely to be correlated with public perceptions of wrong-doing. The greater the perception of corruption, the more likely citizens will make use of voice mechanisms and monitor public service delivery. In more general terms, the hard/soft data comparisons are reassuring. Analyses based on public opinion polls and surveys are, on this account, consistent with the available evidence on corrupt practice: the greater the corruption, the greater the perception of corruption.

5. CONCLUSIONS

In this study we have focused on the scope and determinants of corruption in the public health sector in Bolivia. We define corruption broadly, to mean the use or appropriation of public resources for private gain. The politics of transparency, accountability and corruption have attracted a great deal of policy notoriety, but little empirical work has focused on the institutional mechanisms that restrict or induce corrupt public practice. In our analysis of municipal hospitals in Bolivia we have suggested a simplified accountability-building model to account for the potential effects of hierarchical controls (mostly administrative) and voice mechanisms (mostly market-based) over hospital level corruption. How significant is health sector corruption in Bolivia, and what factors account for corrupt public practice?

In a survey of clients, doctors and nurses in thirty municipal hospitals, we find that perceptions on health sector corruption fare well compared to other public and private sector institutions. Most respondents believe public hospitals are among the least corrupt institutions, together with public schools and the Catholic Church. When asked to assess the frequency of corrupt acts in the public sector, most respondents identify red-tape and public works related corruption as being most frequent. Within the health sector itself, doctors and nurses point to theft of medical supplies, patient misdirection and payments over operation scheduling as being the most prominent. Finally, most respondents believe corruption in the health sector has decreased over the past five years. Doctors are most critical of health sector

corruption, while patients are less critical. This descriptive assessment leads to an analysis of the determinants of corruption within the public health sector.

First, we considered the scope and determinants of informal payments to service providers. Despite the relatively optimistic picture suggested by public perceptions, we find that approximately 40% of clients made illegal informal payments to service providers and administrators under the *Seguro Materno Infantil*. Controlling for municipal poverty levels and patient waiting hours, we find four variables to be significant in explaining payment variations under alternative specifications: the degree of activism of the local citizen health board (-), the existence of alternative private sector health providers (-), administrative supervision of health staff (-) and competitive hiring practices (-). We hypothesize that voice and exit mechanisms are important deterrents of illegal informal payments at the local level. The literature on voice has stressed the effect that competition in service delivery can have over institutional performance (Paul 1994, Picciotto 1997). This study suggests that voice is best assessed after controlling for more conventional hierarchical controls over public accountability. Competition between public and private service providers is likely to be most effective in increasing the price of non-compliance in cases where public providers are dependent on user cost-recovery for service financing.

Second, we analyze the scope and determinants of input overpricing for homogeneous and widely available medical supplies (dextrose, physiological solution, cotton and alcohol). We find that, even for a small survey of prices in 24 municipalities, standardized prices for medical supplies vary significantly. Controlling for municipal poverty levels, we find three significant determinants of price variation for a single input: administrator education (+) job tenure length (-) and health board activism (-). To a lesser extent (at 10% significance), the existence of a personnel supervision system also deters overpricing (-). We find that voice plays a key role in deterring overpricing, and accounts for a 40% differential between official and purchased prices. More tentatively, the evidence also suggests that administrative factors that promote competitive and supervised hiring and management practices are more likely to reduce overpricing, than those relying on political placement and discretionary practice.

Third, we contrast hard and soft measures of corruption at the municipal level. We find that public perceptions of corruption are positively correlated to higher incidences of informal payments and input overpricing. Greater the corruption, greater the perception of

corruption. High actual and perceived levels of corruption tend to concentrate in larger municipalities. Smaller, particularly rural municipalities, show low levels of both. We find that the correlation for services in which users are directly involved is higher than when discretionary actions go unobserved. As suggested earlier, the use of citizen voice is likely to be correlated with public perceptions of wrongdoing. The greater the perception of corruption, the more likely citizens will make use of voice mechanisms and monitor public service delivery.

What are the implications of these findings for transparency, accountability and corruption in the public health sector? From an analytical perspective, we argue that the measurement of corrupt public practice should be institution-sensitive to account for the particularities of different types of corrupt behavior. In the Bolivian case, we seek to capture the decentralized and participatory characteristics of the health delivery system through a model that controls for hierarchical controls and voice and exit variables. We observe that the very definition of corruption comes into question when we compare perceptions from different groups and for different types of practices. It is likely, although untested through available data, that the public's threshold for petty corruption is relatively high in Bolivia. While nearly 40% of surveyed patients acknowledged having made an (illegal) informal payment of one kind or another, over two thirds of patients, nurses and doctors rate health sector corruption as being less or equally corrupt as other public and private sector institutions. Only 18% percent of patients, 18% of doctors and 26% of nurses considered hospital corruption to be widespread (with corrupt acts being carried "a lot" or "all" of the time).

From a public policy perspective, our study has focused on the particular question of citizen voice and public accountability. When does voice matter as a deterrent to public sector corruption? We find that voice matters both for exposing bribery (that directly involves citizen contact) and for deterring input overpricing (characterized by hidden action within the health bureaucracy). In both cases, "voice" has involved citizen health board activism, as proxied by participation in annual participatory planning, budgeting and oversight. In the case of bribery, the "exit" option, as proxied by the existence of private health service providers, is also significantly correlated to corruption deterrence. What role is left for hierarchical controls, expected to deter (ex ante) and sanction (ex post) corrupt behavior? Unlike voice, we find no consistent evidence to suggest hierarchical controls deter

corruption. In the case of bribery only one hierarchical variable is significant (competitive hiring practices, at 5%); in the case of overpricing, practically none are (personnel supervision, at 10%). The evidence on hierarchical controls is inconclusive and compounded by the observation that both models explain only a small proportion of variation in our key dependent variables. Perhaps the low fit also suggests omitted political and administrative factors (at the prefectural or national level) could account for the overall impact of hierarchical controls in corruption deterrence. Clearly, citizen involvement in public services is likely to have a number of additional effects besides deterring corruption – including promoting a sense of ownership, inclusion and, in some cases, political empowerment. The links between citizen voice, transparency and increased accountability, however, stand at the heart of present efforts to promote good governance and increase public service performance. A significant finding of this study is that voice is indeed a significant deterrent of corrupt behavior.

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ANNEX A1

Summary Statistics for Determinants of Informal Payments

. summarize Payment Poverty Heard Waiting Supervis Hiring Voice

Variable	Obs	Mean	Std. Dev.	Min	Max
Payment	301	30.07143	71.23552	0	635
Poverty	301	71.61163	19.29069	42.5	99
Heard	301	3.611296	14.30496	1	90
Waiting	301	1.541528	.6800267	1	4
Supervis	301	.6943522	.4614484	0	1
Hiring	301	.3920266	.4890156	0	1
Voice	281	.2775801	.448604	0	1
Exit	301	.4019934	.4911171	0	1

. corr Payment Poverty Heard Waiting Supervis Hiring Voice

	Payment	Poverty	Heard	Waiting	Supervis	Hiring	Voice
Payment	1.0000						
Poverty	-0.1467	1.0000					
Heard	-0.0193	0.0729	1.0000				
Waiting	0.2791	-0.1347	0.0156	1.0000			
Supervis	-0.1732	-0.6102	0.0706	0.1820	1.0000		
Hiring	-0.0367	-0.2514	-0.1386	-0.1000	0.0836	1.0000	
Voice	-0.0363	-0.1604	-0.0148	-0.2625	0.2631	0.2944	1.0000
Exit	-0.0758	-0.7693	-0.0233	0.0567	0.2698	0.1698	0.0708

ANNEX A2

Summary Statistics for Determinants of Input Overpricing

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. sum PriceRat Tenure Educat Poverty Oversig Voice DisCent Supervis
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Variable	Obs	Mean	Std. Dev.	Min	Max
PriceRat	24	1.309385	.4565702	.394	2.83
Tenure	24	8.827586	23.20109	0	12
Educat	24	6.448276	16.48719	0	5
Poverty	24	73.8	19.15119	42.5	99
Oversig	24	.4285714	.5039526	0	1
Voice	24	.2962963	.4653216	0	1
DisCent	24	.5	.5091751	0	1
Supervis	24	.6785714	.4755949	0	1

```
. corr PriceRat Tenure Educat Poverty Oversig Voice DisCent Supervis
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	PriceRat	Tenure	Educat	Poverty	Oversig	Voice	DisCent
PriceRat	1.0000						
Tenure	-0.2389	1.0000					
Educat	0.1248	0.6862	1.0000				
Poverty	0.1662	-0.0934	0.2226	1.0000			
Oversig	-0.0705	0.0199	-0.2001	-0.2118	1.0000		
Voice	-0.3377	-0.1659	-0.1478	-0.1917	0.3446	1.0000	
DisCent	-0.0460	0.0463	-0.1631	-0.6110	0.1883	-0.0144	1.0000
Supervis	-0.3699	-0.0674	-0.2749	-0.5303	0.3290	0.2821	0.4969