



## Short communication

## Effect of corruption on healthcare satisfaction in post-soviet nations: A cross-country instrumental variable analysis of twelve countries



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## ABSTRACT

There is the lack of consensus about the effect of corruption on healthcare satisfaction in transitional countries. Interpreting the burgeoning literature on this topic has proven difficult due to reverse causality and omitted variable bias. In this study, the effect of corruption on healthcare satisfaction is investigated in a set of 12 Post-Socialist countries using instrumental variable regression on the sample of 2010 Life in Transition survey (N = 8655). The results indicate that experiencing corruption significantly reduces healthcare satisfaction.

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## 1. Introduction

The purpose of this paper is to explore the effect of corruption on healthcare satisfaction in Post-Socialist countries. On one end of the equation, customer satisfaction with healthcare is recognized as a crucial component of healthcare delivery by governments, healthcare authorities practitioners, and patients worldwide (Smith et al., 2006; Kimenyi and Shughart II, 2006; Kettl et al., 2006; Amponsah-Nketiah and Hiemenz, 2009). Feedback from customers provides an important impetus to improving healthcare delivery (Qatari and Haran, 1999; Bara et al., 2002; Brinkerhoff and Wetterberg, 2013). Satisfied customers are more likely to develop long-lasting relationship with healthcare providers and demonstrate higher level of compliance, which ultimately leads to better health outcomes (Margolis et al., 2003; Bleich et al., 2009; Njong and Tchouapi, 2014).

On the other side of equation, corruption in healthcare exists as a rampant issue in Post-Socialist countries (Bonilla-Chacin et al., 2005; Falkingham et al., 2010). The literature notably lacks consensus regarding the effect of corruption in developing and transitional countries in general, and in healthcare in particular. One school of thought conceptualises corruption as “sand the

wheels” and suggests a negative effect of corruption (Clausen et al., 2011). Indeed, previous studies on healthcare in transitional countries support this view. Corruption, encompassing unofficial out-of-pocket payments and gifts, is associated with lower propensity of using healthcare when needed (Balabanova et al., 2004; Falkingham, 2004; Fan and Habibov, 2009). Bribes often constitute catastrophic expenditures for the poor (Habibov, 2009a, 2011). Due to corruption barriers, more advanced and specialized health services remain out of reach for the poor (Habibov, 2009b, 2010). Conceptualizing corruption as “sand the wheel” postulates that we should expect the effect of corruption on healthcare satisfaction.

The opposite school of thought conceptualises corruption as “grease in the wheels” and highlights the positive outcomes of corruption (Méon and Weill, 2010). First, corruption alleviates inefficiencies of administering public healthcare in transitional period. Healthcare professionals consider their remuneration low and expect informal payments, while patients expect that they would have to pay out-of-pocket to underpaid professionals for additional or better quality services (Gaal and McKee, 2004; Vian and Burak, 2006). When expectations of healthcare professionals and patients match, then a transaction of paying and receiving unofficial payments takes place. Corruption also introduces redistribution towards the poor. A number of previous studies report that healthcare professionals charge a lower out-of-pocket rate or even provide free care to citizens struggling with poverty,

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compensating the “lost” revenue by asking wealthier patients for higher payments (Ensor and Savellyeva, 1998; Belli et al., 2004; Gotsadze et al., 2005). In addition, corruption encourages competition. Individuals may pay bribes to receive necessary treatment “free” in public healthcare rather than to pay officially more for the same treatment in private facilities (Rose, 1998). Conceptualizing corruption as “grease the wheels” postulates that we should expect effect of healthcare satisfaction on corruption.

Yet, another school of thought considers corruption a cultural norm (Turex, 2011; Wang-Sheng and Guven, 2013). Thus, although large-scale corruption schemes are commonly denounced, out-of-pocket payments to healthcare professionals are not considered an act of corruption (Bowser, 2001). Conceptualising corruption as a harmless cultural norm suggests that there is no statistically significant association between corruption and satisfaction in either direction.

Given the lack of consensus about the effect of corruption on healthcare satisfaction, we focus on testing the above-describe three hypotheses on a diverse sample of 12 Post-block countries. We use classic single-stage linear OLS regression to test whether healthcare corruption is a cultural norm, and examine if it has a statistically significant link with satisfaction. If OLS identifies such a link, then we can reject conceptualization of corruption as a cultural norm. However, results of single-stage models like OLS are prone to endogeneity, namely, reverse causality and omitted variable bias. OLS cannot rule out reverse causality. For instance, it is plausible to assume that clients satisfied with the higher level of healthcare service pay extra or give gifts to healthcare personnel, supporting “grease the wheels” conceptualization (Rose, 1998; Gaal and McKee, 2004; Vian and Burak, 2006; Habibov, 2010). It is also plausible that OLS estimation can suffer from uncontrolled confounder variable that affect both corruption and satisfaction leading to omitted variable bias. Consequently, we estimate and rigorously test two-stage 2SLS regression which addresses both reverse causality and omitted variable bias (Wooldridge, 2008). If 2SLS reports negative association between corruption and satisfaction, then we can reject the “grease the wheels” conceptualization of corruption in favour of the “sands the wheels”. An excellent discussion of employing 2SLS to address reverse causality and omitted variable bias in healthcare studies is provided by Kim et al. (2011). To the best of our knowledge, our study is the first one to apply 2SLS to test three different conceptualisations of corruption and to establish causal association between corruption and healthcare satisfaction.

Let us now turn to method section.

## 2. Method

We used data from the Life-In-Transition survey (the LITS), which was conducted in 2011 by European Bank of Reconstruction and Development in cooperation with the World Bank (EBRD, 2009; Habibov, 2013). Our sample covers Post-Socialist Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Mongolia, Russia, Tajikistan, Ukraine, and Uzbekistan. Approximately 1000 respondents in non-institutionalized populations were interviewed face-by-face in each country by especially trained interviewers. However, since our focus is on healthcare satisfaction, our sample is limited to the respondents who reported using public healthcare within the last 12 months.

The LITS uses a clustered sampling design. According to LITS manual (Ipsos, 2011), communities are clusters with clearly defined borders (e.g. census enumeration areas or voting districts) based on the most recent national censuses or election lists (CITE). Clusters are selected for the survey based on the probability proportional to size. Each country included approximately 50–70 clusters

depending on the geographical and population size. Within the clusters, a random walk fieldwork method was employed select a household for the interview. Maximum of 20 households were selected randomly for the interview in each cluster. Finally, within the households, the “last birthday” method was employed to select the respondent for the interview. Replacement was not allowed to avoid selection bias. The Research Ethics Board of University of Windsor does not require ethical approval for secondary data analysis.

### 2.1. Outcome, predictor, and controls

Our outcome variable is satisfaction with healthcare. The LITS asked respondents to rate their satisfaction with the quality and efficiency of the public healthcare system. Satisfaction is measured on five-point ordinal scale, ranging from “very unsatisfied” to “very satisfied”. Satisfaction is treated as continuous measure across all estimations (Kim et al., 2011). Our predictor variable is corruption in healthcare. The LITS asked whether an unofficial payment was made or gift was given to public healthcare personnel in the last 12 months. The responses are binomial (Yes = 1, No = 0).

Socio-demographics are controlled by age, gender, and education of respondent. Healthcare quality is controlled by the index of healthcare quality. The LITS asked respondents a set of question regarding problems they may have encountered in healthcare, such as frequent and unjustified absence of doctors, treated disrespectfully by personnel, availability of medication, long waiting times, and unclean facilities. The responses are binomial (no such a problem = 1, otherwise = 0). Summing up these binomial answers, we created an additive index varying from 0 to 5, where a higher index value represents higher quality of healthcare received. To control for needs for healthcare, we use a binomial variable of poor health status, where value of 1 denotes a respondent who reported poor or very poor health. Tertiles of wealth index represent middle 33.3% and wealthiest 33.3% of households in each country (Filmer and Pritchett, 2001). Descriptive statistics is reported in Table 1.

### 2.2. Analysis

We commence by using OLS, where the outcome variable is satisfaction with healthcare, the predictor variable is corruption in healthcare with individual-level controls are as discussed above. Next, we estimate a 2SLS model. In the first-stage, corruption is regressed on two instruments and covariates, including fixed effects. In the second-stage, healthcare satisfaction is regressed on the predicted value of corruption from the first stage and

**Table 1**  
Descriptive statistics.

	Mean	Std. Dev.	Min	Max	Yes (%)
Outcome					
Satisfaction with healthcare	3.252	1.066	1	5	
Predictor					
Experienced corruption in healthcare		0.005	0	1	37%
Controls					
Healthcare service quality	3.959	1.202	0	5	
Poor health		0.37	0	1	16%
Age	43.658	17.024	17	93	
Female		0.005	0	1	66%
University		0.005	0	1	25%
Middle wealth households		0.005	0	1	30%
Wealthiest households		0.005	0	1	31%
Work		0.005	0	1	49%
Instruments					
Ask for interference		0.004	0	1	12%
Frequency of public service utilization	2.201	1.155	1	8	

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