SURVIVAL IN TRANSITION: INFORMAL PAYMENTS IN HEALTHCARE

by

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A thesis submitted in partial
fulfillment of the requirements for the
degree of

MA in Economic Analysis
.

Kyiv School of Economics

2019

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Kyiv School of Economics

Abstract

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Informal payments are often considered as the response of the public system for being underfunded. Informal payments allow people, who provide public services, to survive while being underpaid. That does explain why all countries of former Eastern Bloc had a high rate of informal payments at the beginning of their transition to the market economy. Still, informal payments themselves managed to survive in some countries over the decades since the transition. They spoil the system, by undermining justice and increase the real cost for patients. This work studies determinants of informal payments in healthcare based on the third round of Life in Transition Survey, carried in 2016.

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ACKNOWLEDGMENTS

The author is grateful to his thesis supervisor Maksym Obrizan for his well-timed advices and to all Research Workshop professors for reviewing the early drafts of the thesis and their helpful remarks.

Additionally, the author is grateful to Sergiy Gusovsky and Alex Lissitsa for providing financial support and mentorship during the first and second years of my studying in Kyiv School of Economics.

GLOSSARY

IP – informal payment

EE – Eastern Europe

FSU – Former Soviet Union

LiTS II – Second round of Life in Transition Survey, carried in 2010

LiTS III – Third round of Life in Transition Survey, carried in 2016

SE – Southern Europe

Chapter 1

INTRODUCTION

There are several types of payment, which fall under the definition of informal payments in health care. The first type is payment for services, which is made through unofficial channels. They can be asked explicitly, be expected or offered by patients themselves. The examples of this type of payments are "under-the-table" payments to physicians, as well as "voluntary contributions" to the hospital. The second type is paying for goods and services, which supposed to be free. The examples of this type of payments are the usage of medical supplies and drugs purchased by a patient which supposed to be provided by the health care system (Lewis 2007).

Also, there is a third group of payments, which includes voluntary gifts and donations, when patients were not being asked to pay it but wanted to express their gratitude or support the maintenance of the system. The example of this type is a lasting tradition of giving gifts to physicians by the end of the treatment or small payments for underpaid staff who provide services for free. Since the difference between "fee-for-service" and "voluntary donation" is subtle (Gaal and McKee 2005), and both of them may affect the decision-making process of individuals, participating in the health system, we define this third group of payments as informal.

The research question of this work is to study the factors which affect the significance of informal payments in financing public health care. These factors can be divided into two groups, about hospitals and about patients.

The first group of factors measures the quality of health care services. They allow us to test, for example, whether an increase in waiting time increases the likelihood of informal payment significantly. The results of testing such hypotheses may help local authorities to make better decisions, and allocate resources for solving more crucial problems.

The second group of factors is about patients themselves. We study how wealth, health and connections effect on the probability that person will make an informal payment. We expect that higher wealth and connections, along with lower health status, have a positive effect on the probability of informal payments.

The existence of informal payments increases the real cost of the health care system and undermine equality and justice. They create unaccounted barriers which prevent individuals from low-income households from seeking treatment, even when the system guarantees free access to health care (Atanasova et al. 2012). In response, individuals from low-income households seek help from less specialized personnel, for example, nurses instead of doctors (Habibov 2009); stay longer in queues while better-off individuals could make informal payments to receive quicker and better health services. This lowers quality of healthcare services, undermines social trust, and decreases overall satisfaction among patients due to a higher perception of corruption in the health care system.

However, physicians may argue being underfinanced by the state and claim that the existence of informal payments is the only way to maintain a sufficient level of medical care. Still, as they do not pay any taxes from received informal payments, they do not participate in income redistribution made by the taxation system, which ideally should decrease inequality.

Our contribution is the following. We use a newer round of Life in Transition Survey, which been carried in 2016. It uses comparable, but different questionnaire than in the LiTS II, and carried six years later. That explained why our results differ for some extent from the closest paper of (Habibov and Cheung 2017), which is based on LiTS II, carried in 2010.

We analyze existing academic literature in Chapter 2; present our model and hypotheses in Chapter 3; show sample composition and data description in Chapter 4; estimate and discuss the results in Chapter 5; summarize main findings and provide policy recommendations in Chapter 6.

Chapter 2

LITERATURE REVIEW

The first part of the literature review present works done for countries of former Eastern Bloc, divided into three regions: Former Soviet Union, Eastern Europe, and Southern Europe.

However, the results of majority papers are usually difficult to compare due to the difference in the methodology applied and different timing of data collection across countries (Stepurko et al., 2015). The second part of the literature review focused of cross-national studies.

2.1. Evidence from former Eastern Bloc

In general, the problem of informal payments is not a new one. Numerous works are being done for different regions around the world, such as Asia, Eastern Europe, Africa, and Latin America. Moreover, the probability of informal payment being made in health care varies significantly from 3 percent in Peru to 96 percent in Pakistan, accordingly to (Lewis 2007).

The countries of our research belong to the same region of former Eastern Bloc. They have a shared past of being influenced by a centrally planned economy, and they all followed the path of economic liberation and transition to a market economy. However, the pace of reforms was different, and researchers often classify transition countries into three regions: Eastern Europe, including of Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia; Southern Europe, including Albania, Bosnia, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, and Serbia; and Former Soviet Union, without Baltic States. Three Baltic countries are included in Eastern Europe instead of the former Soviet Union region because they are in the European Union and differ from the FSU region (Balabanova et al. 2004).

The most successful reforms were in the Eastern Europe region, while FSU countries are still in transition. In Figure 1, we present how the probability of making informal payment during the past year varies across the countries grouped by these regions, estimated on data from Life in Transition Survey III, carried in 2016.

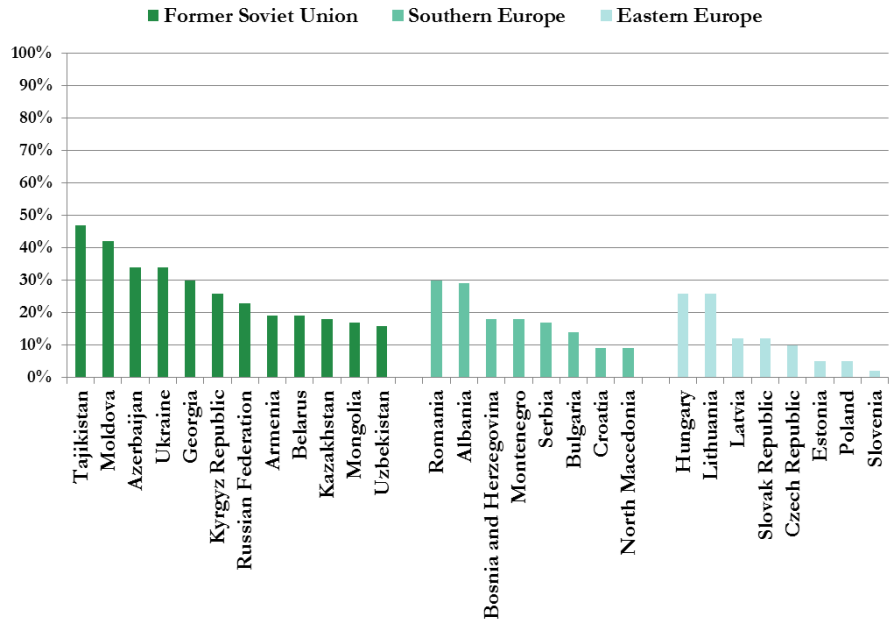

Figure 1. The percentage of households which members made an informal payment at their visit to the public hospital during the past year, 2016

Central Asian countries show on average the highest frequency of informal payment among countries of our study. (Falkingham 2004) and (Habibov 2009) reported for Tajikistan that one of the most important determinants of out-of-pocket expenditures is the ability and willingness to pay. Such results are consistent in other countries, such as Kazakstan (Ensor and Savelyeva 1998), or Kyrgyzstan (Falkingham et al. 2010). It includes payments for drugs and other medical supplies, laboratory and physician charges as well as payments for nurses. Eventually, it increases the real cost of health care for

potential patients, as reported for Georgia (Gotsadze et al. 2005), even when officially health services are free (Aarva at al. 2009).

Another important factor which increases the chances of informal payments is underfunding in health care. Many public workers, who received minimum wages, continue their services, but expect informal payments from their counterparty at the public health system, public education, and the road police in Ukraine (Polese 2008). However, if a new patient is in need, or being introduced by an existing patient, the expected payment may be smaller (Morris and Polese 2016). Still, public opinion for such payments is negative, and their existence lowers patients' satisfaction with the healthcare system, as in (Stepurko et al. 2015) for Lithuania, Poland, and Ukraine.

Some other works for the countries in Eastern Europe, with similar results are (Albert 1992) for Czech Republic, (Barr 1996) for Estonia, (Chawla et al 1999) for Poland, (Dobryninas 2005) for Lithuania, (Murauskiene et al. 2012) for Lithuania, (Golinowska and Tambor 2012) for Poland.

As for Southern Europe, some other works based on national surveys are (Mastilica and Bozikov 1999) for Croatia, (Balabanova and McKee 2002) for Bulgaria, (Burak and Vian 2007) for Albania, (Atanasova et al. 2012) for Bulgaria.

2.2. Evidence from cross-national surveys

There are a few research papers on the topic of informal payments where we can compare results from different countries. It could be explained by the fact that such works require surveys where people will report informal papers, and cross-national surveys cost more. The first research which provides comparable results was done for eight countries from the former Soviet Union (Balabanova et al. 2004). It uses cross-sectional surveys carried in Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, and Ukraine in 2001. The results show the percentage of patients paying

informally, which varies from 8 percent in Belarus to 65 percent in Georgia. Another research has been done for Estonia, Latvia, and Lithuania based on the survey being carried in 2002 (Cockcroft et al. 2008). The results vary from 1 percent for Estonia to 8 percent for Lithuania.

Another way, how such studies may be conducted is by using datasets being collected for other purposes. The next study of (Habibov and Cheung 2017) used Life in Transition Survey II. This survey was carried in 2010 and provided information about standards of living, employment, trust into institutions, and attitudes towards a market economy and democracy, with only a few variables concerning healthcare. Still, it was enough to study the determinants of informal payments and attain comparable results across all countries of the former Eastern Bloc. Since then, six years passed, and a new round of Life in Transition Survey III appears. The change of informal payment frequency is presented in Figure 2.

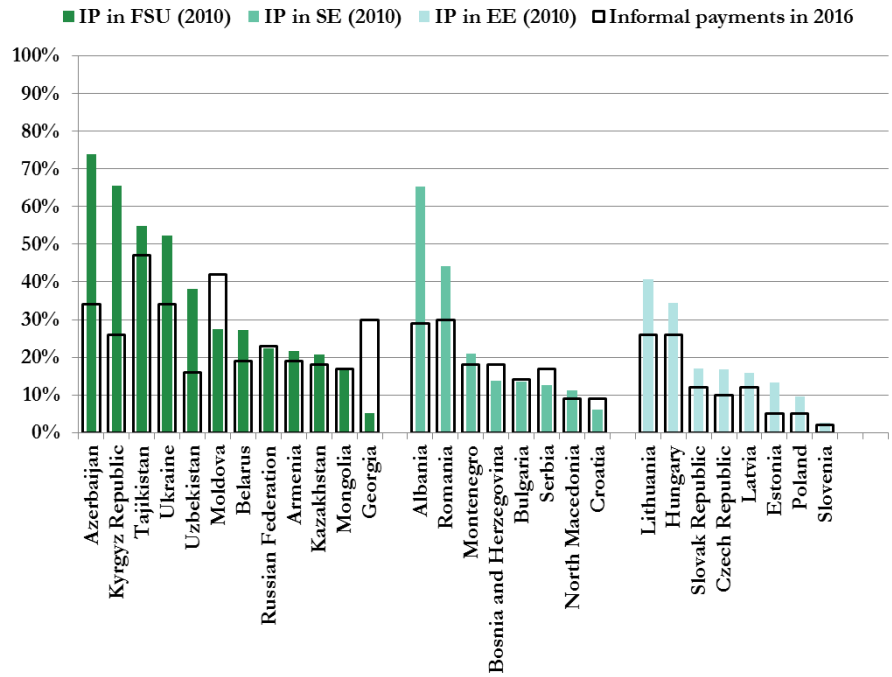

Figure 2. The change of informal payment frequency between 2010 and 2016

Chapter 3

METHODOLOGY

The model we used is based on the model from similar research (Habibov and Cheung, 2017), which is based on the previous wave of LiTS II, being conducted in 2010. Since then, a new round was carried in 2016, which consist of a slightly different set of questions. For instance, in the LiTS III, there are no questions related to the categories of people, who can be asked by the respondent for help. Thus, we use another set of variables to capture the potential effect of social embeddedness. Variables concerning the head's of household wealth, health and social embeddedness from the side of patients and indicators of poor quality of health care services from the side of hospitals are the main groups of variables, which effect we examine in our models.

Thus, the structure of this chapter is the following. In the first part, we study the effect of wealth and health. In the second part, we consider the indicators for the lack of quality for healthcare services which are available to us. In the third part, we take into account social embeddedness. In the fourth part, we use country fix effects instead of regional dummies and list additional variables for robustness check.

3.1. The effect of wealth and health

In the first model, we take into consideration the only effect of wealth and health on the probability of informal payment, with social-demographic controls and dummies for regions.

$$P(IP) = \beta_0 + \sum_{i=1}^{4} \beta_i Cqnt_i + \sum_{i=5}^{8} \beta_i health_i + \text{controls} + \text{region} \quad (1)$$

IP is our dependent variable and equals to 1 if the head or any other member of the household made an unofficial payment while using healthcare services during the past year, and 0 otherwise.

$Cqnt$ corresponds to the quintile of household consumption weighted by household size (1= the smallest expenditures per capita, 5= the largest expenditures per capita) calculated separately within each country.

$health$ corresponds to self-assessment of health made by the head of household herself (1= very bad, 5=very good).

Our social-demographic controls are:

$children$ equals the number of children (age < 18) in household

$elders$ equals the number of elders (age > 60) in household

age corresponds to the age of the head of household.

$male$ is equal to 1 if the head of household is male, and 0 otherwise.

$univeduc$ is equal to 1 if the head of household has a university education (starting from post-secondary education), and 0 otherwise.

$unemployed$ is equal to 1 if the head of household is unemployed, and 0 otherwise.

$married$ is equal to 1 if the head of household is married, and 0 otherwise.

$urban$ is equal to 1 if the household is in urban region, and 0 otherwise.

Our region indicators are:

EE is equal to 1 if the household is in Eastern Europe, and 0 otherwise.

SE is equal to 1 if the household is in Southern Europe, and 0 otherwise.

FSU is equal to 1 if the household is in the Former Soviet Union region, and 0 otherwise.

We expect the increase of likelihood for making an informal payment by a representative of the wealthier household for several reasons.

Firstly, other things constant, they are more able to pay an unofficial premium for better healthcare services. For example, they may pay for personal supervision of doctor when there is no need or they may be willing to stay longer if they think it will help them better to recover.

Additionally, it creates an incentive for asking an informal payment for hospital staff because they knew their patients might afford that (Gaal et al. 2006). It potentially creates discrimination in favor of members from poorer households, known as "Robin Hood Hypothesis", when informal payments are taken only from rich to continue the treatment of poor while being underfunded (Belli et al. 2004).

Another explanation is that individuals from wealthier households may have a higher opportunity cost of time spent in queues and may use informal payments not only as a tool for getting better quality of services but also for getting them faster (Stepurko et al. 2015).

The last reason for making informal payments is gratitude and reciprocity. However, the difference between a voluntary donation and unofficial fee-for-service may be subtle, while the tradition of giving gifts may discourage more impoverished individuals from seeking professional help (Gaal and McKee 2005).

As a result, our first hypothesis looks like:

H1: Members of wealthier households are more likely to make unofficial payments.

Health self-assessment is another potentially important factor in explaining the rate of informal payments. Individuals, who consider themselves as having worse health, other things constant, may use healthcare services more often. Because our dependent variable measures the fact of making payments during the past year, an increase in the number of visits will increase the probability of informal payment. Additionally, such individuals may consider themselves as more vulnerable, and may easier agree to pay informal payment while being afraid for their lives. Moreover, such cases may require treatment with a higher cost for the hospital itself, and may not be available in full scale for all patients. Overall, the next hypothesis is the following:

H2: Individuals with worse self-assessment health is more likely to make an informal payment during the past year.

3.2. The effect of lack of quality

To our Model 2 we added indicators which correspond to lack of quality in healthcare services, which available in Life in Transition Survey III.

$$P(IP) = (\text{as in Model 1}) + \beta_9 nopersonnel + \beta_{10} impolite + \beta_{11} nodrugs + \beta_{12} waiting + \beta_{13} notclean \quad (2)$$

$nopersonnel$ is equal to 1 if a head of household has encountered a frequent and unjustified absence of physicians at a public hospital during the past year, and 0 otherwise.

$impolite$ is equal to 1 if a head of the household was treated disrespectfully by personnel at a public hospital during the past year, and 0 otherwise.

$nodrugs$ is equal to 1 if a head of household has encountered a shortage of drugs which have to be provided by a public hospital during the past year, and 0 otherwise.

$waiting$ is equal to 1 if a head of household thought that she had encountered a long waiting time at a public hospital during the past year, and 0 otherwise.

$notclean$ is equal to 1 if a head of household had encountered facilities at a public hospital being not clean during the past year, and 0 otherwise.

These five variables concern the other side participating in transactions. Providers not only receive informal payments but have a choice to ask. It is common to define corruption as "getting a private gain from the public workplace". Still, in transition countries, the perception of bribes depends on whether they being asked for it or receive voluntarily (Polese 2008).

While being underfunded, healthcare services providers have several choices. They may either decrease the number of beds-days provided or lower the quality standards. However, the number of beds lowering is unlikely to happen because in many post-Soviet systems budget for hospital staff depends on a number of filled beds (Ensor 2004). That leads to the situation when hospitals are "over-staffed but under-equipped", where physicians are forced to find additional sources of income.

As a result, the quality of services worsened which can be captured with such indicator variables as $nopersonnel, impolite, nodrugs, waiting$ and $notclean$. From the other side, patients may be more willing to pay informal payment to receive better quality of services, when proposed quality is low. Thus, our next hypotheses (H3-H7) look as:

H3: Frequent and unjustified absence of physicians increase the likelihood of informal payments.

H4: Frequent and unjustified absence of physicians increases the likelihood of informal payments.

H5: Disrespectful treatment by healthcare personnel increases the likelihood of informal payments.

H6: Shortages of free provided drugs increase the likelihood of informal payments.

H7: The fact of facilities at a public hospital being not clean increases the likelihood of informal payments.

3.3. The effect of social embeddedness

For the third model we take into account social embeddedness, with two additional variables.

$$P(IP) = (\text{as in Model 2}) + \sum_{i=14}^{17} \beta_i socialties_i + \beta_{18} publicsector \quad (3)$$

$socialties$ is equal to the frequency of meeting with friends or relatives who are not living in the same household (0= Never, 1= Less often than once a month, 2= Once or twice a month, 3= Once or twice a week, 4= On most days).

$publicsector$ is equal to 1 if a head of household works in a public sector, and 0 otherwise.

In order to capture social embeddedness of household, we use another two variables concerning the head of the household.

The first one corresponds to the frequency of interactions with friends or relatives outside the household, which should capture both the strength and the extent of social ties. The higher it is, the more developed social network is expected to be, which increases the chances of mobilizing resources and connections when it is needed. Other things constant, the help from outside of the household is expected to increase chances of taking treatment with high out-of-pocket expenditures initially unaffordable to a household in low- and middle-income countries (McIntyre et al. 2006).

Thus, our hypothesis concerning this variable is:

H8: More frequent social interactions with friends and relatives outside household increase the probability of making informal payments during the past year.

Another variable which we use to take social embeddedness into account is working in the public sector. However, we expect the opposite effect on the rate of informal payments. Public servants may have access to a better quality of healthcare with the help official benefit packages or their connections. That decreases the need for informal payments for them, while may increase for others who initially don't have such access but ready to pay for it. Thus, our next hypothesis is:

H9: Working in the public sector decreases the probability of making informal payments during the past year.

3.4. Country fixed effect

In our Model 4 we add country dummies instead of region indicators.

$$P(IP) = \beta_0 + \sum_{i=1}^{4} \beta_i Cqnt_i + \sum_{i=5}^{8} \beta_i health_i + \text{controls} + \text{quality} + \text{embeddedness} + \text{country} \quad (4)$$

H10: Unobserved country characteristics are significant for estimating the probability of informal payments in healthcare.

The motivation for such hypothesis arises from the differences in rates of informal payments from 2% in Slovenia up to 47% in Tajikistan.

As for robustness check, we will use GDP per capita instead of country indicators and call it Model 5. The estimates of Models 3-5 are presented in Table 12 in Appendix A.

Chapter 4

DATA DESCRIPTION

The data for the research includes the Life in Transition Survey III carried by the European Bank of Reconstruction and Development, in collaboration with the World Bank. There were three waves of this survey, which all study countries in transition of former Eastern Bloc with some neighboring countries for the sake of comparison. The first survey was carried in 2006, the second after the crisis in 2010 and the last in 2016. Questionnaires for later waves are based on former, and all ask representatives of households about their social-economic state and perceptions.

The first part of this chapter is devoted to the sample composition, while the second presents descriptive statistics of variables.

4.1. Sample composition

The data we use is cross-sectional, with household as a unit of observation.

Initially, there are 51,205 observations for 34 countries. After we leave only our countries of interest, we have 42,201 observations for 28 countries.

Additionally, not all households have used health care services during the past 12 months. After we exclude them from our sample, we left with 23,495 observations.

246 households refuse to reply whether they make informal payments, or reply that they do not know. Every household is being represented by the head of household and randomly (by the rule of latest birthday) secondary respondent, if available. However, only the primary respondent, which in most cases is the head of the household, answered questions about healthcare. Thus, we consider only information from the head of the household as a representative of the household. 246 households refuse to reply whether they

make informal payments, or reply that they do not know. Also, 97 primary respondents were not the head of household. Given the number of observations we have, we exclude them from our research as outliers. At this point, we have 23,152 observations.

The next step is constructing our proxy for wealth, which is household consumption per capita. We sum up the monthly expenditures on food, beverages, and tobacco with expenditures on utilities and transportation (which include public transportation and fuel for a car). Then multiplied by 12 and add up information we had on such yearly expenditures as education, health, clothing and footwear, and durable goods. The data presented are in local currencies, so we divide by a number of peoples in household and split into five quintiles within each country. At this point, we have left with 16,782 observations.

After we add other variables for health and embeddedness, we left with 16,716 observations. That is our final number of observations, while the process is summarized in Table 1.

Table 1. Summary of sample composition

Step	Size of sample
Initially for 34 countries	51,205
For 28 countries of interest	42,201
Used health care sevices last 12 months	23,495
Head of household replied about IP	23,152
Calculated consumption per capita	16,782
Final version of sample	**16,716**

4.2. Descriptive statistics

We divide our variables into four groups for this chapter:

- primary information about patients, including IP, wealth, health and embeddedness
- lack of quality indicators
- social-demographic controls
- country effect variables

Here and after we present information on the final version of the sample. That means we have representatives not for all population, but only whose of them, who have used the public health system during the past year. Thus, our estimate will be different from estimates for the whole population.

Table 2. Descriptive statistics of primary information about patients

Variable	Mean	SD	Min	Max
Informal payment was made during the past year, indicator variable	0.18	0.38	0	1
Consumption of household per capita, 1 = the lowest, 5 = the highest	3	1.41	1	5
Self-assessment health, 1 = very bad, 5 = very good	3.34	0.93	1	5
Frequency of meeting with friends or relatives outside the household, 1 = never, 5 = on most days	3.53	1	1	5
Working in public sector, indicator variable	0.08	0.28	0	1

Our dependent variable, IP, varies across countries from 0.02 for Slovenia to 0.47 for Tajikistan, with the average value for dataset around 0.18.

Expenditures per capita of the poorest households are twice lower than average, while the wealthiest spend 2.6 times more (Figure 3). We expect to have even greater inequality if we take into account households whose members have not used public health services.

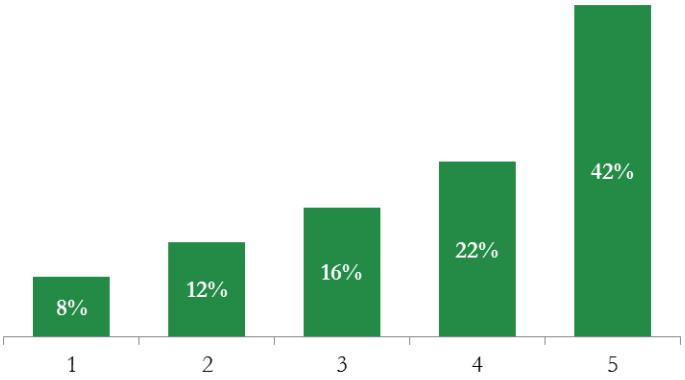

Figure 3. Consumption distribution by quintiles

56% of respondents do not report having good health (Figure 4). We expect to have a better situation with health if we take into account whose have not used public health services.

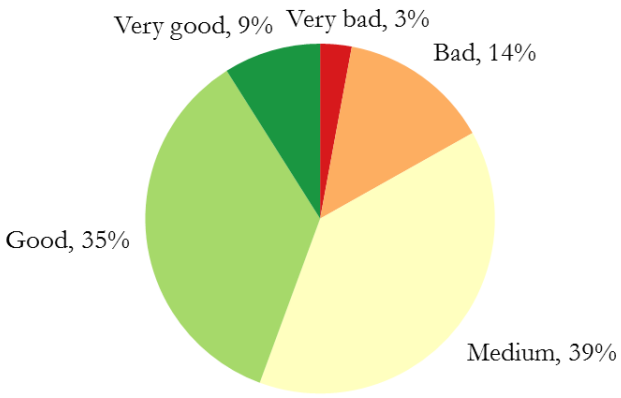

Figure 4. Self-assessment of health

Only 18% of respondents see their friend or relatives outside the household on the most days, while the same percentage of people maintain connections less often than once a month.

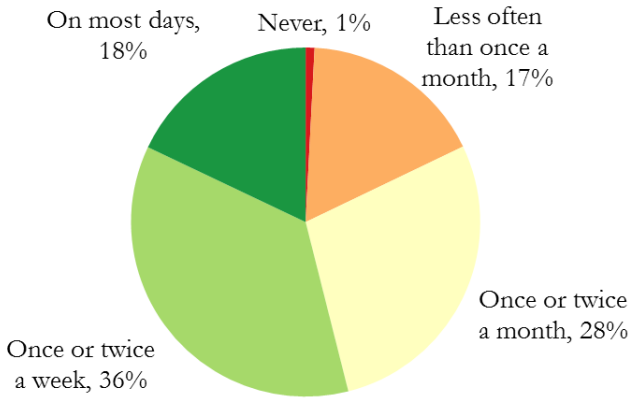

Figure 5. Frequency of meeting with friends and relatives

Only 8% of respondents are working in the public sector, such as education and administration. Here we do not include working in state-owned enterprises or international organizations.

Next group of variables is lack of quality indicators.

52% of respondents report at least one problem with quality. The most prevalent reported problem was long waiting time, with 42% of households who visited a public health clinic. The absence of drugs and disrespectful treatment are the next two problems with the frequency of 16% and 14% respectively, while the frequent absence of personnel and facilities being not clean had the frequency of 9% and 7% respectively.

The descriptive statistics for the lack of quality indicators are presented in Table 3.

Table 3. Descriptive statistics for the lack of quality indicators

Variable	Mean	SD	Min	Max
Frequent and unjustified absence of physicians, indicator variable	0.09	0.28	0	1
Was treated disrespectfully by personnel, indicator variable	0.14	0.35	0	1
Encountered a shortage of drugs, indicator variable	0.16	0.37	0	1
Encountered a long waiting time, indicator variable	0.42	0.49	0	1
Encountered facilities being not clean, indicator variable	0.07	0.25	0	1

The descriptive statistics for controls are presented in Table 4. However, by the construction of the survey, everyone older 95 reports 95 instead of their real age. Also, the size of the household was bounded by 10, so if there are more people who "live together, put resources in common and share meals", they choose whose ten people to report. Thus, age, the number of children or elders could be underestimated.

Table 4. Descriptive statistics for social-demographic controls

Variable	Mean	SD	Min	Max
Number of children (age < 18) in the household	0.61	0.99	0	7
Number of elders (age >= 60) in the household	0.24	0.44	0	3
Age	50.91	17.68	18	95
Male, indicator variable	0.4	0.5	0	1
University education, indicator variable	0.42	0.49	0	1
Unemployed, indicator variable	0.51	0.5	0	1
Married, indicator variable	0.58	0.49	0	1
Live in urban region, indicator variable	0.58	0.49	0	1

The rest of the variables are controls for country effect, which used in different specifications and robustness check. They are presented in Table 5.

Table 5. Descriptive statistics for controlling the effect of country/region

Variable	Mean	SD	Min	Max
Country, categorial variable			1	28
Live in FSU region, indicator variable	0.355	0.48	0	1
Live in Eastern Europe, indicator variable	0.4	0.49	0	1
Live in Southern Europe, indicator variable	0.245	0.43	0	1
GDP per capita, constant 2011 international $	19,088	8,899	2,761	31,295

Former Soviet Union region consist of Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Mongolia, Russia, Tajikistan, Ukraine, and Uzbekistan.

Eastern Europe consists of Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.

Southern Europe consists of Albania, Bosnia, Bulgaria, Croatia, Montenegro, North Macedonia, Romania, and Serbia.

Chapter 5

ESTIMATION RESULTS

Our dependent variable is binary; thus we use a logit model for estimations.

The coefficient of such models is harder to interpret; thus, we report odds ratios.

The dataset, which we use, have a clustered design – 73-76 Primary Samplings Units represented each country. Thus, we use cluster-robust standard errors.

In Chapter 3, we defined four models, and the following results of estimations are six grouped by variables of interest. They are wealth, health, quality, embeddedness, controls, and country. In this chapter, we estimate them and report the main results.

Table 6. The effect of wealth on informal payment probability

Variable	Model 1	Model 2	Model 3	Model 4
Cqnt				
1-st	0.726***	0.717***	0.716***	0.705***
	(0.0519)	(0.0504)	(0.0503)	(0.0557)
2-nd	0.965	0.963	0.963	0.958
	(0.0616)	(0.0624)	(0.0624)	(0.0642)
4-th	0.995	1.018	1.017	1.010
	(0.0639)	(0.0658)	(0.0659)	(0.0688)
5-th	1.294***	1.292***	1.296***	1.300***
	(0.0873)	(0.0892)	(0.0890)	(0.0945)

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

The first group is wealth, which is represented by the place of household consumption per capita within the country. The reference group is middle-

income households with average consumption. The results, which are presented in Table 6, show that the association to the most deprived quintile significantly lowers the chances of informal payment, while the affiliation with the wealthier quintile increases the probability in approximately 1.3 times, other things constant. It supports our hypothesis 1.

Table 7. The effect of health on informal payment probability

Variable	Model 1	Model 2	Model 3	Model 4
health				
Good health	1.201* (0.103)	1.169 (0.0963)	1.165 (0.0964)	1.182 (0.103)
Medium health	1.527*** (0.140)	1.444*** (0.129)	1.431*** (0.129)	1.494*** (0.147)
Bad health	1.901*** (0.201)	1.749*** (0.181)	1.727*** (0.180)	1.757*** (0.197)
Very bad health	1.882*** (0.292)	1.728*** (0.261)	1.694*** (0.260)	1.762*** (0.270)

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

The second group is the self-assessment of health. The reference group is respondents with very good health, and results are shown in Table 7. The answer to each respondent is very subjective, and different people may evaluate the same health status differently. However, we may suggest, that starting from respond of having medium health or worse, it became the indicator of having some problems (without knowing the scope). Moreover, the results support this idea, with the significance of influence the health status on the informal payments rate starting from medium health and worse. Moreover, the odds ratios increase with worsened self-assessment health, which is consistent with our hypothesis 2.

Table 8. The effect of lack of quality in health care services

Variable	Model 1	Model 2	Model 3	Model 4
quality				
nopersonnel		1.224*	1.225*	1.310**
		(0.103)	(0.104)	(0.112)
impolite		1.733***	1.731***	1.835***
		(0.134)	(0.134)	(0.142)
nodrugs		1.832***	1.835***	1.703***
		(0.126)	(0.126)	(0.132)
waiting		1.067	1.068	1.178**
		(0.0613)	(0.0616)	(0.0657)
notclean		1.413**	1.413**	1.332**
		(0.155)	(0.155)	(0.126)

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Starting from Model 2 we include the third set of variables. They correspond to the lack of quality in hospitals observed by patients during the past year.

As we see in Table 8, all indicators of a lack of quality are important for our analysis. Moreover, the existence of problems in public hospitals increases the frequency of informal payment being made in the healthcare system, which corresponds to our hypotheses 3-7.

Additionally, almost all indicators of quality, except *waiting*, have an effect on IP at least as much as belonging to the wealthiest quintile of the household. It shows, that willingness to pay, other things constant, has approximately the same effect as the ability to pay in case of *nopersonnel* and *notclean* indicators, and even larger importance in case of *impolite* and *nodrugs*. So in general, we may conclude that hospitals underfunding has a stronger effect on IP, than wealth inequality.

Variable *waiting* becomes significant only after we include country fixed effects instead of regional indicators in Model 4. Other things constant, the experience of waiting for a long time in hospital increase IP rate in 1.18 times. Additionally, after we take into account unobservant country-specific characteristics in Model 4, variable *nopersonnel* became more significant

Table 9. The effect of social embeddedness on informal payment probability

Variable	Model 1	Model 2	Model 3	Model 4
socialties				
< once a month			0.922 (0.221)	0.851 (0.198)
<= twice a month			0.864 (0.203)	0.849 (0.193)
<= twice a week			0.866 (0.205)	0.857 (0.199)
On most days			0.815 (0.198)	0.879 (0.210)
publicsector			0.898 (0.0653)	0.918 (0.0701)

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

The fourth set of variables is to capture social embeddedness. In Table 9, we present results of our estimations, with the answer "Never" as the reference category for variable *socialties*. Despite having no significant effect, we left these variables in our Models 3-4 for several reasons.

Firstly, these variables capture social capital, which brings supplementary access for goods, services, and information outside the household. When the government fails to respond in changing of preferences and increases of demand for certain goods, connections and informal payments filled the gap. It was crucial for surviving in the central planning economy, and create

unique situations when "shelves were empty, but fridges remain full". Because our study is based on transition countries, such effect still may be present to some extent. Thus, from the perspective of theory, we should report these variables in the model, even if they show insignificant results.

Secondly, similar variables were included in (Habibov and Cheung 2017), which is based on the previous round of Life in Transition Survey carried in 2010, and shows significant or close to significant results. In the LiTS III, no variables are corresponding to which group of the social network a respondent may ask for help in case of need. Thus, we use a different set of variables to capture social embeddedness.

Despite having the support from theory and empirical studies, all variables for measuring social embeddedness are insignificant in our models, so our hypotheses 8-9 is not confirmed. There are at least two possible explanations for these results.

Firstly, these variables may be bad proxies for measuring social capital. The frequency of meeting with friend and relatives outside the household may capture the number of connections, but we have no information how strong these relations, or what even more important, how potentially helpful these connections could be. On the contrast, the social network variables, which were available in LiTS II, provide the number of people from certain social groups whom respondents could ask for help. If we look closer on results of (Habibov and Cheung 2017), we will see that only asking relatives was significant in all specifications, while asking friends, on the contrary, was insignificant in all models. Still, we do not have such variable in LiTS III and include the best we have.

Secondly, these variables may become insignificant with the pace of time, because we study developing countries based on the data 6 years after LiTS II was carried. As countries continue their transaction, social networks became less import as the alternatives for government and the free market.

In Table 10 we present results of our estimations, with Eastern Europe as the reference category for the variable *region*, while in Table 11 we present results of our estimations, with Slovenia as the reference category for variable *country*.

Table 10. The effect of control variables on informal payment probability

Variable	Model 1	Model 2	Model 3	Model 4
controls				
children	1.043	1.048	1.049	1.034
	(0.0332)	(0.0348)	(0.0345)	(0.0342)
elders	1.026	1.020	1.019	1.073
	(0.0638)	(0.0657)	(0.0657)	(0.0723)
age	0.993***	0.995***	0.995***	0.996**
	(0.00130)	(0.00138)	(0.00141)	(0.00137)
male	0.937	0.919	0.914	0.892*
	(0.0460)	(0.0448)	(0.0447)	(0.0452)
univeduc	1.039	1.026	1.033	1.009
	(0.0523)	(0.0527)	(0.0538)	(0.0498)
unemployed	1.015	1.037	1.019	0.962
	(0.0572)	(0.0569)	(0.0569)	(0.0562)
married	1.229***	1.248***	1.248***	1.231***
	(0.0600)	(0.0629)	(0.0629)	(0.0600)
urban	0.994	0.962	0.958	0.966
	(0.0604)	(0.0553)	(0.0547)	(0.0552)
region				
FSU	1.787***	1.417***	1.405***	
	(0.138)	(0.111)	(0.112)	
SU	1.496***	1.236*	1.240*	
	(0.132)	(0.112)	(0.112)	

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table 11. The effect of country on informal payment probability

Variable	Model 4
Albania	20.30***
	(7.911)
Armenia	11.14***
	(3.834)
Azerbaijan	24.12***
	(9.093)
Belarus	7.271***
	(3.004)
Bosnia and Herzegovina	9.305***
	(3.301)
Bulgaria	8.124***
	(3.396)
Croatia	4.564***
	(1.787)
Czech Republic	6.378***
	(2.330)
Estonia	3.132**
	(1.185)
Georgia	1.595
	(0.665)
Hungary	15.87***
	(5.533)
Kazakhstan	6.317***
	(2.362)
Kyrgyz Republic	10.17***
	(3.984)
Latvia	7.300***
	(2.357)
Lithuania	18.90***
	(6.162)
Moldova	30.88***
	(9.746)
Mongolia	7.739***
	(2.721)
Montenegro	8.087***
	(3.084)

Table 11. The effect of country on informal payment probability – Continued

Variable	Model 4
North Macedonia	4.031***
	(1.289)
Poland	2.470*
	(1.039)
Romania	20.49***
	(7.787)
Russian Federation	10.58***
	(3.600)
Serbia	7.603***
	(3.096)
Slovak Republic	6.984***
	(2.888)
Tajikistan	39.57***
	(14.78)
Ukraine	16.75***
	(6.036)
Uzbekistan	9.006***
	(3.587)

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

As for controls, age and marital status have a significant effect. Regional indicators are significant, and living in FSU region increases the odds ratio for IP the most. As for country fixed effects, all country indicators are significant except for Georgia, while their magnitude of odds ratios corresponds to the distribution of informal payments across countries.

Chapter 6

CONCLUSIONS

In this paper, we checked such factors influencing informal payment probability as wealth, health, and social embeddedness of patients and the lack of quality indicators for public health clinics. We study the effect of these factors in 28 countries of Former Eastern Bloc based on Life in Transition Survey III, carried in 2016. We estimate by using a logit model with cluster-robust standard errors and report odds ratios.

Higher wealth status and lower health self-assessment of patients significantly increase informal payment probability, while social embeddedness has not shown a significant effect. This information could be used for sampling the respondents who most likely to make an informal payment.

All reported flaws in the quality of public health services are significantly increasing the frequency of informal payment. However, the effect of the most frequently reported problem of long waiting time is the smallest among other problems, while disrespectful treatment and absence of drugs have the most substantial effect on the likelihood of informal payment. The policy implication is to focus more public attention to the absence of drugs or cases of disrespectful treatment instead of long waiting lines.

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APPENDIX A. Robustness check

Table 12. Robustness check

Variable	Model 3	Model 4	Model 5
Cqnt			
1-st	0.716***	0.705***	0.733***
	(0.0503)	(0.0557)	(0.0526)
2-nd	0.963	0.958	0.972
	(0.0624)	(0.0642)	(0.0643)
4-th	1.017	1.010	1.006
	(0.0659)	(0.0688)	(0.0647)
5-th	1.296***	1.300***	1.265***
	(0.0890)	(0.0945)	(0.0874)
health			
Good health	1.165	1.182	1.180*
	(0.0964)	(0.103)	(0.0999)
Medium health	1.431***	1.494***	1.465***
	(0.129)	(0.147)	(0.135)
Bad health	1.727***	1.757***	1.779***
health	(0.180)	(0.197)	(0.192)
Very bad health	1.694***	1.762***	1.709***
	(0.260)	(0.270)	(0.267)
quality			
nopersonnel	1.225*	1.310**	1.202*
	(0.104)	(0.112)	(0.106)
impolite	1.731***	1.835***	1.738***
	(0.134)	(0.142)	(0.134)
nodrugs	1.835***	1.703***	1.799***
	(0.126)	(0.132)	(0.126)
waiting	1.068	1.178**	1.138*
	(0.0616)	(0.0657)	(0.0654)
notclean	1.413**	1.332**	1.371**
	(0.155)	(0.126)	(0.154)

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 12. Robustness check – Continued

Variable	Model 3	Model 4	Model 5
socialties			
< once	0.922	0.851	0.909
a month	(0.221)	(0.198)	(0.218)
<= twice	0.864	0.849	0.870
a month	(0.203)	(0.193)	(0.204)
<= twice	0.866	0.857	0.880
a week	(0.205)	(0.199)	(0.207)
On most	0.815	0.879	0.827
days	(0.198)	(0.210)	(0.201)
publicsector	0.898	0.918	0.895
	(0.0653)	(0.0701)	(0.0643)
controls			
children	1.049	1.034	1.022
	(0.0345)	(0.0342)	(0.0326)
elders	1.019	1.073	1.015
	(0.0657)	(0.0723)	(0.0652)
age	0.995***	0.996**	0.995**
	(0.00141)	(0.00137)	(0.00140)
male	0.914	0.892*	0.899*
	(0.0447)	(0.0452)	(0.0436)
univeduc	1.033	1.009	1.048
	(0.0538)	(0.0498)	(0.0512)
unemployed	1.019	0.962	0.978
	(0.0569)	(0.0562)	(0.0522)
married	1.248***	1.231***	1.214***
	(0.0629)	(0.0600)	(0.0635)
urban	0.958	0.966	0.986
	(0.0547)	(0.0552)	(0.0582)

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table 12. Robustness check – Continued

Variable	Model 3	Model 4	Model 5
region			
FSU	1.405***		
	(0.112)		
SU	1.240*		
	(0.112)		
country			
Albania		20.30***	
		(7.911)	
Armenia		11.14***	
		(3.834)	
Azerbaijan		24.12***	
		(9.093)	
Belarus		7.271***	
		(3.004)	
Bosnia and Herzegovina		9.305***	
		(3.301)	
Bulgaria		8.124***	
		(3.396)	
Croatia		4.564***	
		(1.787)	
Czech Republic		6.378***	
		(2.330)	
Estonia		3.132**	
		(1.185)	
Georgia		1.595	
		(0.665)	
Hungary		15.87***	
		(5.533)	
Kazakhstan		6.317***	
		(2.362)	

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table 12. Robustness check – Continued

Variable	Model 3	Model 4	Model 5
Kyrgyz Republic		10.17***	
		(3.984)	
Latvia		7.300***	
		(2.357)	
Lithuania		18.90***	
		(6.162)	
Moldova		30.88***	
		(9.746)	
Mongolia		7.739***	
		(2.721)	
Montenegro		8.087***	
		(3.084)	
North Macedonia		4.031***	
		(1.289)	
Poland		2.470*	
		(1.039)	
Romania		20.49***	
		(7.787)	
Russian Federation		10.58***	
		(3.600)	
Serbia		7.603***	
		(3.096)	
Slovak Republic		6.984***	
		(2.888)	
Tajikistan		39.57***	
		(14.78)	
Ukraine		16.75***	
		(6.036)	
Uzbekistan		9.006***	
		(3.587)	
GDP per capita			0.973***
			(0.00396)

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001