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Three Essays on Informal Payments in the Health Care Sector in Russia

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THREE ESSAYS ON INFORMAL PAYMENTS IN THE HEALTH CARE SECTOR IN RUSSIA

Alexandra Polovinka, Ph.D.

Western Michigan University, 2016

Health care is one of the most corrupt sectors in Russia. In 2015 twenty percent of patients paid a bribe for the health care services once or twice, and thirteen percent more than twice (Russian Public Opinion Research Center, 2015). Using data on adults from over 5,000 households in Russia, this three-essay study analyzes out-of-pocket formal (official) and informal (unofficial, bribes) payments for the health care.

In the first essay, I study whether there is a difference in the amount of unofficial payments across five types of health care services (ambulance, inpatient, outpatient, dental, and medical checkups) and two types of health care facilities (state and private). Finally, I examine whether the purchase of private health insurance reduces unofficial health care payments. Using fixed and random effects models, I find that adults incur the highest informal expenditures on dental, outpatient and inpatient care. The bribes are higher in state compared to private facilities. There are a few reasons for that. First, there is generally lower quality of services and longer waiting lines in state hospitals. Therefore, patients use bribes as a mechanism to guarantee themselves higher quality of care. Second, the salaries of doctors in state facilities are lower than in private hospitals. I also find evidence that the purchase of private health insurance reduces patients' informal payments. People buy private insurance to guarantee themselves access to better services. In the second essay, I examine whether the official payment increases

or decreases the likelihood of people paying unofficially. If official and unofficial payments are negatively related, then the payments are substitutes. If an increase in the formal payment increases the probability of informal spending, then they are complements. Patients have different motivations for paying a health care bribe. Some may seek to access services in short supply or to avoid official fees, thereby substituting informal for formal payments. Others may view informal payments as a tip or gratuity, which would make unofficial payments a complement to official payments. I find that in the Russian health care market formal and informal payments are substitutes. However, there is significant heterogeneity across different types of services. In particular, bribes and official payments act as substitutes in the case of dental care and medical check-ups, while they are complements in inpatient care.

In the third essay, I study whether Russians residents (native born and foreign born) are less likely to pay informally for their health care than foreign born non-residents that do not have state provided health insurance. I find that the residents have a lower probability of paying unofficially than non-residents and that if they pay a bribe, then, on average, its amount is lower than that of a non-resident. In addition, the difference in the probability and the amount of informal payments between residents and non-residents is higher in private than state hospitals, regardless of whether patients have private insurance or not. For non-residents, private insurance plays the biggest role in the reduction of their informal spending in private hospitals.

THREE ESSAYS ON INFORMAL PAYMENTS IN
THE HEALTH CARE SECTOR IN RUSSIA

by

Alexandra Polovinka

A dissertation submitted to the Graduate College
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CHAPTER I

INTRODUCTION

The Russian economy has a relatively high level of corruption as measured by the corruption perception index and a high bribery payment index (Transparency International, 2011b; Transparency International, 2013; Transparency International, 2014). Between 2010 and 2015, approximately a quarter of patients in Russia paid a bribe to a health care worker (Transparency International, 2011a; Russian Public Opinion Research Center, 2015). In 2010, 51% of adults in Russia reported paying a bribe to a public sector worker at least once and the average burden of petty corruption was 0.77, which means that an average person pays informally 0.77 times per year. The average amount that a person pays informally is 5,285 rubles or 76 USD. (Ministry of Economic Development of the Russian Federation, 2011b). These bribes include out-of-pocket monetary informal payments and gifts (in-kind payments). This dissertation presents three essays on informal payments in the Russian health care system in order to better understand what drives these payments.

According to the Russian Ministry of Economic Development, corruption in the country's health care sector imposes a significant threat to economic growth and development. The volume of Russia's petty corruption market, across all sectors, is estimated at 164 billion rubles or 0.42% of the country's real GDP (Ministry of Economic Development of the Russian Federation, 2011b). Petty corruption in the health care sector, in particular, exceeds 35 billion rubles annually, which is equal to around half a billion in U.S. dollars (Ministry of Economic Development of the Russian Federation, 2011a). The amount of informal payments in health care

exceeds that of the other three most corrupt sectors: police, road police, and higher education. In addition, these payments are increasing over time. In 2005, an average bribe in health care was 1,423 RUB or 20 USD per service, while in 2010 it went up by over 140% to 3,476 RUB or 50 USD (Ministry of Economic Development of the Russian Federation, 2011a).

The most common reasons why people in Russia pay bribes to doctors and other medical personnel include: long waiting lines in the hospitals, difficulties making an appointment, difficulties getting an appointment with a particular doctor and/or in a particular hospital, a request for a bribe from doctors, low quality of service, and a poor attitude of medical personnel (Russian Public Opinion Research Center, 2015). Paying informally can help people overcome these shortcomings of the health care system. In addition, patients may decide to pay unofficially to express their gratitude to the doctor. In this case, a bribe works like a tipping mechanism.

One of the important features of the Russian health care system is the universal health care coverage, under which the state provides the country's legal residents with state insurance. Therefore, purchase of private insurance is not necessary to reduce the out-of-pocket payments, and its purchase is voluntary. Patients can use state insurance in state (public) medical facilities, but not in private facilities. Private health insurance, however, can be used in both state and private hospitals. Due to universal health coverage and expensive private insurance premiums, a majority of patients choose health care in state hospitals over private ones, even though they generally perceive the quality of medical services to be lower in the former (Russian Public Opinion Research Center, 2015).

In this dissertation, I use 2012 household and individual level data from the 21st round of the Russian Longitudinal Monitoring Survey by the Higher School of Economics (RLMS-HSE). This is a representative nation-wide survey. The sample that I use consists of adults who

received health care in the 12-months preceding the survey. I use their responses regarding whether and how much they paid officially and unofficially out-of-pocket for five different types of health care services in state and private medical facilities. As a measure of informal payments, I use a binary variable indicating whether a person paid unofficially and a continuous variable of how much they paid informally out-of-pocket. I organize the data as a 3-way (across individual, household, and type of service) nested panel, in which every individual from a particular household received between one and five types of health care services.

The first essay (Chapter 2) is a study of the amount of out-of-pocket unofficial and official payments across five different types of health care services (ambulance, inpatient, outpatient, dental, and medical checkups) and two types of health care facilities (state and private). The Russian health care market is very heterogeneous in terms of both formal and informal payments for the various types of medical services and facilities. For example, dental care is the service with traditionally poor quality and a shortage of doctors in the state facilities. While the numbers of doctors and beds available in hospitals for inpatient care is abundant, outpatient services suffer from long waiting times. In addition, private hospitals in Russia charge higher prices for medical services than state facilities, and patients in private facilities have higher quality of service, shorter waiting times and friendlier medical personnel. In this chapter, I also examine whether private health insurance reduces probability and the amount of unofficial health care payments by a person who purchased it.

The second essay (Chapter 3) extends the analysis and comparison of two formal and informal payments by studying whether bribes and official payments are substitutes or complements for each other. If paying officially makes patients more likely to pay unofficially, or

higher formal spending is associated with higher informal payment, then the payments are complements. In the case of complements, informal payments can be seen as a form of a tip or gratuity to a doctor. Alternatively, if a higher official payment is associated with a lower unofficial one, or if people are less likely to pay a bribe when they pay a formal fee, then the payments are substitutes. To account for the health care market heterogeneity, I examine the relationship between formal and informal payment both at the aggregated level (health care market in general) and disaggregated by the type of health care service.

The final essay (Chapter 4) draws on the literature on migration and considers how informal health care spending differs across two groups of people in Russia: residents and non-residents. Residents are native Russians and legal foreign-born who received the status of a resident. Non-residents are foreign-born without a residency status. Contrary to residents, non-residents are not eligible for state health insurance and prior to 2015 they were not required to purchase private insurance either.

A reduction in informal payments in the Russian health care sector would reduce the overall unofficial payments in the country and decrease the informal sector of the economy. In turn, it would potentially reduce the foregone revenue for the medical facilities resulting when official fees are avoided through informal payments. This dissertation shows that there are a few ways by which a decline in the bribery payments could be achieved. First, by increasing the official price of the health care services for ambulance, dental care and medical checkups with a simultaneous increase in the supply of these services. I show that official and unofficial payments for the Russian health care market overall, and for these three services in particular, are substitutes for each other, implying that the higher the official payment is, the lower the unofficial payment is. However, the opposite should be considered for inpatient care, in which a

lower informal spending would be a result of a lower formal price, due to the complementarity between these two payments for this type of care.

Second, a further development of private insurance market that would induce more people to purchase private insurance, would help reduce informal payments. This dissertation shows that those who have private insurance are paying bribes less often and their bribes are lower than those of people without private insurance. In addition, making it a requirement for the country's non-residents without state insurance to purchase private insurance, would reduce their informal health care spending, both in state and private medical facilities.

Third, policy makers should consider a potential inefficiency in the country's state medical facilities, especially in the case of inpatient services. This inefficiency results from combination of both relatively low salaries of medical personnel, a high inpatient-outpatient ratio, a large number of hospital beds and physicians, on the one side, and unfriendly personnel, long waiting lines, difficulty in making an appointment, frequently reported low quality of services, and high informal payments, on the other side. Both the probability of paying unofficially and the amount of these payments are the highest for inpatient care compared to the other four types of services. It makes inpatient services a potentially key type of care to put an emphasis on for the reduction of informal spending in the country's health care sector in general.

However, it is also worth noting that under the current system, informal payments do play an important role in the country's health care market. In particular, price controls (set prices imposed by the government in state medical facilities) and limited supply create incentives for paying informally. Thus a bribe works as a mechanism that allows patients to signal their willingness to receive a service of certain quality and eliminate the market shortage.

CHAPTER II

FORMAL AND INFORMAL PAYMENTS ACROSS TYPES OF SERVICES IN THE RUSSIAN HEALTH CARE SYSTEM

2.1 Introduction

The analysis of informal (unofficial) payments in the health care sector in Russia is important since this sector has been consistently ranked as having one of the highest levels of corruption in the country. In 2010, 26% of Russians reported paying informally to health workers at least once in previous year (Transparency International, 2011a). In health care, petty corruption occurs when patients incur not only official (formal) expenditures, but also unofficial bribery payments to the medical personnel. Among the reasons of paying unofficially are reducing the waiting time in the queue at the doctor's office, receiving higher quality of help, moving oneself up on the appointment list, and getting a better hospital ward.

In this paper, I consider five types of health care services – ambulance, inpatient, outpatient, dental, medical checkups, as well as two types of hospitals – state (public) and private – where doctors provide these services. Informal payments (bribes) persist in all five types of health care services. However, I expect the magnitude of these payments differs across services because of the specific characteristics of each type of service. For example, dental care is the service with traditionally poor quality and a shortage of doctors in the state facilities. While the numbers of doctors and beds available in hospitals for inpatient care is abundant, outpatient services suffer from long waiting times. In addition, the type of hospital ownership matters as well. Private hospitals in Russia charge higher prices on medical services than state facilities, and patients have perceived them as having higher average quality of service, shorter waiting

times and friendlier medical personnel. In addition, I examine whether the purchase of private medical insurance impacts informal payments.

There are multiple definitions of informal payments in the health sector. In this paper, I follow the one suggested in the seminal papers by Lewis (2000, 2007). “*Informal payments* can be defined as (1) payments to individual and institutional providers, in kind or in cash, that are made outside official payment channels and (2) purchases that are meant to be covered by the health care system” (Lewis, 2000, p.1). The theoretical literature on informal payments in the health care sector is quite vast. However, the empirical evidence is mixed and country-specific. A patient can bribe a medical worker in the form of cash, gifts or other forms of gratitude (Ensor, 2004). With respect to the medical service, patients can make these payments either ex-ante or ex-post or both (Allin et al., 2006). Bribes can either substitute for or complement the official payment.

Thompson and Witter (2000) note that among the reasons patients bribe medical care workers are a wish to tip the doctor, to obtain access to a particular service, to guarantee better quality care, or to fulfill the direct demand from health workers. Gaal et al. (2006) refer to social and cultural norms as the key drivers behind corruption. For example, people use informal payments to express gratitude to the doctors. In these conditions, some patients form habits of paying informally on a routine basis (Baji et al., 2012). Tatar et al. (2007) find that an underlying reason for informal cash payments in Turkey is the desire to get better attention either at the time of the service or in the future by means of establishing a closer relationship with the doctor. Among the factors that play a key role in the decision to pay informally are household health expenditures, universal state health insurance that does not prevent informal payments, service type and provider ownership (Özgen et al., 2010); wealth, education and age (Balabanova and

McKee, 2002); age, area of residence, education, health status and health insurance (Tomini and Maarse, 2011); gender, age, disability status, education, service provider ownership (Riklikiene et al., 2014).

I use 2012 survey data on adults from over 5,000 Russian households and construct a three-way panel data (individual, household, service), in which I observe an adult who received up to five types of health care services.¹ By matching each individual to his or her household, I use a household fixed effect (HHFE) model to control for unobservable household characteristics that can determine an adult's decision on the amount of his official and unofficial payments.

I find that on average, adults pay more informally (in the form of bribes) when receiving health care in state rather than private hospitals. I can explain it by the decentralized nature of health care services in the state facilities which increases patients' costs of care in such types of hospitals and provides higher incentives to pay informally. This difference is the biggest for three types of services – dental, outpatient and inpatient. Share of out-of-pocket unofficial payments for outpatient and inpatient care in the total health care expenditures is lower in private than state hospitals. Formal payments, on the contrary, are higher in private than state facilities, especially for dental and check-up services. I also find evidence that the purchase of private health insurance reduces patient's bribes through their shift from state to private health care. I can explain it by the fact that people who buy insurance prefer to get health care of higher quality and receive health care in private facilities rather than state hospitals. In addition, purchase of private insurance can be seen as a mechanism that clears market imperfection.

¹ Data come from the “Russia Longitudinal Monitoring Survey, RLMS-HSE”, conducted by the National Research University Higher School of Economics and ZAO “Demoscope” together with Carolina Population Center, University of North Carolina at Chapel Hill and the Institute of Sociology RAS.

My paper contributes to the literature on formal and informal payments and on the literature studying corruption at the microeconomic level in several ways. First, I study unofficial payments across five types of health care services using data on the actual monetary value of the bribes in state and in private medical facilities. Second, unlike most microeconomic studies of corruption in the health care sector, I use three-way panel data on individual's health care payments stacked across both households and five types of health care services. Finally, I study both official and unofficial payments for the same services to allow for an empirical comparison between the two.

This paper is organized as follows. Section 2.2 provides an insight on the organization and structure of the health care system, the health insurance market and informal payments in Russia. Section 2.3 describes the data. Section 2.4 explains estimation methodology and provides main empirical results. Section 2.5 provides concluding remarks.

2.2 Background: Health Care and Corruption in Russia

2.2.1 The Health Care System

According to the Russian Ministry of Finance, between 2010 and 2015 the share of government health expenditures in the country did not exceed 4% of GDP is expected to decline to 3.4% by 2020 (Ministry of Finance of the Russian Federation, 2015). In 2010, the World Health Organization recommended that the optimal level of government spending that would guarantee satisfaction of the basic medical care in the country should be at least 6% of the GDP (World Health Organization, 2010).

Table 2.1 compares Russia's total health care expenditures (both individual and state).

In 2009, Russia was ranked 38th out of 53 European countries in per capita total health care expenditures. It is one-eighth of spending in Luxemburg (world and European leader) and one seventh of that in the USA. Health care accounts for only 8.5% of all government spending in Russia. It is lower than European and world average: 14.6% and 14.3%, respectively.

Table 2.1: Health Care Expenditures

Indicator	Russia		European average		Upper middle income average		World average	
	2000	2009	2000	2009	2000	2009	2000	2009
Government health care expenditures, % of total expenditures on health care	59.9	63.4	74	74.9	48.1	54.8	55.5	59.1
Individual's health care expenditures, % of total expenditures on health care	40.1	36.6	26	25.1	51.9	45.2	44.5	40.9
Out-of-pocket expenses, % of individual's health care expenditures	74.7	82.1	67.4	69.7	79.5	75.1	52.2	50.2
Private prepaid plans expenditures, % of individual's health care expenditures	8.1	10.5	67.4	21.2	15.7	16.9	37	38.9
Total health care spending, % of GDP	5.4	5.6	7.9	9.3	5.5	6.1	7.7	9.4
Government health expenditures, % of total government expenditures	12.7	8.5	14	14.6	9.3	10.5	12.9	14.3
Per capita total health care expenditures, PPT, USD	369	1,049	1,216	2,218	242	565	597	990
Per capita government health care expenditures, PPT, USD	221	661	900	1,661	117	309	331	584

Source: World Health Organization. World Health Report 2012. World Health Statistics.

The government is the main source of health funding in Russia, covering 63.4% of all health care expenditures. Individuals cover the remaining 36.6%, of which 82.1% is paid out-of-pocket, while private insurance covers only 10.5% (versus 21.2% and 38.9% private insurance coverage in Europe and the world, respectively). The share of out-of-pocket health care expenditures is close to that of other upper middle-income countries (75.1%), but lower than that in Europe (69.7%) and in the world (50.2%).

Medical personnel and medical facilities are the two largest categories of Russia’s health care expenditures (see Table 2.2). Despite rather poor financing of health care, the country ranks seventh in the world in the number of physicians per capita (43.1 doctors per 10,000 people). In addition, Russia also has a comparatively large number of available hospital beds – 97 per 10,000 people implying that there are 3 beds in Russian hospitals per 1 hospital bed in the world and per 1.6 beds in Europe. It worth noting that more hospital beds is not necessarily better.

Table 2.2: Medical Personnel and Facilities

Indicator	Russia	European Average	Upper middle income countries average	World Average
	2005-2010	2005-2010	2005-2010	2005-2010
Number of physicians per 10,000 people	43.1	33.2	17.1	14.2
Number of dentists per 10,000 people	3.2	5.0	2.4	2.2
Number of hospital beds per 10,000 people	97	61	39	30

Source: World Health Organization. World Health Report 2012. World Health Statistics.

Often a hospital with 1,000 beds has 200 occupants, out of which only 50 people have a real need in inpatient service, while 150 can receive treatment at home. This leads to the

situation in which Russia has a high ratio of inpatient to outpatient capacity in health care facilities (Russian Business Consulting Group, 2013). All of the above, accompanied by a high share of individual's out-of-pocket health care expenditures can indicate inefficient use of inpatient care facilities in Russia.

While indicators on medical personnel and facilities in inpatient and outpatient care imply that the country has more physicians and hospitals per capita than European countries, the situation with the dental care is very different. Per 10,000 people, there are 3.2 dentists in Russia versus 5 in Europe. This is an indicator of a shortage of dental care specialists in Russia that leads to longer waiting lines, smaller selection of doctors and more difficult access.

Another reason why bribes are common in the health care sector is the low salaries of medical personnel. Table 2.3 provides comparison of mean salaries of medical personnel in Russia versus the USA. working in medical care facilities, usually work 1.5-2 loads of full time capacity and/or have additional jobs in order to increase their salary.²

Table 2.3: Comparison of Salaries of Medical Personnel in Russia and the USA

Indicator	Russia³	USA⁴
Average annual salary of dentist, USD	19,404	123,922
Average annual salary of physician of general practice, USD	11,642	141,692
Average annual salary of surgeon, USD	13,582	249,000
Average annual salary of ambulance doctor, USD ⁵	8,732	209,062
Average annual salary of certified nurse, USD	11,345	51,446

² Dynnichenko, A. (2011). What Salaries Are Paid to Doctors in Russia, Ukraine and Elsewhere in the World? (<http://www.profi-forex.us/news/entry4000001012.html>).

³ Data on salaries in Russia, except for ambulance doctors and certified nurses are from Prytin, D. (2010).

⁴ Data on salaries in the USA are from Payscale Salary Data and Career Research Center, United States (2015).

⁵ Data on salaries in Russia for ambulance doctors and certified nurses are from Trud (2015).

According to the Russian Business Consulting Group (2013), doctors and medical nurses are among the ten lowest paid jobs in the country, ranking sixth and third worst, respectively. The only professions that have lower mean salary than the salary of doctors are salespeople, secretaries/office managers, street cleaners and cooks/bakers.⁶ The problem of low salaries creates a shortage of doctors of most specializations and types of care. An estimated shortage of doctors of all specializations in Russia is around 30%.⁷ Despite a large number of medical college graduates, many doctors opt to enter other professions outside medicine or get another certification, such as pharmacy, and stay in the health care industry.

There are significant difference in the salaries in state versus private health care facilities. The average salary of physician in private hospital is 2-3 times higher than that of doctor in state facility.⁸ However, the basis for salary of doctors in state hospitals is their qualification and work experience and it is usually independent of the number of patients that the doctor receives or the number of procedures/tests he orders. In private facilities, the salary is based, in part, on the number of patients and prescribed procedures.

In the Russian health care market, there are state-owned (public) and private-owned facilities. They differ by the range and type of services, as well as by the type of health insurance that they accept. In private facilities, patients have to pay for all services, while in state facilities there are both free and fee-based services. According to the Russian Business Consulting Group (2013), in 2010, 74.4% of patients sought medical care in state hospitals, while 45.6% - in private facilities.⁹

⁶ RBC Rating (2009). (http://rating.rbc.ru/articles/2009/11/19/32624383_tbl.shtml?2009/11/19/32624382).

⁷ Dynnichenko, A. (2011). (<http://www.profi-forex.us/news/entry4000001012.html>).

⁸ ASCPB (2013). (<http://www.acspb.ru/index.php/2010-03-16-09-18-34/1950-2013-04-03-09-05-33>).

⁹ The total can sum to more than 100% because it is possible that the same adult patient received health care services in both state and private medical facilities.

Most of the outpatient and inpatient care occurs in small state hospitals that have a reputation for long waiting times for an appointment, unfriendly personnel, limited sitting and rest areas, limited working hours of doctors, and other similar downsides. According to Russian Public Opinion Research Center (2015), 65% of Russians report that outpatient and inpatient health care provided in state hospitals is of poor quality and is in most cases accompanied by long waiting lines and unfriendly staff. This is one reason for unofficial payments as patients seek better quality and faster service.

2.2.2 Health Insurance Market

One of the unique features of the Russian health care system outlined in the previous section is the structure of the health insurance market. There are two types of medical insurance. One is “required state health insurance” and the other is “non-required private health insurance”. The state guarantees that all Russian residents regardless of their employment status or other characteristics get access to certain free medical care services at state medical facilities. For this, they use state-provided health insurance. For the employed, the employer fully subsidizes this insurance through a monthly social tax to Russia’s Required Medical Insurance Fund. For the unemployed, the government itself provides free insurance via Russia’s Required Medical Insurance Fund.

The second type of insurance is a voluntary “non-required private insurance”. According to the study of the Russian Business Consulting Group (2013), in 2013 less than 40% of adults had private insurance. The two services with the highest share of coverage were outpatient (26.3% of all insured) and dental (8.3% of all insured). Purchase of private health insurance

reduces costs in most private hospitals and clinics and can help avoid the drawbacks associated with medical services in state hospitals. All state facilities accept state-provided medical insurance, but may or may not accept private insurance. A lot of private hospitals accept private insurance.

Patients may or may not have to make official payments for care in Russia. As I explained above, many services are free in state facilities with state-provided insurance. Similarly, individuals with private insurance who choose private facilities may be fully covered. Alternately, some services both in public and private facilities may be fee-based and not covered by either state or private insurance. In addition to official (formal) payments, it is a common practice in Russia to either supplement or substitute official payment with an unofficial (informal) payment. The next section discusses these payments.

2.2.3 Corruption and Informal Payments in the Health Care Sector

In 2011, Transparency International compared 28 developed and developing countries by bribery payments. Russia received the worst bribery payment index, meaning that a high share of firms frequently paid bribes (Transparency International, 2011b). For the last decade, the same organization has been ranking Russia among 35 most corrupt states out of 175 countries worldwide. It has a Corruption Perception Index close to that of countries like Nigeria, Lebanon and Iran (Transparency International, 2014). Among 19 Central Asian and Eastern Europe countries, Russia had the fifth highest level of corruption. The only four countries in the region where corruption is worse are Turkmenistan, Uzbekistan, Tajikistan and Ukraine (Transparency International, 2006; Transparency International, 2014).

In 2012, 75% Russians called health care services corrupt or extremely corrupt (Transparency International, 2013). The literature outlines the following problems in the Russian health care market that drive informal payments: low satisfaction with the quality of the received service, problem with the access to the facility, doctor and/or particular services, and limited selection of health care providers (Gordeev et al, 2014; Twigg, 2002; Fotaki, 2009).

Corruption and bribery in the health sector, in particular, are not unique to Russia. Cohen (2012) notes that health care bribes are mainly paid in the former Soviet Union countries, as well as Eastern and Central Europe. The history of the Soviet Union (USSR) plays one of the major roles in defining corruption characteristics common to all former member-countries, including Russia. Andvig (2006) refers to the socialist system itself as the most important reason behind corruption and bribery in planned economies both before and after the collapse of the USSR. According to the author, socialist system determines the following features favorable for the presence of corruption in post-Soviet economies, including Russia: central planning with an all-embracing economic bureaucracy, dominant role of the ruling party, high level of bureaucracy in many of the market transactions, the ethics of governance, underdeveloped market mechanisms and others. In addition to the features of the economic and political regime of post-Soviet economies, there is an inherited tradition of giving monetary and gifts in exchange for the services in the state institutions. Employees that provide these services make it clear that they expect under-the-table payments and are willing to accept them (Sari et al., 2002).

Informal payments in the health care sector in post-Soviet countries, including Russia are present in all types of health care services. Stepurko et al. (2013) find that the majority of females giving birth in Kiev, the capital of Ukraine, make informal payments in cash to medical staff and very often supplement them with in-kind gifts. During their stay in hospital, almost

all patients in Kyrgyzstan have to pay informally. In addition, they have to purchase syringes and other supplies, as well as pay for light bulbs and linen in their wards (Schuth, 2001). In Georgia, the incidence of health care bribes is high as well. Among the most important reasons of unofficial payments are cultural norms, expression of gratitude to a doctor, lack of trust in doctors, or desire to support those doctors (Belli et al., 2004). Falkingham (2004) finds support for the above in the case of another former socialist country - Tajikistan.

Overall, the findings on corruption and bribery in Russia are scarce and mixed. Rassadovskaia and Aistov (2014) find that a change in individuals' real wage does not have a significant effect on their perception of corruption and bribery. Using data from two cities in Russia, Aarva et al. (2009) study formal and informal payments and find that women are more likely to pay bribes if they receive medical service in state facilities and if this service is free. Similarly, the retired, the employed and those with chronic disease are more prone to bribery behavior, while the level of income and education did not affect bribery behavior.

The studies by Besstremyannaya (2007) and Gordeev et al. (2014) use the same household survey used here – the Russia Longitudinal Monitoring Survey-Higher School of Economics (RLMS-HSE) data. Besstremyannaya (2007) employs the 2003 survey and compares the frequencies and size of unofficial payments for patients with high and low health status. She shows that patients with better health spend more both on informal and on overall out-of-pocket payments for in-patient care.

People with worse health have higher formal expenditures on outpatient services. Gordeev et al. (2014) use 2009 RLMS-HSE data and finds that higher level of individuals' education, poor health status and the presence of at least one chronic disease or disability status increases one's probability of paying bribes. Similarly, households with higher per capita incomes

pay informally more frequently than those with lower incomes.

Most of the papers that look at the problem of bribery in Russian health sector emphasize statistical analysis and comparison of data and measure corruption by its perception rather than by the actual amount of informal bribes. In addition, there is a paucity of the research on the Russian health care market that employs up-to-date data on informal payments. In my paper, I build on the above literature and attempt to overcome these limitations. Controlling for household fixed effects (HHFE) allows me to isolate the effects of types of care on payment. In the next section, I describe the data in detail.

2.3 Data

I use 2012 data from the 21st round of the Russia Longitudinal Monitoring Survey-Higher School of Economics (RLMS-HSE). This is a survey of households with separate questions for individuals. In the survey, respondents answer questions regarding five types of health care services: ambulance, inpatient and outpatient care, dental services and medical check-ups. The questionnaire asks an adult whether he used each type of services in the previous year. If the person received at least one type of medical care, then he reports the actual amount of his official and unofficial (both in cash and in the form of gifts) payments for this service. I only use the responses of those adults who received at least one out of five types of health care services.

Figure 2.1 presents the structure of the data. There are over 5,000 households with the median household size of two. Each individual belongs to only one household, but there can be more than one member in the same household. Each individual could receive either all types of health care services, or any combination of them in the range from one to five. I drop children

as well as those adults who received no care from the sample.

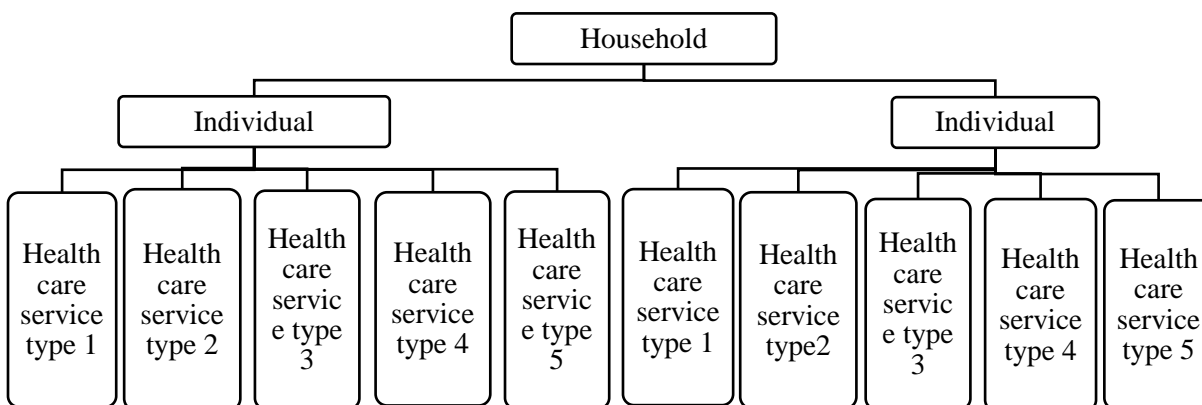


Figure 2.1: Survey Data Structure

Another group of control variables describes adult’s health condition. Among those are the frequency of doctor’s visits, dummy for chronic diseases and cancer, and dummy for a surgery. Table 2.4 and Figure 2.2 provide the descriptive data on payments in the health care sector. Both for official and unofficial payment, adults paid the most for their dental care.

Traditionally, dental care has been an expensive type of health care service in Russia. In state hospitals and *polyclinics*, state insurance covers only emergency cases and most basic general dentistry problems. More advanced and expensive procedures, such as tooth whitening, teeth implants, braces do not fall under state insurance and patients have to either pay for them out-of-pocket or use private health insurance. Ambulance services, on average, were the least expensive both in terms of formal and informal payments.

There are individuals who had zero out-of-pocket expenditures at the time of the service. However, this varies a lot across the types of the health care. Inpatient and outpatient care are the services that were most likely to be free from both official and unofficial payments (62.27% and 37.64% of adults). On the contrary, patients seeking medical check-ups were least likely to

have no out-of-pocket fees (only 0.09% of patients). All adults had to make out-of-pocket payments for ambulance and dental care.

Table 2.4: Summary Statistics

Variable	N	Mean	Std. Dev	Min	Max
Annual official out-of-pocket payments for the health care service, RUB	10,959	17,817	48,135	0	1,214,400
Annual unofficial out-of-pocket payments for the health care service, RUB	10,959	1,215	13,749	0	480,000
Share of annual unofficial out-of-pocket payments for the health care service in total out-of-pocket payments, %	8,452	7.39	22.89	0	100
Medical Facility Type (1-private, 0 – state)	10,959	0.48	0.49	0	1
Private Health Insurance dummy (1=yes, 0- no)	10,937	0.35	0.23	0	1
Ambulance dummy (1=yes, 0 –no)	10,959	0.37	0.49	0	1
Outpatient dummy (1=yes, 0 –no)	10,959	0.48	0.49	0	1
Inpatient dummy (1=yes, 0 –no)	10,959	0.2	0.4	0	1
Dental dummy (1=yes, 0 –no)	10,957	0.31	0.47	0	1
Checkups dummy (1=yes, 0 –no) ¹⁰	10,944	0.48	0.49	0	1
Age, years	10,959	46.85	20.13	14	101
Education Level (1 –elementary school...12 – PhD)	9,895	4.93	2.14	1	12
Frequency of doctor visits (1-once per year....5-few times per month)	10,829	2.96	1.1	1	5
Gender (1-male, 0-female)	10,959	0.32	0.47	0	1
Employment Dummy (1-employed, 0-other-wise)	10,959	0.54	0.49	0	1
Chronic disease dummy (1=yes, 0-otherwise)	10,959	0.75	0.43	0	1
Surgery dummy (1-had a surgery, 0 – no)	10,959	0.1	0.3	0	1
Health care worker dummy (1-adult works in health care sector, 0 –otherwise)	10,959	0.05	0.22	0	1
Religion dummy (1-orthodox Christian, 0 – otherwise)	10,959	0.87	0.34	0	1
Annual household income, RUB	10,485	518,108	459,458	0	5,220,000
Number of children	10,959	0.64	0.861	0	7

¹⁰ Within a year, an adult could seek for either one out of five types of health care services or for few different types of services.

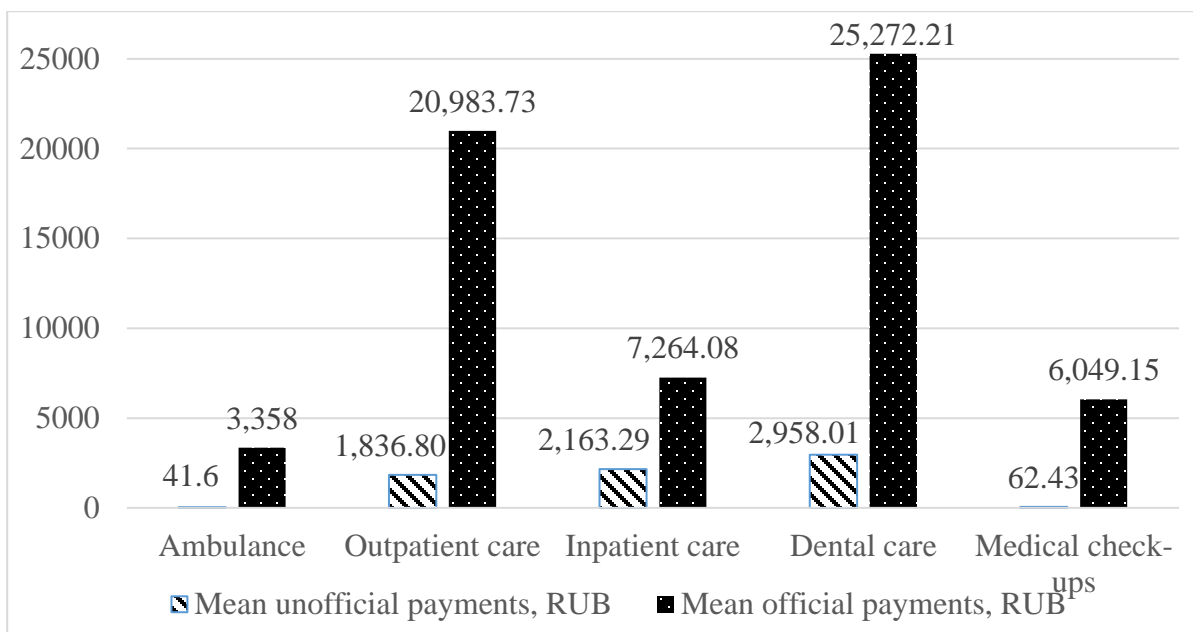


Figure 2.2: Average Official and Unofficial Out-of-Pocket Payments Across Types of Health Care Services, RUB¹¹

In 21% of the households with private health insurance, there is a variation between the household members who have and do not have such insurance. Table 2.5 compares the share of adults with and without private insurance according to how they paid for their health care services in terms of the choice between their official and unofficial payments. The majority of patients without private insurance (59.86%) paid for their health care services officially, about 15% received the service free, while 25% of individuals paid a bribe either as the only form of payment or in combination with the formal fee for the service. The share of people with private insurance who paid only informally falls from 10% to 2%, the percent of individuals paying both formally and informally declines from 15% to 8%. A greater share of adults received services free when they had insurance (14% versus 32%, respectively). Across all five types of

¹¹ In 2012, the average annual USD/RUB exchange rate set up by the Central Bank of Russia was 30.94. Central Bank of Russia, 2015 (http://www.cbr.ru/eng/currency_base/daily.aspx).

services, the mean annual out-of-pocket unofficial payments of individuals without private insurance and with it are 2,615 rubles and 837 rubles, respectively.

Table 2.5: Percent of Adults With and Without Private Insurance by Type of Their Payment for Health Care Services

Type of payment	Percent of adults without private insurance	Percent of adults with private insurance
Formal payment only	59.86	56.9
Informal payment only	10.25	2.2
Both formal and informal payment	15.04	8.4
Paid nothing	14.85	32.5

Figure 2.3 shows the mean official and unofficial out-of-pocket payments across state and private medical care facilities. On average, health care services in private facilities are more expensive in the form of official payment than in state facilities. The opposite is true for informal payments: people pay higher bribes in state hospitals.

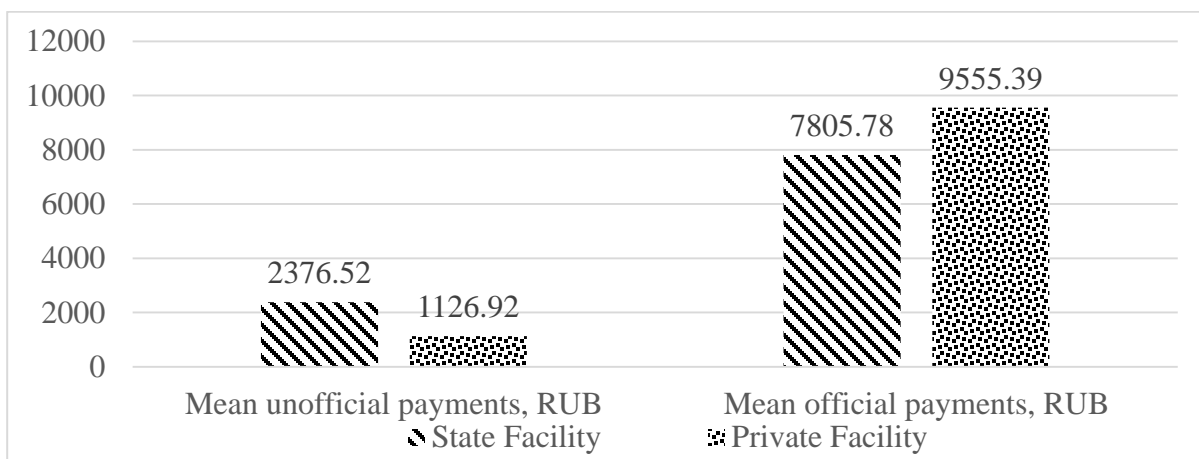


Figure 2.3: Average Official and Unofficial Out-of-Pocket Payments Across Types of Medical Care Facilities, RUB

Table 2.6 presents correlation between unofficial and official out-of-pocket health care expenditures across each type of service and in state versus private medical facilities. When I consider services regardless of the type of the medical facility, I observe positive correlation between bribes and formal payments for four services, while negative for dental procedures

Table 2.6: Correlation Between Unofficial and Official Out-of-Pocket Health Care Expenditures Across Each Type of Service and Medical Facility, %

	Across both state and private medical facilities	In state facilities	In private facilities
Ambulance	8.9	14.9	1.9
Outpatient	11.6	7.9	-8.9
Inpatient	8.3	8.1	-4.8
Dental	-8	0.9	-33
Checkups	12	16.4	-1.2

The highest correlation between the payments is for outpatient care. In state facilities, higher formal payments mean higher informal spending for all types of care, with the highest ones associated with ambulance calls and checkup services. In private hospitals, there is a positive correlation between bribes and formal payments only in the case of ambulances. On the contrary, higher official payments correspond to lower unofficial spending for outpatient, inpatient, dental services and medical checkups.

In the next section I proceed with the description of the empirical models and discussion of the main estimation results.

2.4 Estimation and Empirical Results

The goal of this paper is to explore how the types of medical services, facility and private insurance affect both official and unofficial out-of-pocket payments for health care. For the purpose of this paper, I only use the responses of those adults who received at least one type of health care service. In other words, each individual in my sample could receive one, two, three, four or all five types of services over the year. The adults, who did not apply for at least one type of health care services (did not receive any treatment), are dropped out from the sample.¹²

Equation 2.1 presents the regression model, in which Y_{hij} is the spending of individual i in household h on type of care j and U_{hij} is the error term.

$$Y_{hij} = \alpha + X'_{hij}\beta + U_{hij} \quad (2.1)$$

Equation 2.2 is the breakdown of the error term. This representation is consistent with the various cases of these models discussed in Baltagi et al. (2001), Baltagi and Pirotte (2013), Graybill (1961), Antweiler (2001), Matyas et al. (2011), and Matyas and Balazsi (2012).

$$U_{hij} = \mu_{hi} + \gamma_j + \varepsilon_{hij} \quad (2.2)$$

In equation 2.2, μ_{hi} is an unobservable household-specific effect, γ_j is an unobservable health care service-specific effect, ε_{hij} is the remaining error term. All components of the overall error term are assumed to be independent and identically distributed.

In order to control for unobserved household heterogeneity in the data, I use household

¹² The results on the variables of interest (types of health care services, private medical insurance and type of medical facility) are robust and consistent when the whole sample is used and individuals who did not receive any type of health care services are included in the sample.

fixed effects (HHFE). There are two main reasons for the choice of HHFE. First, this allows me to control for the average differences across individuals in both observable and unobservable factors that determine how much they pay officially and unofficially. With this, I can reduce the potential omitted variable bias (Cameron and Trivedi, 2005). Second, HHFE helps to control for the problem of the household budget allocation. The unit of analysis in this paper is an individual, rather than a household. However, a person's decision on the health care spending is likely a part of the household budget allocation problem. In addition, I use random effects (RE) regressions for each of the models to account for both within and between variation in the data, as well as to control for the number of children and the household income level.

First, I use the data on adults who received at least one out of five types of health care services to study the effect of this service (ambulance, inpatient, outpatient, dental and check-ups), the type of medical facility (state versus private), the purchase of private medical insurance, as well as a set of control variables on the amount of adult's unofficial out-of-pocket payments for each type of health care service. Then, I examine the above effect for the share of bribery payment for a particular type of service in adult's total health care spending. For comparison purposes, I perform similar analysis to estimate the effect of the same factors on person's official out-of-pocket payment.

For each of the above models, I use three specifications. The first specification includes the five types of health care services. The second one adds the private insurance dummy and a variable indicating whether the service was received in state or private facility. The third includes all control variables. I refer to these three specifications as specifications 1, 2 and 3, which are estimated using both fixed and random effects with the following dependent varia-

bles: log of unofficial payment, share of unofficial payment in total, and log of official payments.

First, looking at the results from the estimation of unofficial payments, patients who receive dental care pay 46.23% more unofficially than those who get other health care services (see Tables 2.7 and 2.8).¹³ I can explain high bribes in this sector by the traditionally poor quality of the majority of dental clinics and facilities, by the high prices in private dental facilities, by high premiums on the inclusion of dental care in the private medical insurance, and by a shortage of dental care specialists in Russia. All the above leads to longer waiting lines, smaller selection of dentists and harder access to them. Adults who seek outpatient care pay 24.87% more unofficially than those who seek other health services.

I find that both the purchase of private health insurance and the type of medical facility where a patient receives care affect out-of-pocket informal payments. On average, the amount of annual bribes of individuals who purchase private medical insurance is 99% lower than those who do not have it. This is larger, but consistent with the descriptive statistics, which show a 68% decline in the amount of unofficial payments by adults who have private insurance versus those who do not purchase it. On average, patients in private hospitals pay 17.72% less in bribes than those in state hospitals. The purchase of private insurance might be working as a substitute mechanism to an unofficial payment.

Adults incur additional costs associated with the purchase of private insurance, but the reduction of the burden of costs associated with bribes partially offsets it. Second, the quality

¹³ Here and further in the paper, for categorical and count variables from output tables, I calculate marginal effects as follows: $100 \cdot \beta$. I use the following exponential transformation to get the exact elasticities for dummy variables: $100 \cdot (\exp(\beta) - 1)$.

Table 2.7: Household Fixed Effects Estimation of Unofficial Payments¹⁴

Dependent variable: Ln(unofficial out-of-pocket payments)	Basic regression without control variables (1)	Regression with medical control variables (2)	Regression with full set of control variables (3)¹⁵
Ambulance dummy (1=yes, 0=no)	0.12*** (0.03)	0.14*** (0.03)	0.09*** (0.03)
Outpatient dummy (1=yes, 0=no)	0.19*** (0.03)	0.29*** (0.04)	0.22*** (0.05)
Inpatient dummy (1=yes, 0=no)	0.11*** (0.02)	0.15*** (0.02)	0.11*** (0.02)
Dental dummy (1=yes, 0=no)	0.35*** (0.02)	0.39*** (0.02)	0.38*** (0.02)
Checkups dummy (1=yes, 0=no)	0.04 (0.03)	0.01 (0.03)	0.02 (0.04)
Medical Facility Type (1-private, 0=state)		-0.24*** (0.05)	-0.2*** (0.06)
Private Health Insurance (1=yes, 0=no)		-4.99*** (0.32)	-4.63*** (0.35)
Gender (1-male, 0-female)			-0.05*** (0.02)
Age, years			0.03 (0.12)
Employment Status (1-employed, 0=otherwise)			-0.02 (0.05)
Education Level (1=elementary...12=PhD)			0.17* (0.09)
Chronic Disease or Cancer (1=yes, 0=otherwise)			-0.16** (0.08)
Frequency of doctor visits (1=once per year...5=few times per month)			0.34*** (0.11)
Surgery (1=had a surgery, 0=no)			0.04*** (0.01)
Religion (1=orthodox Christian, 0=otherwise)			0.29** (0.11)
Health care worker y (1=works in health care sector, 0=otherwise)			-0.02** (0.01)
Constant			4.29*** (0.41)
N of observations	10,943	10,925	9,833

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

¹⁴ The results are robust and consistent if I use individual fixed effects model.

¹⁵ Annual income of the household and number of children are omitted in all household fixed effects models.

Table 2.8: Random Effects Estimation of Unofficial Payments

Dependent variable: Ln(unofficial out-of-pocket payments)	Basic regression without control variables (1)	Regression with medical control variables (2)	Regression with full set of control varia- bles (3)
Ambulance dummy (1=yes, 0 –no)	0.09*** (0.21)	0.11*** (0.02)	0.08*** (0.02)
Outpatient dummy (1=yes, 0 –no)	0.17*** (0.02)	0.32*** (0.03)	0.28*** (0.03)
Inpatient dummy (1=yes, 0 –no)	0.14*** (0.01)	0.19*** (0.01)	0.13*** (0.01)
Dental dummy (1=yes, 0 –no)	0.38*** (0.02)	0.41*** (0.02)	0.39*** (0.02)
Checkups dummy (1=yes, 0 –no)	0.08*** (0.02)	0.02 (0.02)	0.03 (0.02)
Medical facility type (1-private, 0 – state)		-0.35*** (0.03)	-0.31*** (0.04)
Private health insurance (1=yes, 0- no)		-4.92*** (0.28)	-4.59*** (0.29)
Gender (1-male, 0-female)			-0.07*** (0.01)
Age, years			-0.13 (0.09)
Employment status (1-employed, 0-other- wise)			-0.06 (0.03)
Education level (1 –elementary school...12 – PhD)			0.09 (0.07)
Chronic disease or cancer (1=yes, 0-other- wise)			-0.05 (0.05)
Frequency of doctor visits (1-once per year...5-few times per month)			0.04 (0.09)
Surgery (1-had a surgery, 0 – no)			0.05*** (0.01)
Religion (1-orthodox Christian, 0 – other- wise)			0.15** (0.08)
Health care worker (1- works in health care sector, 0 –otherwise)			-0.01*** (0.007)
Ln (Annual income of the household)			1.13* (0.59)
Number of children			-0.14 (0.27)
Constant			3.67*** (0.64)
N of observations	10,943	10,925	9,833

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses

of health care received in private facilities, as well as overall friendliness of the medical personnel and easiness of making an appointment (it is a big problem with most state hospitals) are in many cases perceived by the Russians as better than those in state hospitals (Russian Public Opinion Research Center, 2015). Increased quality and reduced waiting times are the main reasons for informal payments, and private hospitals already provide those, patients may not need to pay unofficially in these facilities.

Among the individual characteristics, I find that females, adults with higher level of education, as well as patients who seek health care frequently incur higher informal payments. If a doctor, nurse or any other medical personnel seeks health care, then they pay 2.08% less informally relative to a patient who is not a doctor. One explanation lies in the idea of belonging to the same professional community with connections, in which doctors know where to get good help and how to get an access to a fast appointment with their colleague(s). I find that Orthodox Christians (the religion of the majority of the Russians) pay 34.58% more informally than people belonging to other religions (primarily, Islam). I can explain it by an Orthodox Christians tradition of in-kind payments that is deeply rooted in Russian culture (Richmond, 2011).

An adult with a chronic disease, including cancer, pays 14.7% less unofficially than adult without a disease does. This can happen because people with chronic conditions, and especially cancer, experience high total official medical costs associated with the need for ongoing treatment. Therefore, these adults may not have enough money for unofficial payments. In addition, these patients can establish connections with a particular doctor(s) and can have a convenient flexible schedule of visits that eliminates the problem of long waiting lines and

increases the quality of attention from this doctor. Patients who undergo surgery pay, on average, 4.92% more in bribes. Patients often bribe doctors before the surgery due to a belief that it would make a doctor act more professionally and be more attentive to the patient undergoing a surgery (Gordeev et al, 2014).

Turning to the estimates of the share of unofficial out-of-pocket payments in the total out-of-pocket payments, I find that in addition to decreasing unofficial expenditures, as I explained above, private insurance reduces the share of adult's informal payments in his total health spending by 99.38% (see Tables 2.9 and 2.10). This supports the idea of switching away from bribes once a patient purchases private insurance.

Out of the five types of health care services, corruption is highest in dental care as a share of total spending. Visits to the dentist increase the share of unofficial payments in patient's overall annual health expenditures by 26.87%. One can view it from two perspectives. On the one hand, rise in the share of unofficial dental payments can reflect poor quality of service and other problems outlined earlier. On the other hand, dental services can be the most responsive in terms of return to a bribe. A patient has higher guarantees to get an expected payoff to his bribe in dental rather than other types of services.

To put the unofficial payments in context, I compare them to the findings on official payments (see Tables 2.11 and 2.12). As with informal expenditures, outpatient and dental services are the most expensive in terms of formal payments. On average, an individual has 15.95% rise in his outpatient and 10.3% increase in his dental official out-of-pocket expenditures relative to patients who have other types of services. People who receive services in private facilities pay, on average, 2.22% more than in state hospitals.

Table 2.9: Household Fixed Effects Estimation of Share of Unofficial Payments¹⁶

Dependent variable: share of unofficial payments in the total out-of-pocket payments	Basic regression without control variables (1)	Regression with medical control variables (2)	Regression with full set of con- trol variables (3)
Ambulance dummy (1=yes, 0 –no)	0.09** (0.04)	0.12*** (0.04)	0.07 (0.04)
Outpatient dummy (1=yes, 0 –no)	-0.09 (0.05)	-0.09 (0.06)	-0.09 (0.07)
Inpatient dummy (1=yes, 0 –no)	0.003 (0.02)	0.02 (0.02)	-0.02 (0.03)
Dental dummy (1=yes, 0 –no)	0.23*** (0.03)	0.25*** (0.03)	0.23*** (0.03)
Checkups dummy (1=yes, 0 –no)	-0.08* (0.04)	-0.06 (0.04)	-0.07 (0.04)
Medical facility type (1-private, 0 – state)		-0.02 (0.07)	0.03 (0.07)
Private health insurance (1=yes, 0- no)		-5.3*** (0.42)	-5.09*** (0.47)
Gender (1-male, 0-female)			0.03 (0.02)
Age, years			-0.33** (0.17)
Employment status (1-employed, 0-other- wise)			-0.11* (0.06)
Education level (1 –elementary school... 12 – PhD)			0.14 (0.12)
Chronic disease or cancer (1=yes, 0-other- wise)			-0.57*** (0.11)
Frequency of doctor visits (1-once per year...5-few times per month)			0.47*** (0.14)
Surgery (1-had a surgery, 0 – no)			0.03* (0.01)
Religion (1-orthodox Christian, 0 – other- wise)			0.21 (0.15)
Health care worker (1- works in health care sector, 0 –otherwise)			-0.01* (0.01)
Constant			14.4*** (3.11)
N of observations	8,443	8,434	7,700

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

¹⁶ These findings are robust and consistent when I use individual fixed effects model.

Table 2.10: Random Effects Estimation of Share of Unofficial Payments

Dependent variable: share of unofficial payments in the total out-of-pocket payments	Basic regression without control variables (1)	Regression with medical control variables (2)	Regression with full set of control variables (3)
Ambulance dummy (1=yes, 0 –no)	0.02 (0.03)	0.06** (0.03)	0.03 (0.03)
Outpatient dummy (1=yes, 0 –no)	-0.15*** (0.04)	-0.11** (0.04)	-0.11** (0.05)
Inpatient dummy (1=yes, 0 –no)	0.07*** (0.02)	0.09*** (0.02)	0.03 (0.02)
Dental dummy (1=yes, 0 –no)	0.3*** (0.02)	0.31*** (0.02)	0.29*** (0.03)
Checkups dummy (1=yes, 0 –no)	-0.02 (0.03)	-0.03 (0.03)	-0.04 (0.03)
Medical facility type (1-private, 0 –state)		-0.09* (0.04)	0.02 (0.05)
Private health insurance (1=yes, 0- no)		-5.03*** (0.37)	-4.79*** (0.39)
Gender (1-male, 0-female)			0.005 (0.01)
Age, years			-0.47*** (0.12)
Employment status (1-employed, 0-otherwise)			-0.11** (0.04)
Education level (1 –elementary school...12 – PhD)			-0.01 (0.09)
Chronic disease or cancer (1=yes, 0-otherwise)			-0.19** (0.08)
Frequency of doctor visits (1-once per year...5-few times per month)			0.004 (0.11)
Surgery (1-had a surgery, 0 – no)			0.04*** (0.01)
Religion (1-orthodox Christian, 0 – otherwise)			0.08 (0.1)
Health care worker (1-adult works in health care sector, 0 –otherwise)			-0.01** (0.008)
Ln (Annual income of the household)			1.87** (0.84)
Number of children			0.01 (0.03)
Constant			12.37*** (2.85)
N of observations	8,443	8,434	7,700

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

Table 2.11: Household Fixed Effects Estimation of Official Payments¹⁷

Dependent variable: Ln(official out-of-pocket payments)	Basic regression without control variables (1)	Regression with insur- ance dummy and type of medical facility (2)	Regression with full set of con- trol variables (3)
Ambulance dummy (1=yes, 0 –no)	0.04*** (0.007)	0.04*** (0.007)	0.01*** (0.007)
Outpatient dummy (1=yes, 0 –no)	0.18*** (0.008)	0.18*** (0.001)	0.14*** (0.01)
Inpatient dummy (1=yes, 0 –no)	0.02*** (0.004)	0.02*** (0.004)	0.02*** (0.004)
Dental dummy (1=yes, 0 –no)	0.09*** (0.005)	0.1*** (0.005)	0.09*** (0.005)
Checkups dummy (1=yes, 0 –no)	0.02*** (0.008)	0.02** (0.009)	0.02*** (0.08)
Medical facility type (1-private, 0 – state)		-0.01 (0.01)	0.02** (0.011)
Private health insurance (1=yes, 0- no)		0.03 (0.07)	-0.11* (0.07)
Gender (1-male, 0-female)			-0.04*** (0.003)
Age, years			0.2*** (0.02)
Employment status (1-employed, 0- otherwise)			0.02*** (0.01)
Education level (1 –elementary school...12 – PhD)			0.07*** (0.01)
Chronic disease or cancer (1=yes, 0- otherwise)			0.07*** (0.01)
Frequency of doctor visits (1-once per year...5-few times per month)			0.11*** (0.02)
Surgery (1-had a surgery, 0 – no)			0.005* (0.002)
Religion (1-orthodox Christian, 0 – otherwise)			-0.003 (0.02)
Health care worker (1- works in health care sector, 0 –otherwise)			0.0004 (0.001)
Constant			1.29** (0.61)
N of observations	10,943	10,925	9,833

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

¹⁷ The results are robust and consistent if I use individual fixed effects model.

Table 2.12: Random Effects Estimation of Official Payments

Dependent variable: Ln(official out-of-pocket pay- ments)	Basic regression without control variables (1)	Regression with insurance dummy and type of medi- cal facility (2)	Regression with full set of control varia- bles (3)
Ambulance dummy (1=yes, 0 –no)	0.04*** (0.004)	0.04*** (0.004)	0.01*** (0.004)
Outpatient dummy (1=yes, 0 –no)	0.18*** (0.006)	0.19*** (0.007)	0.17*** (0.008)
Inpatient dummy (1=yes, 0 –no)	0.01*** (0.003)	0.02*** (0.003)	0.02*** (0.003)
Dental dummy (1=yes, 0 –no)	0.09*** (0.003)	0.1*** (0.003)	0.09*** (0.003)
Checkups dummy (1=yes, 0 –no)	0.006 (0.005)	0.0008 (0.006)	0.007 (0.006)
Medical facility type (1-private, 0 – state)		-0.05*** (0.008)	0.06*** (0.008)
Private health insurance (1=yes, 0- no)		-0.06 (0.04)	-0.01 (0.047)
Gender (1-male, 0-female)			-0.04*** (0.003)
Age, years			0.19*** (0.018)
Employment status (1-employed, 0- otherwise)			0.02*** (0.008)
Education level (1 –elementary school...12 – PhD)			0.08*** (0.01)
Chronic disease or cancer (1=yes, 0- otherwise)			0.08*** (0.01)
Frequency of doctor visits (1-once per year...5-few times per month)			0.1*** (0.01)
Surgery (1-had a surgery, 0 – no)			0.004** (0.002)
Religion (1-orthodox Christian, 0 – otherwise)			0.008 (0.014)
Health care worker (1- works in health care sector, 0 –otherwise)			-0.001 (0.001)
Ln (Annual income of the house- hold)			0.31*** (0.11)
Number of children			0.02*** (0.005)
Constant			1.29** (0.61)
N of observations	10,943	10,925	9,833

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

I can explain it by higher average prices in private clinics, as well as by no service coverage by state insurance, both of which imply higher out-of-pocket payments at the time of service. Private health insurance reduces not only out-of-pocket unofficial payments, but also official payments. However, the magnitude of this effect is much smaller (99% versus 11%). This makes private health insurance an effective instrument aimed at reduction of informal payments.

When estimating RE models, I control for additional characteristics of the household such as income level and number of children (see Tables 2.8, 2.10 and 2.12). The results on the key variables are consistent with the FE models, with the exception of the effect of private health insurance on official payments, which is insignificant.

As shown above, informal payments differ between the types of health care service, as well as between state and private facilities. To explore this further, I add a set of interaction variables between the type of health service and type of medical facility. I find that the highest annual unofficial payments are in dental, outpatient and inpatient care (see Tables 2.13 and 2.14). Unofficial out-of-pocket payments for all five types of health care services are lower in private than state hospitals. However, I observe the biggest difference for outpatient, inpatient and dental services. Patients in private hospitals pay less for these services than in state facilities by 33.5%, 24.57% and 21.42% for outpatient, inpatient and dental services, respectively. One can consider this as an indicator of lower perceived quality for these services in state facilities.

For two types of services – outpatient and inpatient – I find that not only is the total monetary value of informal payments for these services lower in private versus state hospitals, but also that the share of bribes in total expenditures for that service is lower by 22.82% and 13.93% for outpatient and inpatient care, respectively.

Table 2.13: Household Fixed Effects Estimation With Interaction Terms

	Ln(unofficial out-of-pocket payments) (1)	Share of unofficial payments in total payments (2)	Ln(official out-of-pocket payments) (3)
Ambulance dummy (1=yes, 0 –no)	0.22*** (0.06)	0.11 (0.08)	0.01 (0.01)
Outpatient dummy (1=yes, 0 –no)	0.38*** (0.09)	0.02 (0.1)	0.13*** (0.01)
Inpatient dummy (1=yes, 0 –no)	0.36*** (0.07)	0.11 (0.08)	0.03** (0.01)
Dental dummy (1=yes, 0 –no)	0.52*** (0.04)	0.27*** (0.06)	0.13*** (0.009)
Checkups dummy (1=yes, 0 –no)	0.22*** (0.07)	-0.01 (0.08)	0.01 (0.01)
Ambulance*Type of medical facility	-0.09* (0.04)	-0.02 (0.06)	0.003 (0.009)
Outpatient*Type of medical facility	-0.41*** (0.09)	-0.26** (0.11)	-0.02 (0.01)
Inpatient*Type of medical facility	-0.29*** (0.07)	-0.15** (0.07)	-0.01 (0.01)
Dental*Type of medical facility	-0.24*** (0.03)	-0.07 (0.04)	0.05*** (0.008)
Checkups*Type of medical facility	-0.11*** (0.03)	-0.02 (0.04)	0.01* (0.008)
Medical facility type (1-private, 0 – state)	-0.59** (0.12)	-0.38** (0.17)	0.04* (0.02)
Private health insurance (1-yes, 0- no)	-4.68*** (0.35)	-5.07*** (0.48)	0.09 (0.07)
Gender (1-male, 0-female)	-0.06*** (0.02)	0.035 (0.02)	-0.04*** (0.003)
Age, years	0.08 (0.11)	-0.31* (0.17)	0.21*** (0.02)
Employment status (1-employed, 0-otherwise)	-0.008 (0.05)	-0.11* (0.07)	0.03*** (0.01)
Education level (1 –elementary...12 – PhD)	0.15 (0.09)	0.13 (0.12)	0.06*** (0.02)
Chronic disease or cancer (1-yes, 0-otherwise)	-0.14** (0.08)	-0.57*** (0.11)	0.07*** (0.01)
Frequency of doctor visits	0.27*** (0.11)	0.42*** (0.14)	0.1*** (0.022)
Surgery (1-had a surgery, 0 –no)	0.04*** (0.01)	0.03* (0.01)	0.04** (0.002)
Religion (1-orthodox Christian, 0 – otherwise)	0.29** (0.11)	0.22 (0.15)	-0.009 (0.02)
Health care worker (1- works in health care sector, 0 –otherwise)	-0.02*** (0.009)	-0.01* (0.01)	0.0007 (0.001)
Constant	3.81*** (0.41)	42.93** (4.19)	1.41** (0.62)
N of observations	9,833	7,700	9,833

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

Table 2.14: Random Effects Estimation With Interaction Terms

	Ln(unofficial out-of-pocket payments) (1)	Share of unofficial payments in total payments (2)	Ln(official out-of-pocket payments) (3)
Ambulance dummy (1=yes, 0 –no)	0.19*** (0.04)	0.08 (0.05)	0.01* (0.009)
Outpatient dummy (1=yes, 0 –no)	0.44*** (0.07)	-0.009 (0.08)	0.16*** (0.01)
Inpatient dummy (1=yes, 0 –no)	0.31*** (0.04)	0.08 (0.06)	0.03*** (0.01)
Dental dummy (1=yes, 0 –no)	0.52*** (0.03)	0.39*** (0.04)	0.12*** (0.007)
Checkups dummy (1=yes, 0 –no)	0.21*** (0.05)	0.03 (0.05)	-0.008 (0.01)
Ambulance*Type of medical facility	-0.07** (0.03)	-0.05 (0.04)	0.005 (0.007)
Outpatient*Type of medical facility	-0.4*** (0.07)	-0.27*** (0.09)	0.05*** (0.01)
Inpatient*Type of medical facility	-0.21*** (0.04)	-0.07 (0.05)	0.02** (0.009)
Dental*Type of medical facility	-0.21*** (0.02)	-0.13*** (0.03)	0.06*** (0.005)
Checkups*Type of medical facility	-0.09*** (0.02)	-0.04 (0.03)	0.01*** (0.005)
Medical facility type (1-private, 0 –state)	-0.4** (0.1)	-0.39*** (0.11)	0.03* (0.01)
Private health insurance (1=yes, 0- no)	-4.57*** (0.29)	-4.81*** (0.39)	-0.02 (0.04)
Gender (1-male, 0-female)	-0.07*** (0.01)	0.007 (0.01)	-0.04*** (0.003)
Age, years	-0.1 (0.09)	-0.43*** (0.12)	0.2*** (0.01)
Employment status (1-employed, 0-otherwise)	-0.04 (0.03)	-0.11** (0.04)	0.02*** (0.008)
Education level (1 –elementary... 12 –PhD)	0.09 (0.07)	-0.02 (0.09)	0.08*** (0.01)
Chronic disease or cancer (1=yes, 0-otherwise)	0.04 (0.05)	-0.19** (0.08)	0.09*** (0.01)
Frequency of doctor visits	0.003 (0.09)	-0.02 (0.11)	0.09*** (0.01)
Surgery (1-had a surgery, 0 – no)	0.04*** (0.01)	0.04*** (0.01)	0.003* (0.002)
Religion (1-orthodox Christian, 0 –otherwise)	0.17** (0.08)	0.09 (0.1)	0.01 (0.01)
Health care worker (1- works in health care, 0 –otherwise)	-0.01*** (0.007)	-0.01** (0.008)	-0.001 (0.001)
Ln(Household annual income level, RUB)	1.08* (0.59)	1.79** (0.84)	0.27** (0.11)
Number of children	-0.01 (0.02)	0.01 (0.03)	0.02*** (0.005)
N of observations	9,833	7,700	9,833

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

Comparing this to official payments, I find a statistically significant difference between state and private facilities for two types of medical care – dental and medical check-ups. Both services are more expensive in private facilities, which reflects the general pattern persistent on the market that I discussed earlier. On average, annual dental care expenditures in private hospitals are 5.34% higher than in state ones, while payments for check-ups are 1.31% higher. In the next section, I provide the summary of the most important findings and concluding remarks.

2.5 Conclusion

In this paper, I study the effect of five types of health care services in both state and private facilities, and private health insurance on adults' official and unofficial out-of-pocket health care expenditures. Using 2012 data on over 5,000 households in Russia and both household fixed effects and random effects models, I find that adults who choose state hospitals have higher informal expenditures (bribes) than those who choose private facilities. One of the possible reasons for this is the decentralized nature of services in state hospitals versus centralized care in private hospitals. In most cases, private clinics offer all services in a bundle at one place, while receiving health care in state hospitals might require patients to visit different locations of the hospital, for medical exams versus visits to the physician, for example. In addition, the more medical workers the patient has to interact with, the more bribes he might be paying. This decentralized nature of services in state facilities increases overall time and opportunity costs and provides incentives for patients to pay informally in order to reduce such costs.

Dental, outpatient and inpatient care are three services with the highest unofficial payments in all types of medical facilities. This is likely due to the factors such as a shortage of

doctors (especially dentists), unsatisfactory quality of service and long waiting lines. Possible reasons why bribery payments might be the highest for dental care, in particular, are related to quality and price. In state hospitals, the quality of this service has traditionally been low, therefore patients use bribes as a payment mechanism to guarantee themselves higher quality of care. The fact that the coverage of private insurance is not very wide across population combined with a relatively high price of dental services makes it a “luxury service” for those who receive it in private clinics.

Another important reason that leads to the prevalence of bribes in state versus private facilities is low salaries in state facilities. The average salary of doctors in private hospitals is higher than in state facilities, and therefore they may be less inclined to demand bribes. The combination of excess capacity in inpatient care facilities and state subsidization of health care, on the one hand, and high informal payments in this sector on the other hand indicate a certain degree of inefficiency in state hospitals.

Currently, the private insurance market is not fully developed in Russia and fewer than 40% of adults use it. However, those who do can access better quality care in private facilities. My results show that insurance also has a dramatic effect on the reduction of informal payments. In other words, people use private insurance to access better and faster services in private facilities and therefore shift away from paying informally. This suggests that because of market imperfections, unofficial health care payments in the form of bribes help to clear the market.

CHAPTER III

OFFICIAL AND UNOFFICIAL HEALTH CARE PAYMENTS: SUBSTITUTES OR COMPLEMENTS?

3.1 Introduction

Although many health care services at state facilities in Russia are officially free or low cost, there is a persistent problem of under-the-table payments to doctors and other medical personnel. In this paper, I examine whether patients use official (formal) and unofficial (informal, bribe) payments as a substitute or complementary form of payments for different types of health care services: ambulance, dental, inpatient, outpatient care and medical check-up services received by adults in Russia. If the probability of paying unofficially declines when patients pay officially, then the two payments are substitutes. Alternatively, if people are more likely to pay a bribe when they pay officially, then the payments are complements.

When receiving health care services, people can pay formally or informally, or a combination of the two. Tambor et al. (2013) classify all European countries based on the scope of formal and informal payments prevalent in the health care sector. Russia is classified as a country with “a narrow scope of formal and widespread informal payments” (Tambor et al., 2013, p. 287). Among states with the same mix of formal and informal payments are Poland, Romania and Turkey. The narrow scope of formal payments arises due to the fact that the Russian state subsidizes health care by providing state health insurance to all citizens. State intervention in health care has also enabled the growth of informal payments by creating shortages and low quality.

According to Azar (2007), people make informal payments that can be socially desirable

or undesirable. In the case of health care markets, the example of the former would be paying for higher quality, especially, in the case of surgeries or any other urgent care. Bribe may also work like a tip and allow one to establish long-term relationship with the service provider (Azar, 2007; Lynn and McCall, 2000; Saunders and Lynn, 2010). This is especially important in health care, when a patient is interested in having a reliable doctor who is willing to provide health care when needed. A socially undesirable payment would be getting preferred treatment at the expenses of others, such as, bribing a doctor in order to move ahead of others in line (Azar, 2007).

Regardless of the outcome and the purpose of informal payment, a person can choose a bribe to substitute for formal payment or to pay it as an addition or complement to the formal fee. Official and unofficial payments in health care can be used for different reasons and serve different purposes. Usually, formal fees that patients pay in hospitals do not go directly to medical personnel. A bribe, on the other hand, is usually made directly to the medical worker. Therefore, a bribe serves as an important source of income for doctors and other medical personnel who are often underpaid in developing and transition economies. However, informal payment benefits not only doctors, but often patients as well. It makes it possible for a person to access not only “standard care” but its additional benefits as well. These might include higher quality service, shorter waiting times, more attention from the personnel, and a better hospital ward. Therefore, it can be in policymakers’ interest to know what makes people pay informally when deciding how much to adjust official medical fees. The reduction or complete elimination of informal payments requires government will and intervention, in addition to economic, social and cultural changes (Tambor et al., 2013).

I use 2012 data on over 5,000 Russian households from the 21st round of the Russia

Longitudinal Monitoring Survey-Higher School of Economics (RLMS-HSE) that includes questions on formal and informal health care payments for five different types of services.

My paper contributes to the literature on formal and informal types of payments in general, and to its applications to the health care sector in particular in three ways. First, I consider official and unofficial payments that people simultaneously make for their health care service, and empirically test whether they are complements or substitutes. This is different from the previous literature, which considers the relationship between the willingness to make informal payments today based on people's previous official payments (Baji et al, 2012; Baji et al., 2014; Baji et al., 2015; Tambor et al, 2013, etc.). Second, I empirically test whether bribes and formal payments in the health care are substitutes or complements using not only the binary choice between two types of payment, but also by looking at the actual amounts of each type of payment. This allows me to observe both the change in the likelihood of paying bribes and in the actual amount of informal payment based on the change in the probability and the amount of official spending. Finally, I examine how payment behavior differs across types of services in the health care sector.

The results of this paper suggest that for all services combined, formal and informal (bribe) payments are substitutes. When data are disaggregated to each type of service, then I find that formal and informal health care payments are substitutes in dental care and medical check-ups, while they are complements in inpatient care.

This paper is organized as follows. Section 3.2 shows the structure of the health care sector in Russia, as well as formal and informal payment options available on this market. Section 3.3 describes the data. Section 3.4 explains estimation methodology and empirical results. Section 3.5 is a discussion of the key findings. Section 3.6 is the conclusion.

3.2. Theoretical Aspects of Payments in the Health Care Sector

3.2.1 Forms of Payments in the Health Care Sector: Background

While there is little empirical research on formal and informal payments as substitutes or complements, once these are viewed as alternative forms of payment, one can look at the literature related to the choice of forms of payments, including cash versus checks, cash versus electronic payments, or cash versus credit card versus debit card (Alhassan, 2010; Arango et al., 2015; Ardizzi, 2013; Chatterjee and Rose, 2012; Cohen and Rysman, 2013; Johnson, 2010; Mann, 2011; Schuh and Stavins, 2014; Soman, 2001; Stavins, 2001).

Similarly, one can look at official and unofficial payments as two co-existing forms of payments. Informal payments are most likely to exist in the economies that suffer from corruption. In their seminal work, Shleifer and Vishny (1993) introduce two types of corruption: corruption without theft and corruption with theft. Corruption without theft refers to the situation, in which the government official collects the official fee for the government, but demands a bribe to complete the transaction. This is similar to the payments being complements.

Corruption with theft is a case when the official does not collect the official payment and hides the transaction (Schleifer and Vishny, 1993). This is similar to a substitute form of payment. In health care, it would mean that the doctor collects the bribe and does not require the patient to pay formally. Under these circumstances, the bribe is usually below the official price.

In this paper, I follow the definition of the informal payments proposed by Lewis, who states that informal payments are payments to individual and/or institutional providers, in kind or in cash, that are made outside official payment channels (Lewis, 2000). In standard economic

theory, two factors are complements if an increase in the price of one factor leads to a decrease in the use of the other. If the goods are substitutes, then an increase in the price of one causes an increase in the use of the other. I modify and apply this concept to the idea of how people choose different forms of payments (formal and informal) for their health care services. When paying officially, increases a person's probability of paying unofficially, then the two forms of payment are complements for each other. Alternatively, when an official payment decreases the likelihood of an unofficial spending, then the payments are substitutes. The same holds true not only for the change in the probability, but for the change in the amount of payments as well.

Baji et al. (2012) and Baji et al. (2014) study the informal payments in Hungary in 2010 and show that the higher the income level of the patients is and the lower their budget constraints are, the more likely it is that people use health care payments as complements. Baji et al. (2012) and Baji et al. (2014) show that patients who were willing to pay for their services unofficially throughout a year, were also more willing to pay for them officially, conditional on the fact that it could help them receive medical service of a higher quality. Tambor et al. (2013) show that economic, governance and cultural differences play crucial role in their choice of the payment mode for medical services. In Europe in particular, the above determine high share of out-of-pocket payments for health care. If formal and informal payments are complements, then coupled with the high share of out-of-pocket payments, overall health care expenditures go up (Baji et al., 2015; Belli et al., 2004; Tambor et al., 2013; Tomini et al., 2012). However, some patients reduce their unofficial spending when official payment goes up. In this case, informal and formal payments substitute for each other, and the rate of substitution is higher the lower the income level of the household is (Baji, et al., 2015).

Baji et al. (2015) study formal and informal health care expenditures of 1,000 of Hungarian households and show that patients usually use bribes to pay doctors in order to have a wider range of physicians, receive higher quality services and better attitude from the medical personnel. While formal fees are paid to the hospital and do not directly increase doctors' incomes, bribes serve as a means of increasing income of underpaid medical personnel.

According to Baji et al. (2012), the wealthier the household is, the more likely it is to use both formal and informal payments for health services, at least in the short run. In other words, higher household income increases the probability of the two forms of payment to be complements. In addition, patients might continue to pay informally over time out of fear of not being able to obtain the service of the same quality as before (Baji et al., 2015). For people with lower income, older patients and patients who live in big cities, bribes and official fees tend to substitute for each other (Baji et al., 2015).

It has been shown that there is a significant difference between services provided by state and private facilities (Hart et al., 1997; Shleifer, 1998; Shleifer and Vishny, 1998; Frye and Shleifer, 1997; Barberis et al., 1996; Ehrlich et al., 1994; Logan, 1990, and other). According to Hart et al. (1997), the main difference between the two lies in the "quality" and "cost" of such services. Those agents that have greater incentives to provide better services with improved quality (those who are willing to innovate) at a low cost attract new customers. The authors find that state-owned agents, on average, have lower incentive to innovate because the managers of these organizations are not the owners and do not participate in profit sharing. On the contrary, private facilities motivated by profit maximization have a strong interest in improving the quality of the services and thus increasing the revenue.

The above suggests that state- and private-owned agents, including medical facilities,

differ in the cost-efficiency and quality of the services that they provide. According to Logan (1990), private medical facilities, in particular, have higher average official service fees, which leads to the difference in the prevalence, level and severity of corruption between state and private hospitals (Kaufmann and Siegelbaum, 1997; Boycko et al., 1995; Shleifer and Vishny, 1993). Therefore, when studying informal payments, it is crucial to distinguish between the types of the medical facilities.

In the next section, I explain the theoretical background behind formal and informal payments being used as substitutes and complements.

3.2.2 Complements and Substitutes in Health Care Payments

In this section, I graphically illustrate how formal and informal payments (bribes) might act as substitutes or complements. First, I show how government intervention in the health care market creates shortages and provides incentives for informal payments, illustrating the case when bribes and official payments for health care services are substitute forms of payment. Then, I discuss how unofficial payments might work as tips or gratuity and complement official payments.

In the classic case of price ceilings applied to health care, government intervenes in the market and sets the maximum price that hospitals are allowed to charge for the service. This creates a market shortage, and as a result, the quantity of health care services supplied on the market is below the efficient market equilibrium level. There are several important market outcomes of this intervention. First, health care services become scarce. For patients, it implies additional costs (both monetary and non-monetary) associated with the search of the available

care providers and/or particular services. Second, there is an inefficient allocation of resources. Under price controls, doctors have an incentive to demand bribes and patients with a high willingness to pay have an incentive to pay for access and for other qualities such as reducing the waiting time for the services, moving themselves up the line, and getting better care.

In the case of price ceilings imposed on a competitive market, the shortage could theoretically be eliminated by informal payments. However, in the case of state hospitals in Russia, there are both fixed prices and limited supply. This is illustrated in Figure 3.1. When a patient pays a bribe, then his total price for the service consists of the official price plus the amount of the bribe, which is equal to the difference between the total price that is paid and the price ceiling. Any payment above “ P_{ceiling} ” is an informal payment. The lower the official price is (“ $P_{\text{ceiling}2}$ ” versus “ $P_{\text{ceiling}1}$ ”), the higher the unofficial payment is (“Unofficial2” versus “Unofficial1”). This results in informal and formal payments acting as substitutes.

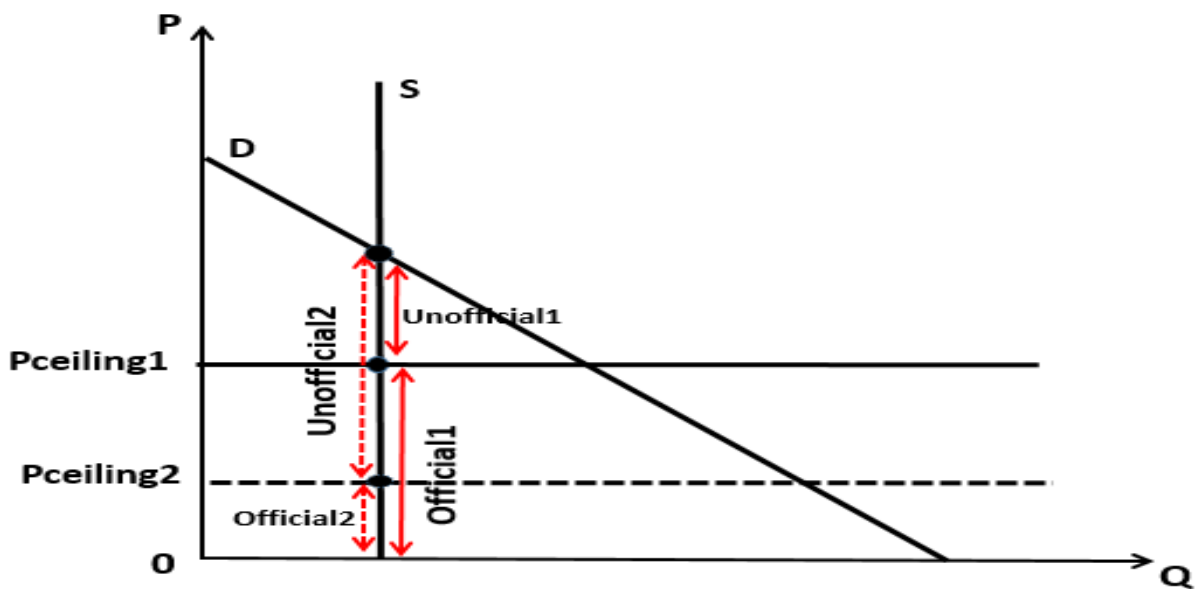


Figure 3.1: Health Care Market With Formal and Informal Payments as Substitutes

While limited supply and fixed prices can generate informal payments that act as substitutes, another possibility is that informal payments are expected as a kind of gratuity. In this case official and unofficial payments are complements. Torfason et al. (2016) consider informal payments in 32 countries across 33 industries and find that there is a strong positive relationship between the level of corruption and frequency of tipping. It has been noted that tipping resembles both an altruistic behavior (a person is not required to pay gratuity) and corrupt behavior (such payments are made outside official payment channels) (Bodvarsson and Gibson, 1997; Lynn and McCall, 2000; Reinstein, 2014; Schotter, 1979; Torfason et al, 2016).

When people receive health care, some of them voluntarily decide to incur additional expenditures and pay informally. This violates traditional economic assumption of a rational individual who maximizes his utility subject to limited resources (Azar, 2007; Azar, 2009; Holland, 2009; Lynn and McCall, 2000; Saunders and Lynn, 2010). The literature suggests that one of the main reasons why people pay both officially and unofficially stems from the nature of unofficial payments, which act as a gratuity to thank service providers and reward them for a good service (Azar, 2007; Bodvarsson and Gibson, 1997; Lynn and McCall, 2000). In turn, service providers prefer these informal payments as well because they serve as their additional income and are not subject to taxes (Azar, 2007; Hemenway, 1993; Holland, 2009).

Figure 3.2 illustrates the case of complementarity between formal and informal payments. “ D^o ” and “ D^b ” are one’s willingness to pay for the service officially and unofficially, respectively. The distance between “ D^o ” and “ D^b ” shows the amount of bribe. Here, a bribe is a tip, proportional to the amount of the official payment. In other words, the higher the formal payment is, the higher the informal spending is. The lower the price ceiling (the official price) is, the lower the unofficial payment (bribe) is as well (“Unofficial2” versus “Unofficial1”). At

point “A” price ceiling is zero, which means that there is no official payment for the service. If bribe is considered as a gratuity, then it is equal to zero as well. In other words, the patient gets health care free both in terms of formal and informal payment.

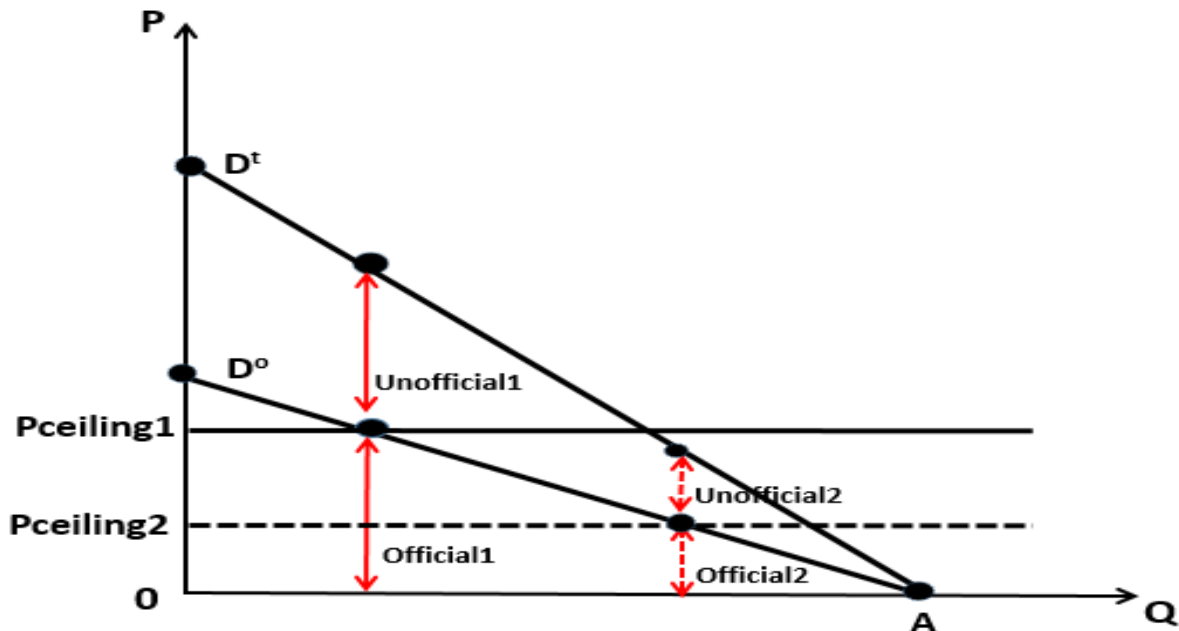


Figure 3.2: Health Care Market With Formal and Informal Payments as Complements

In contrast to the situation when patients substitute official payment with a bribe in order to signal their willingness to purchase health care service in a market with a price ceiling, people complement official payment with an unofficial one to thank their health care service provider in the form of gratuity proportional to the formal payment.

3.2.3 Russian Health Care Market

Seventy five percent of Russians consider the country's health care services corrupt or extremely corrupt and a quarter of them report paying bribes for health care at least once per year (Transparency International, 2013). In order to understand why informal payments are widespread in health care, it is important to consider the structure of health care market and overall health care expenditures in the country. The Russian state provides its residents with free health insurance. The goal of this universal coverage is to allow everyone obtain the medical services they need at an affordable cost. However, the reality of the market is such that patients still incur high out-of-pocket payments for their health care. In 2012, patients' out-of-pocket health care payments (both official and unofficial) in Russia were as high as 92% of the overall health care expenditures. In part, this is driven by the widespread unofficial health care payments (World Health Organization. World Health Statistics, 2015).

Compared to most industrialized countries, the share of private insurance plans in patients' individual health care expenditures in Russia is low – a mere 4.2% compared to 71.4% in Europe. This can be explained by state subsidies, which result in low demand and high insurance premiums. As a result, fewer than 40% of adults purchase any private insurance (Russian Business Consulting Group, 2013).

In private medical facilities, patients (or their insurers) have to pay for all services, while in state hospitals some services are free, while other are not. People may choose a private facility over a state one for reasons including shorter waiting times, an easier appointment system, friendlier personnel, and an expected higher quality of services (Russian Public Opinion Research Center, 2015). However, state hospitals still receive the majority of total health care

visits. In 2010, 74.4% of patients received medical care in state hospitals, and 45.6% in private hospitals (Russian Business Consulting Group, 2013).¹⁸ Primarily, this is driven by low prices and lower out-of-pocket payments in state medical facilities. One of the biggest reasons why one might purchase private insurance is to decrease out-of-pocket payments for services in private hospitals.

In the next section, I discuss the structure of my data and provide a better insight on the combination of official versus unofficial payments for different health care services.

3.3 Data

To analyze whether people use formal and informal (bribes) payments as substitutes or complements for their health care services, I use data on adults in Russia who received at least one of the five types of medical service over the year. These data come from the 21st round of the Russian Longitudinal Monitoring Survey run by the Higher School of Economics (RLMS-HSE) conducted in 2012. Figure 3.3 shows the structure of the survey data. This is an individual-level survey, which asks adults to recall different types of health services they have used in the previous year. I use responses of adults, who received at least one type of health care. Each individual in a household could have received from 1 to 5 different types of medical services. Using information on the type(s) of services, I construct hierarchical data, in which each adult is matched with his household and whose behavior is observed across five types of health care services.

¹⁸ The total sums up to more than 100% because over the year some people could receive health care services both in state and private hospitals.

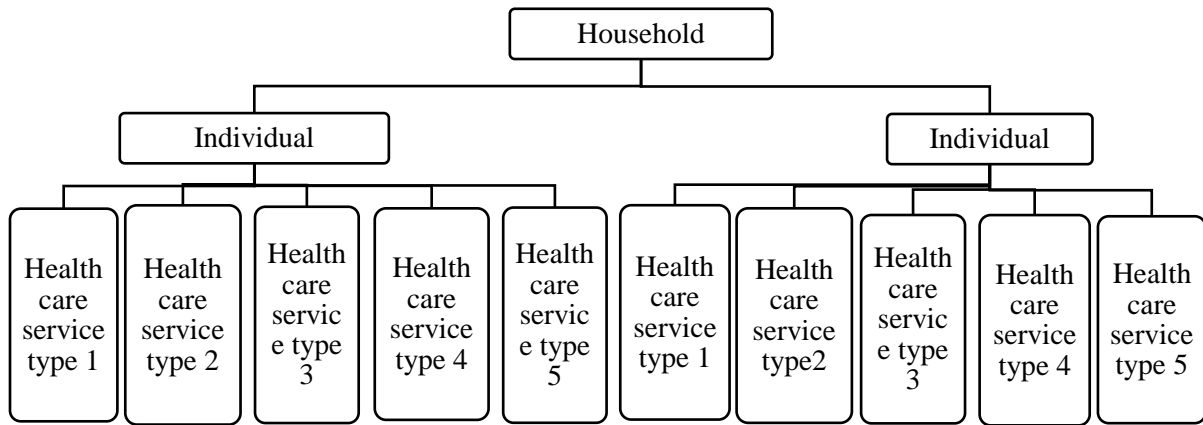


Figure 3.3: Survey Data Structure¹⁹

Tables 3.1 and 3.2 present summary statistics for the whole sample and the sample disaggregated for five types of service, respectively. For each type of service, the survey asks people whether they paid officially and/or unofficially, and, if so, how much. Therefore, I observe four possible combinations of payments: zero payment (free service), official payment only, unofficial payment only, or both payments at the same time.

Table 3.3 and Figures 3.4 and 3.5 illustrate distribution of formal and informal payments in state and private medical facilities, as well as across the types of services. Regardless of the hospital type, the majority of patients pay officially only, with this share being higher in private facilities (73% versus 67.4% in state facilities). On average, 15% of patients receive services free both in state and private hospitals. If the service in the private hospital is free, then it is most likely to be fully covered by the private insurance. However, the share of informal payments (bribes) are higher in state (18%) versus 10.2% in private facilities. In state hospitals, 83.7% of all unofficial payments are complemented by official payment, while 16.3% are bribes

¹⁹ This figure is taken from Polovinka (2016).

with no official payment. In private hospitals, the two payments are full complements in 81.4% cases, while they are full substitutes in 18.6% situations.

Table 3.1: Summary Statistics for the Whole Sample

Variable	N	Mean	Std. Dev	Min	Max
Dummy for official payment (1=yes, 0 –otherwise)	10,959	0.38	0.49	0	1
Dummy for unofficial payment (1=yes, 0 –otherwise)	10,959	0.06	0.22	0	1
Adult’s annual official out-of-pocket payments for the health care services, RUB	10,959	17,817	48,135	0	1,214,400
Adult’s annual unofficial out-of-pocket payments for the health care services, RUB	10,959	1,215	13,749	0	480,000
Medical facility (1=private, 0 – state)	10,959	0.48	0.49	0	1
Private health insurance dummy (1=yes, 0- no)	10,937	0.35	0.23	0	1
Ambulance dummy (1=yes, 0 –no)	10,959	0.37	0.49	0	1
Outpatient dummy (1=yes, 0 –no)	10,959	0.48	0.49	0	1
Inpatient dummy (1=yes, 0 –no)	10,959	0.2	0.4	0	1
Dental dummy (1=yes, 0 –no)	10,957	0.31	0.47	0	1
Checkups dummy (1=yes, 0 –no) ²⁰	10,944	0.48	0.49	0	1
Age, years	10,959	46	20	14	101
Education level (1 –elementary school... 12 – PhD)	9,895	4.93	2.14	1	12
Frequency of doctor visits (1=once or less per year...5=few times per month)	10,829	2.96	1.1	1	5
Gender (1=male, 0=female)	10,959	0.32	0.47	0	1
Employment dummy (1=employed, 0= otherwise)	10,959	0.54	0.49	0	1
Chronic disease dummy (1=yes, 0=otherwise)	10,959	0.75	0.43	0	1
Annual household income, RUB	10,485	518,108	459,458	0	5,220,000
Number of children	10,959	0.64	0.861	0	7

²⁰ Within a year, an adult could seek for either one out of five types of health care services or for few different types of services.

Table 3.2: Summary Statistics Disaggregated by the Type of Health Care Service

Variable	N	Mean	Std. Dev.	Min	Max
Ambulance					
Adult's annual unofficial out-of-pocket payments, RUB	1,971	41	374	0	10,000
Adult's annual official out-of-pocket payments, RUB	1,971	17	378	0	14,000
Dummy for unofficial payment (1=yes, 0 –otherwise)	1,971	0.04	0.20	0	1
Dummy for official payment (1=yes, 0 –otherwise)	1,971	0.01	0.07	0	1
Medical facility type (1-private, 0 – state)	1,971	0.51	0.50	0	1
Private health insurance dummy (1=yes, 0- no)	1,966	1.97	0.18	1	2
Check-ups					
Adult's annual unofficial out-of-pocket payments, RUB	3,314	62	696	0	20,000
Adult's annual official out-of-pocket payments, RUB	3,314	1,076	3,727	0	72,000
Dummy for unofficial payment (1=yes, 0 –otherwise)	3,314	0.02	0.13	0	1
Dummy for official payment (1=yes, 0 –otherwise)	3,314	0.18	0.38	0	1
Medical facility type (1-private, 0 – state)	3,314	0.29	0.45	0	1
Private health insurance dummy (1=yes, 0- no)	3,307	1.93	0.26	1	2
Dental					
Adult's annual unofficial out-of-pocket payments, RUB	2,066	2,958	19,824	0	480,000
Adult's annual official out-of-pocket payments, RUB	2,066	12,880	49,406	0	1,200,000
Dummy for unofficial payment (1=yes, 0 –otherwise)	2,066	0.13	0.34	0	1
Dummy for official payment (1=yes, 0 –otherwise)	2,066	0.51	0.50	0	1
Medical facility type (1-private, 0 – state)	2,066	0.59	0.49	0	1
Private health insurance dummy (1=yes, 0- no)	2,062	1.93	0.25	1	2
Inpatient					
Adult's annual unofficial out-of-pocket payments, RUB	888	2,163	15,250	0	240,000
Adult's annual official out-of-pocket payments, RUB	888	7,264	51,168	0	980,000
Dummy for unofficial payment (1=yes, 0 –otherwise)	888	0.08	0.27	0	1
Dummy for official payment (1=yes, 0 –otherwise)	888	0.18	0.39	0	1
Medical facility type (1-private, 0 – state)	888	0.89	0.31	0	1
Private health insurance dummy (1=yes, 0- no)	887	1.96	0.21	1	2
Outpatient					
Adult's annual unofficial out-of-pocket payments, RUB	2,720	1,836	19,526	0	420,000
Adult's annual official out-of-pocket payments, RUB	2,720	20,983	42,266	0	1,214,400
Dummy for unofficial payment (1=yes, 0 –otherwise)	2,720	0.04	0.21	0	1
Dummy for official payment (1=yes, 0 –otherwise)	2,720	0.83	0.37	0	1
Medical facility type (1-private, 0 – state)	2,720	0.84	0.37	0	1
Private health insurance dummy (1=yes, 0- no)	2,715	1.94	0.22	1	2

Table 3.3: Share of Formal and Informal Payments in State and Private Medical Facilities, %

Private facility	Informal payments		State facility	Informal payments	
	0	1		0	1
Formal payments	0	16	Formal payments	0	14.9
	1	73.8		1	67.4
					14.8

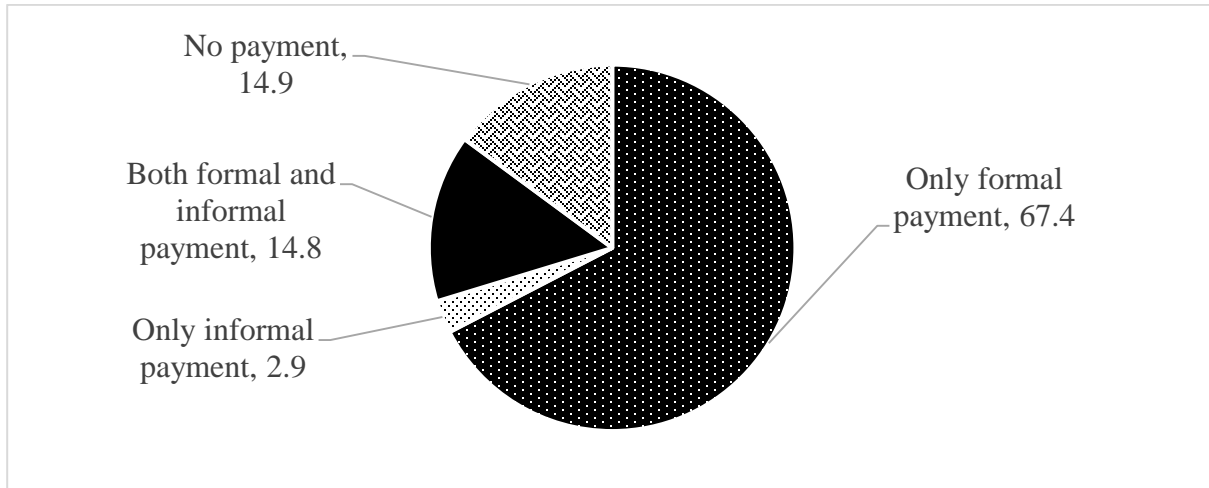


Figure 3.4: Percent of Payment Types for Services in State Medical Facilities

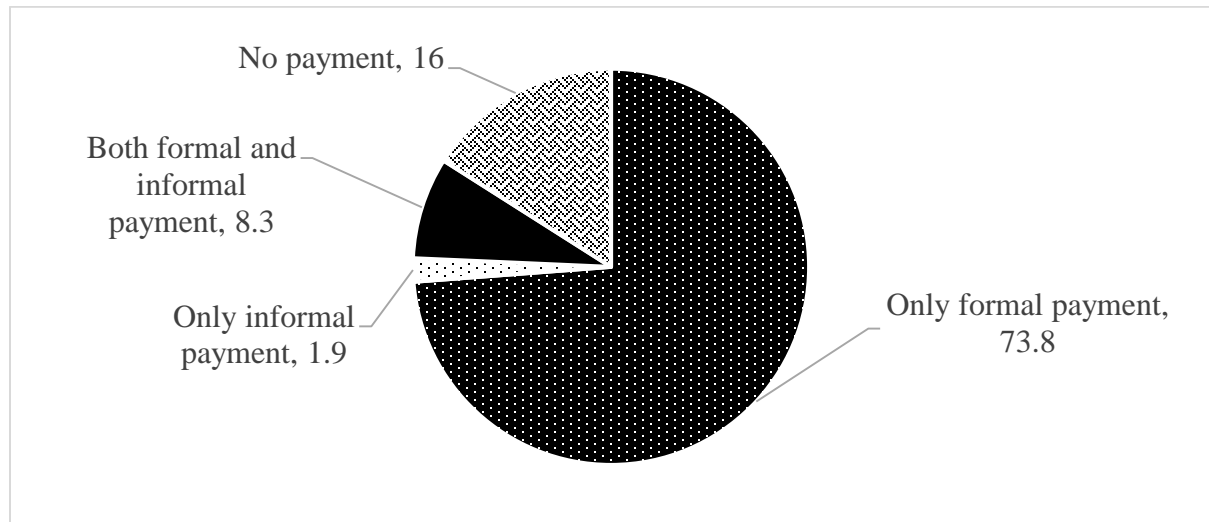


Figure 3.5: Percent of Payment Types for Services in Private Medical Facilities

It is worth looking at the distribution of formal and informal payments not only across types of hospitals, but across types of health care services as well. In private medical facilities, all five types of services (ambulance, dental, inpatient, outpatient and check-ups) show a similar pattern in the forms of payment. The most frequent type of payment is formal payment only, while the second largest is zero payment (free service). A combination of formal and informal payments, as well as only informal payments are least common (see Table 3.4).

Table 3.4: Share of Formal and Informal Payments Across Types of Services, %

Ambulance				State			
Private							
	Informal payments				Informal payments		
	0	1		0	1		
Formal payments	0	10.8	1.3	Formal payments	0	27.2	1.95
	1	78	9.8		1	64.1	7.08
Medical check-ups				State			
Private							
	Informal payments				Informal payments		
	0	1		0	1		
Formal payments	0	15.3	2.08	Formal payments	0	41.4	1.3
	1	75.8	6.8		1	53.6	3.53
Dental care				State			
Private							
	Informal payments				Informal payments		
	0	1		0	1		
Formal payments	0	23.1	3.8	Formal payments	0	2.8	6.9
	1	64.4	8.8		1	77	13.5
Inpatient care				State			
Private							
	Informal payments				Informal payments		
	0	1		0	1		
Formal payments	0	18.7	1.9	Formal payments	0	0.8	2.2
	1	69.1	10.3		1	65.6	31.4
Outpatient care				State			
Private							
	Informal payments				Informal payments		
	0	1		0	1		
Formal payments	0	12.5	0.6	Formal payments	0	1.9	2.3
	1	80.9	6.1		1	77.5	18.2

In state facilities, the distribution of formal versus informal payments is more heterogeneous. For example, for ambulance and medical check-ups, the pattern repeats that of private hospitals, with the purely formal payments having the highest share, and purely informal payments being the least common. However, for the other three services (dental, inpatient, and outpatient), the share of complementary payments is the highest, when formal and informal payments are made together. This is especially pronounced in the case of inpatient services, where over 30% of payments are a combination of a bribe and official fee. In addition, there is a higher share of pure bribes, and free services represent the smallest part of the payments (less than 1% for inpatient care, and between 2 and 3 percent for outpatient and dental services). Figure 3.6 illustrates the distribution of payments for inpatient care in state hospitals, and Figure 3.7 shows the average shares for outpatient and dental services.²¹

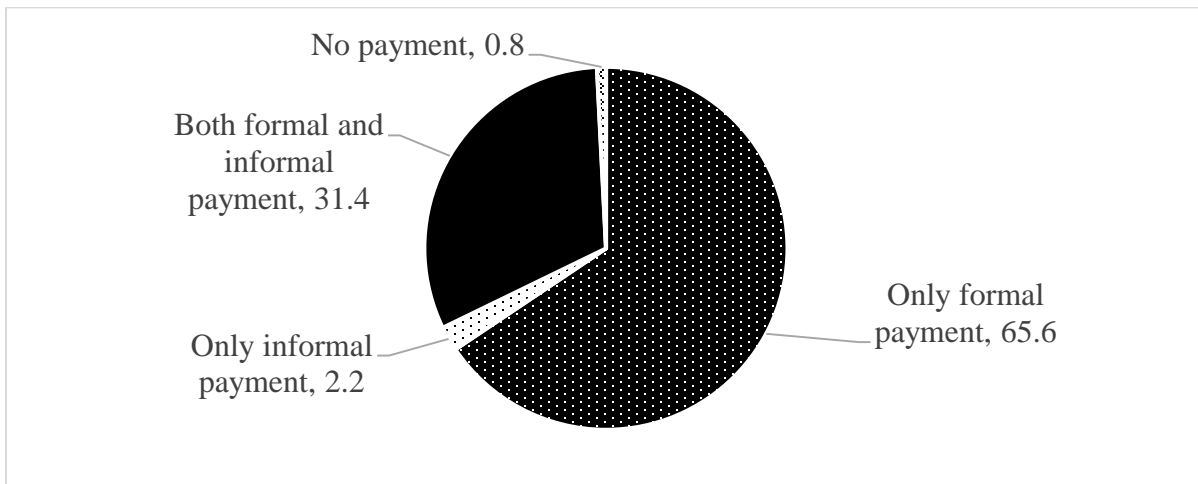


Figure 3.6: Percent of Payment Types for Inpatient Services in State Medical Facilities

²¹ I take the averages, because these two services have a very similar distribution of types of payments.

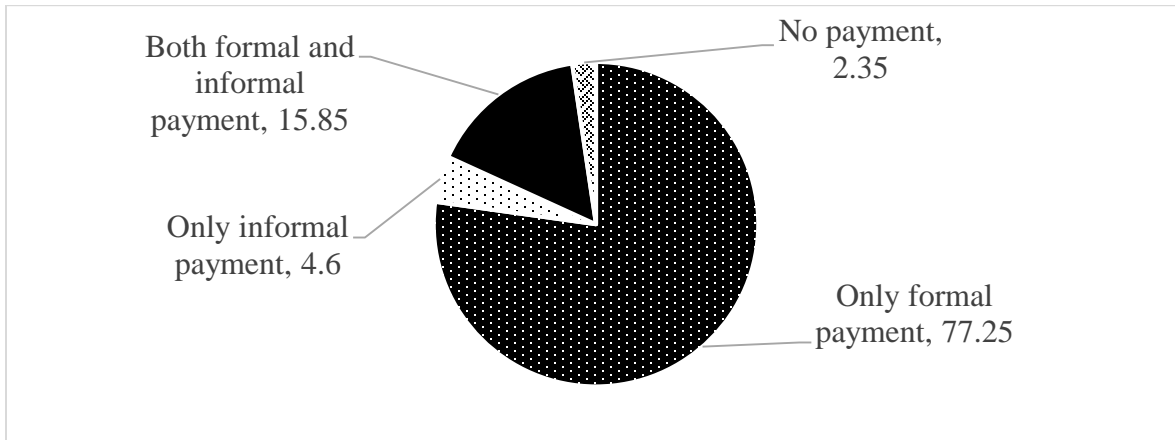


Figure 3.7: Percent of Payment Types for Outpatient Services in State Medical Facilities, %

3.4 Estimation Strategy and Empirical Results

To test whether formal and informal payments for health care services are complements or substitutes, I follow the methodology of Mateut and Zanchettin (2013). The authors study credit sales and advance payments as two alternative forms of payment in international trade; the two payments are complements if there exists a positive relationship between them, while they are substitutes if they are inversely related. Applying the same logic to payments in the health care sector, I will refer to a positive relationship between informal and formal payments as complements and a negative relationship as substitutes.

I first estimate the relationship using a dichotomous dependent variable taking value 1 if an adult paid a bribe for the visit and 0 otherwise. The main explanatory variable is a dummy that equals 1 if an adult paid officially and 0 if not. I estimate the models with the binary choice dependent variables, using logit household fixed effects and logit random effects.²²

²² Estimation results of these models using the linear probability model are consistent with the results of the logit models.

The next specification uses the amount of formal and informal payments. For this specification with continuous dependent variable, I apply household fixed effects and random effects. Considering heterogeneous nature of quality, speed of services and other characteristics of medical care across their different types, I also disaggregate the data for each type of health care service: ambulance, dental, inpatient, outpatient, and check-ups.

Each results table includes several specifications: a basic model without any control variables; a model with health care market control variables²³; and a model with both market and individual-specific control variables.²⁴ For the estimations pooling all types of medical care, I also control for the type of medical service.

Table 3.5 presents the results for the full data set with the binary dependent variable. Formal payment has a negative and significant effect on whether individuals pay informally, suggesting that formal and informal payments are substitutes. The results are consistent across all specifications and estimation techniques (see Models 1-6). Using fixed effects, adults who pay officially are, on average, 9.5%-11% less likely to pay unofficially for the same service (see Models 1-4).²⁵ The effect is smaller in the random effects models – adults paying formally are 1%-2% less likely to pay informally for the service (see Models 5-8).

²³ I use two health care variables: dummy for medical facility (state versus private) and dummy for whether a person has private health insurance or not.

²⁴ I use the following control variables: patient's gender, age, employment status, highest level of education, frequency of visits to the doctor, dummy for whether person had any chronic disease, dummy for whether person had a surgery, dummy for whether person is a doctor or nurse, religion dummy, as well as household income and number of children in the family.

²⁵ Here and further in the paper, for categorical and count variables from output tables, I calculate marginal effects as follows: $100 \cdot \beta$. I use the following exponential transformation to get the exact elasticities for dummy variables: $100 \cdot (\exp(\beta) - 1)$.

Table 3.5: Estimation Results Using Payment Dummies, Pooled Across Types of Care

Dependent variable: dummy for unofficial payment (bribe)	Basic regression. Logit FE (1) ²⁶	Regression w/medical variables. Logit FE (2)	Regression w/medical variables. Logit FE (3)	Regression w/full set of control variables. Logit FE (4)	Basic regression. Logit RE (5) ²⁷	Regression w/medical variables. Logit RE (6)	Regression with w/medical variables and types of services. Logit RE (7)	Regression w/all control variables. Logit RE (8)
Dummy for official payment	-0.12*** (0.03)	-0.12*** (0.03)	-0.12*** (0.03)	-0.1** (0.04)	-0.01*** (0.002)	-0.01*** (0.003)	-0.02*** (0.004)	-0.02*** (0.004)
Medical facility (1-private, 0 – state)		0.07 (0.04)	-0.05 (0.04)	-0.03 (0.04)		-0.003 (0.002)	-0.01*** (0.003)	-0.01*** (0.003)
Private health insurance (1-yes, 0- no)		-0.03 (0.09)	-0.007 (0.1)	-0.02 (0.08)		-0.002 (0.005)	-0.007 (0.006)	-0.01 (0.008)
Ambulance (1-yes, 0 –no)			0.08 (0.05)	0.07 (0.06)			-0.004 (0.003)	-0.009** (0.003)
Outpatient (1-yes, 0 –no)			0.12** (0.05)	0.1** (0.04)			0.008** (0.003)	0.009** (0.004)
Inpatient (1-yes, 0 –no)			-0.03 (0.07)	-0.05 (0.07)			0.01*** (0.004)	0.008* (0.004)
Dental (1-yes, 0 –no)			0.28*** (0.04)	0.2** (0.1)			0.03*** (0.004)	0.03*** (0.004)
Checkups (1-yes, 0 –no)			-0.18*** (0.05)	-0.13** (0.08)			-0.02*** (0.003)	-0.02*** (0.003)
Constant					-3.5*** (0.12)	-3.6*** (0.45)	-3.81*** (0.49)	-3.8*** (0.52)
N of observations	1,323	1,321	1,318	1,164	10,959	10,937	10,925	9,833
Demographic control variables	NO	NO	NO	YES	NO	NO	NO	YES

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Standard errors are in parentheses.

²⁶ Results are robust when dependent variable is “dummy for official payment”.

²⁷ Results are robust when dependent variable is “dummy for official payment”.

Table 3.6 includes results using the full data set for the total amounts paid formally and informally. Similar to the Table 3.5 results, the evidence suggests that the two types of payments are substitutes. Using household fixed effects, a 10% increase in the official payment leads to a 0.8%-1.2% reduction in the unofficial payment (see Models 1-4). This is consistent under random effects specification (see Models 5-8). I find that there is a significant difference in the unofficial payments in private versus state hospitals. In private facilities, the amount of informal payments is lower than in state ones (see Models 6-8).

To get a better insight in the relationship between formal and informal payments in Russian medical facilities, Table 3.7 presents separate estimations for each type of health care service using dummy for unofficial payment. Consistent with the pooled results, I find that formal payment has a negative and significant effect on informal payments in 2 out of 5 types of services: dental care, and medical check-ups. When paying for dental care, those who pay a formal fee are, on average, 22.89% to 30% less likely to pay a bribe (see Dental, Models 1-6). In addition, private insurance reduces the likelihood of informal payments for dental care by an average of 4%-6.7% (see Dental, Models 2-3 and 5-6). Dental services show the largest difference between state and private facilities. Patients are 14%-16.5% less likely to pay informally for dental care in private facilities (see Dental, Models 2-3).

Table 3.8 presents the results across different types of care using the total payment, which support the above findings for the case of the dummy variables. Two forms of payments are substitutes for ambulance, dental care and medical check-ups, while they are complements for inpatient care. Results suggest that patients substitute official fee with unofficial payment the most for dental services, then for check-up, and the least for ambulance. Some people received their health care free, therefore both their official and unofficial payments were zero.

Table 3.6: Estimation Results Using Payment Amounts, Pooled Across Types of Care

Dependent variable:	Basic regression.	Regression	Regression	Regression	Basic regression.	Regression	Regression with	Regression
Ln(amount of unofficial payment)	FE (1) ²⁸	w/medical variables. FE (2)	w/medical variables and types of services. FE (3)	w/full set of control variables. FE (4)	RE (5) ²⁹	w/medical variables. RE (6)	w/medical variables and types of services. RE (7)	w/full set of control variables. RE (8)
Ln(Amount of official payment)	-0.08** (0.04)	-0.09** (0.03)	-0.12*** (0.03)	-0.11*** (0.04)	-0.13*** (0.03)	-0.12*** (0.03)	-0.24*** (0.03)	-0.27*** (0.03)
Medical facility type (1-private, 0 – state)		0.11 (0.09)	-0.18 (0.11)	-0.14 (0.12)		-0.09** (0.04)	-0.41*** (0.07)	-0.37*** (0.07)
Private health insurance (1=yes, 0- no)		-0.29 (0.71)	-0.32 (0.71)	-0.11 (0.78)		0.08 (0.35)	0.3 (0.34)	0.5 (0.37)
Ambulance (1-yes, 0 –no)			0.001 (0.07)	-0.02 (0.08)			-0.1*** (0.03)	-0.13*** (0.03)
Outpatient (1-yes, 0 –no)			0.18* (0.09)	0.13 (0.11)			0.19*** (0.05)	0.19*** (0.06)
Inpatient (1-yes, 0 –no)			0.05 (0.04)	0.02 (0.05)			0.11*** (0.02)	0.07*** (0.02)
Dental (1-yes, 0 –no)			0.4*** (0.06)	0.39*** (0.06)			0.41*** (0.03)	0.41*** (0.03)
Checkups (1-yes, 0 –no)			-0.32*** (0.09)	-0.29*** (0.09)			-0.34*** (0.04)	-0.31*** (0.04)
Constant	0.52*** (0.02)	0.7** (0.34)	0.63* (0.34)	0.62* (0.38)	0.54** (0.02)	0.54*** (0.18)	0.51*** (0.18)	0.54*** (0.19)
N of observations	10,959	10,937	10,925	9,833	10,959	10,937	10,925	9,833
Demographic control variables	NO	NO	NO	YES	NO	NO	NO	YES

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Standard errors are in parentheses.

²⁸ Results are robust when dependent variable is “ln(amount of official payment)”.

²⁹ Results are robust when dependent variable is “ln(amount of official payment)”.

Table 3.7: Estimation Results Using Payment Dummies, Disaggregated Across Types of Care

Dependent variable: dummy for unofficial pay- ment (bribe)	Basic re- gression. Logit (1)	Regression w/medical variables. Logit (2)	Regression w/full set of control var- iables. Logit (3)	Basic re- gression. Logit RE (4)	Regression w/medical variables. Logit RE (5)	Regression w/full set of control variables. Logit RE (6)
AMBULANCE						
Dummy for official payment	-0.03 (0.04)	0.03 (0.04)	0.02 (0.04)	0.0001 (0.002)	0.0001 (0.002)	-0.001 (0.01)
Medical facility type (1-pri- vate, 0 – state)		-0.01* (0.009)	-0.01 (0.01)		-0.0007 (0.008)	-0.002 (0.0009)
Private health insurance (1- yes, 0- no)		-0.001 (0.02)	-0.01 (0.02)		-0.0002 (0.001)	-0.002 (0.007)
N	1,971	1,966	1,800	1,971	1,966	1,800
OUTPATIENT						
Dummy for official payment	0.003 (0.05)	-0.004 (0.01)	-0.008 (0.01)	0.002 (0.008)	-0.003 (0.01)	-0.0008 (0.01)
Medical facility type (1-pri- vate, 0 – state)		-0.06*** (0.009)	-0.06*** (0.01)		-0.04** (0.02)	-0.05*** (0.01)
Private health insurance (1- yes, 0- no)		0.01 (0.01)	0.009 (0.01)		0.01 (0.01)	0.009 (0.01)
N	2,720	2,715	2,475	2,720	2,715	2,475
INPATIENT						
Dummy for official payment	0.08*** (0.01)	0.08*** (0.01)	0.07*** (0.01)	0.09*** (0.01)	0.08*** (0.01)	0.04** (0.009)
Medical facility type (1-pri- vate, 0 – state)		-0.03 (0.02)	-0.02 (0.02)		-0.03 (0.02)	-0.02 (0.03)
Private health insurance (1- yes, 0- no)		0.001 (0.04)	0.01 (0.04)		0.002 (0.04)	0.01 (0.03)
N	888	887	805	888	887	805
DENTAL						
Dummy for official payment	-0.31*** (0.02)	-0.35*** (0.02)	-0.38*** (0.02)	-0.26*** (0.01)	-0.29*** (0.02)	-0.3*** (0.02)
Medical facility type (1-pri- vate, 0 – state)		-0.18*** (0.01)	-0.18*** (0.01)		-0.15*** (0.01)	-0.13*** (0.009)
Private health insurance (1- yes, 0- no)		-0.05* (0.02)	-0.07** (0.02)		-0.04* (0.02)	-0.04* (0.02)
N	2,066	2,062	1,838	2,066	2,062	1,838
CHECKUPS						
Dummy for official payment	-0.01 (0.008)	-0.01 (0.008)	-0.01* (0.009)	-0.002 (0.008)	-0.002 (0.002)	-0.001 (0.001)
Medical facility type (1-pri- vate, 0 – state)		-0.002 (0.005)	-0.009 (0.007)		-0.0005 (0.001)	-0.0008 (0.0009)
Private health insurance (1- yes, 0- no)		0.02 (0.01)	0.03 (0.01)		0.005 (0.006)	0.002 (0.002)
N	3,314	3,307	2,925	3,314	3,307	2,925
Demographic control varia- bles	NO	NO	YES	NO	NO	YES

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Standard errors are in parentheses.

Table 3.8: Estimation Results Using Payment Amounts, Disaggregated Across Types of Care

Dependent variable: Ln(amount of unofficial payment)	Basic re- gression. FE (1)	Regres- sion w/medi- cal varia- bles. FE (2)	Regression w/full set of control var- iables. FE (3)	Basic re- gression. RE (4)	Regression w/medical variables. RE (5)	Regression w/full set of control var- iables. RE (6)
AMBULANCE						
Ln(Amount of official pay- ment)	-0.05*** (0.01)	-0.05*** (0.01)	-0.04** (0.02)	0.008 (0.007)	0.008 (0.007)	0.008 (0.008)
Medical facility type (1-pri- vate, 0 – state)		0.24 (0.29)	0.17 (0.34)		-0.19 (0.11)	-0.19 (0.12)
Private health insurance (1- yes, 0- no)		0.03 (0.45)	-0.18 (0.49)		0.07 (0.2)	0.72 (0.42)
N	1,971	1,971	1,800	1,971	1,966	1,800
OUTPATIENT						
Ln(Amount of official pay- ment)	-0.36 (0.43)	-0.39 (0.43)	-0.6 (0.5)	0.09 (0.19)	-0.12 (0.19)	-0.07 (0.21)
Medical facility type (1-pri- vate, 0 – state)		-0.99** (0.5)	-0.83 (0.57)		-0.5*** (0.02)	-0.32*** (0.02)
Private health insurance (1- yes, 0- no)		-0.86* (0.42)	-0.44* (0.2)		0.49 (0.77)	0.28 (0.81)
N	2,720	2,715	2,475	2,720	2,715	2,475
INPATIENT						
Ln(Amount of official pay- ment)	0.1 (0.09)	0.19 (0.23)	0.22 (0.39)	0.23*** (0.06)	0.22*** (0.06)	0.2*** (0.07)
Medical facility type (1-pri- vate, 0 – state)		-0.23 (0.22)	-0.76 (0.59)		-0.62* (0.36)	-0.54 (0.4)
Private health insurance (1- yes, 0- no)		-0.12 (0.41)	-0.86 (0.67)		-0.28 (0.49)	-0.22 (0.21)
N	888	887	805	888	887	805
DENTAL						
Ln(Amount of official pay- ment)	-0.89*** (0.13)	-0.95*** (0.01)	-1.21*** (0.18)	-0.89*** (0.08)	-1.21*** (0.09)	-1.22*** (0.09)
Medical facility type (1-pri- vate, 0 – state)		-0.71*** (0.2)	-0.71*** (0.22)		-0.93*** (0.09)	-0.9*** (0.09)
Private health insurance (1- yes, 0- no)		-0.32 (0.98)	-0.18 (0.12)		0.3 (0.39)	0.57 (0.4)
N	2,066	2,062	1,838	2,066	2,062	1,838
CHECKUPS						
Ln(Amount of official pay- ment)	-0.22 (0.14)	-0.23 (0.14)	-0.3* (0.17)	-0.1* (0.07)	-0.1* (0.007)	-0.14** (0.07)
Medical facility type (1-pri- vate, 0 – state)		-0.19 (0.18)	-0.34* (0.21)		-0.03 (0.09)	-0.11 (0.1)
Private health insurance (1- yes, 0- no)		0.43 (0.48)	0.33 (0.66)		0.58 (0.99)	0.67* (0.29)
N	3,314	3,307	2,925	3,314	3,307	2,925
Demographic control varia- bles	NO	NO	YES	NO	NO	YES

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Standard errors are in parentheses.

As a robustness check and in order to make sure that my empirical findings are not driven by those who paid nothing for medical care both officially and unofficially, the estimations (not presented here) were run with only those paying a non-zero amount for care. The results were consistent across all specifications after dropping this subsample out.

3.5 Discussion

Why do payments for inpatient services appear to be complements while they are substitutes for other services? First, one can look at the difference in the likelihood and amount of inpatient care payments in state versus private facilities. The findings of the paper suggest that neither the probability of paying informally nor the actual amount of the bribe depend on whether the person receives inpatient services in a state or private facility. As Figure 3.2 shows, regardless of the size of the price ceiling, the change in the patient's willingness to pay informally is proportional to the change in their willingness to pay formally. This is consistent with the responses from the 2009 wave of the survey, which includes more detailed questions about the reasons and nature of informal payments for inpatient and outpatient services. According to this survey, 39% of people reported that the main reason why they paid a bribe for inpatient care was to tip doctors for their good work, good services and for successful treatment.³⁰

However, the opposite is true for dental and outpatient care. For these two services the probability and the amount of informal payments are lower in private hospitals. In addition, the data show that the average official health care spending for all five services is higher in private than state hospitals. As illustrated in Figure 3.1, when an adult incurs a high formal payment,

³⁰ Russia Longitudinal Monitoring Survey, RLMS-HSE (2009). 18th Round. Household and Individual Survey.

his willingness to complement it with the informal bribe goes down, and the higher the official spending is, the more likely it is that the two forms of payment substitute for each other, which is the case for dental care and medical check-ups.

Second, it is worth considering the motivation behind paying informally using the 2009 wave of the survey.³¹ The survey shows that in the case of inpatient care most of the respondents paid informally not because a medical worker insisted on this, but because it was their own decision. In outpatient services, the responses are the opposite: over 40% of people paid a bribe based on the doctor's suggestion, and only 19% said that it was their own decision. Similarly, when deciding on the actual amount of bribe, in 51% of inpatient services, people themselves decided on it, while this share is only 37% in the case of outpatient care.³² In other words, when getting inpatient services patients' decisions on whether to pay a bribe, and if yes, how much, is in many cases determined by their own will rather than the direct demand from the medical personnel. Therefore, people consider a bribe as a way of expressing gratitude to the doctor.

Finally, when answering why they paid unofficially for their health care, 32% of patients said that otherwise they would not be able to either get an appointment at a hospital, with a particular doctor, or to receive a particular inpatient service. In outpatient care, the same rationale behind informal payments makes up over 85% of all responses. In addition, 41% of people paid bribes for outpatient services in hope of a higher quality of service, and around 19% of respondents explicitly mentioned that they did so in order to express gratitude to the doctor.³³ Therefore, in the case of inpatient services, the pressure to pay a bribe was not as significant as for outpatient ones.

³¹ Russia Longitudinal Monitoring Survey, RLMS-HSE (2009). 18th Round. Household and Individual Survey.

³² Russia Longitudinal Monitoring Survey, RLMS-HSE (2009). 18th Round. Household and Individual Survey.

³³ Russia Longitudinal Monitoring Survey, RLMS-HSE (2009). 18th Round. Household and Individual Survey.

3.6 Conclusion

In this paper, I study whether formal and informal (bribes) payments for health care services are complements or substitutes. For the empirical analysis, using 2012 data on adults in Russia, I study how the likelihood of paying informally and the amount of the actual unofficial payment relate to the official health care payment at the same point of time. Using the full data set, I find evidence that formal and informal payments are substitutes both in the likelihood of using them and in the actual amount of spending.

In addition, I consider not only health care market overall, as most of the other papers do, but also look at five medical services individually (ambulance, dental, inpatient, outpatient and medical check-ups) and find that formal and informal payments are substitutes for medical check-ups and dental care, but complements in the case of inpatient services.

As I show in the paper, there is a significant relationship between the price that hospitals and health care providers charge people officially and the amount of unofficial payments that people make. In addition, I show that formal health care spending affects both the probability and the amount of unofficial payments. Therefore, a change in the officially charged price might have a significant impact on the reduction of the informal sector of the Russia's economy. When formal and informal payments are substitutes, an increase in the formal fee for the health care could reduce both the probability of people and the amount of informal payments. In addition, this would reduce the foregone income that the health care facilities face when patients pay bribes outside of the official hospital payment channels.

The case of the inpatient care is different, as this is the only type of medical services in which the two forms of payments are complements. This means that an increase in the formal

price of the service would make people pay more unofficially, and this might be seen as a type of gratuity or tip for the service. This implies that, unlike other types of service, an increase in price might actually increase unofficial payments for inpatient care.

CHAPTER IV

WHO PAYS BRIBES FOR HEALTH CARE? A COMPARISON OF RESIDENTS AND NON-RESIDENTS IN RUSSIA

4.1 Introduction

Access to health care services can be challenging for citizens and non-citizens of a country alike, but non-citizens often face additional barriers including lack and/or unequal health care coverage, language and cultural barriers, discrimination by the health care providers, and unfamiliarity with the structure of the health market (Davidovitch et al., 2013; Derose et al., 2007; Lebrun, 2012; Lebrun and Dubay, 2010; Huang et al., 2006). In general, migrants are considered a vulnerable population when it comes to their health and compared to non-migrants, they usually have higher risk of social, psychological and physical health problems (Derose et al., 2007).

Most of the health care literature either compares the behavior of migrants to that of non-migrants or puts an emphasis on undocumented migrants only (Lebrun, 2012). However, the category of migrants is very diverse, starting from their country of origin and reason for migrating to the difference in their income and availability of health insurance. One important criteria often omitted from migrants health care utilization literature is residency status. In Russia, for example, residency status directly affects the access to health care by foreign- versus native-born populations. In particular, residents (both native Russian and foreign-born) are covered by the universal health care and are granted subsidized state health insurance. Non-residents do not have access to state insurance and must either pay out-of-pocket for the service or purchase private insurance to partially cover these payments. I use the above residency criterion

to study informal out-of-pocket payments by residents (both native and foreign-born) and foreign-born non-residents.

The availability and type of health insurance is one of the key factors that affects health care utilization not only by the native population but also by different categories of foreign-born population. In addition, the impact is different in the case of state versus private health insurance. The duration of stay is another factor that affects health care utilization by the foreign-born population of a country. Lebrun (2012) and Chavez et al. (1985) show that the longer the migrants stay in the country, the more familiar they are with the local health care system, and the higher their utilization rate.

In terms of health care spending, a number of studies compare total health care spending between the immigrants and the native-born population. Mohanty et al. (2005) use the 1998 Medical Expenditure Panel Survey and find that, on average, health care spending by immigrants in the U.S. is half of that of the U.S.-born population. This is consistent for both insured and uninsured people. Goldman et al. (2006) and Prentice et al. (2005) find supporting evidence to the above by employing 2000 and 1997 data on people using health care services in California. The main reason behind lower expenditures of foreign versus U.S.-born population is their lower insurance rate and lower overall utilization rate of medical facilities. Ku (2009) looks only at the part of population with health insurance and also finds that insured foreign-born people spend less on health care than U.S. citizens.

Several other studies, including Stimpson et al. (2013), look at the difference in the health care spending by both the birthplace and legal status of migrants and find that undocumented migrants in the U.S. spend less on health care than both the legal migrants and U.S. natives. Prior to the Affordable Care Act, a similar pattern held true for refugees and uninsured

immigrants compared to legal migrants and the U.S. natives (Caulford and Vali, 2006). Tarraf et al. (2012) compares 2000-2008 health care expenditures of U.S.-born citizens, foreign-born citizens and non-citizen immigrants. The paper finds that U.S.-born citizens have the highest spending on health care, while immigrants without citizenship have the lowest payments. Similar to the findings of the papers cited above, the main explanation for the difference in health spending is underutilization of the U.S. health care system in general by the immigrants.

Informal payments are also referred to as unofficial payments, bribes, under-the-table or under-the-counter payments, and envelope payments. The practice of unofficial payments is very common in the former communist countries, including former Soviet Union countries (Lewis, 2002; Lewis, 2000; Ensor and Savelyeva, 1998; Ensor and Witter, 2001; Tatar et al., 2007), and many of Central and Eastern European states (Liaropoulos et al., 2008; Gaal et al., 2006; Vian et al., 2006; Balabanova and McKee, 2002; Chawla et al., 1998; Özgen et al., 2010).

Ensor (2004) outlines at least three main factors that can explain why informal payments are widespread in these countries, including Russia. The first reason is a practice of strict price regulation by the state during the communist era, which significantly increased the role of individual connections in obtaining different goods and services. In addition, many transactions had to be supported not only by cash payments, but also by in-kind payments. The second contributing factor is rooted in the culture of gift giving, which is looked at as an expected part of doing business in these countries. Finally, Ensor (2004) considers the importance of the reduction in public spending, in general, and on salaries of public workers, in particular, when economies were transitioning from state-controlled to market economies.

In the Russian health care market in particular, there are a few reasons why people may pay informally. Among these are: low quality of the services, problems with the access to the

facility or to a particular doctor/service, long waiting time, and a limited selection of health care providers (Gordeev et al, 2014; Twigg, 2002; Fotaki, 2009). Overall, the empirical analyses of informal health care payments in Russia are lacking. Aside from case studies of bribes in Russian health market, there are only a few papers with formal empirical estimation of this phenomenon. Aarva et al. (2009) use microeconomic data on health care bribes in the hospitals of two cities in Russia and find that the likelihood of bribes by female patients is consistently higher in state hospitals and if patients do not have to pay for their services officially.

The paper uses 2012 data from the 21st round of the Russia Longitudinal Monitoring Survey-Higher School of Economics (RLMS-HSE). The sample is made up of over 7,000 Russian adults aged 14 and up. Of these, 6,269 are residents (either native Russians or foreign-born with legal permanent or temporary residency) and 1,106 are non-residents (migrants without residency status).

The main difference between state and private health insurance in Russia is that state insurance is a part of the country's universal health care coverage, and is therefore subsidized by the state. All legal residents (regardless of their citizenship) have state insurance. For non-residents who do not have state insurance, private insurance is the only option to reduce their out-of-pocket health care payments. I find that both state and private health insurance reduce the probability and the amount of out-of-pocket informal health care payments by adult patients. The findings suggest that residents pay less informally than non-residents, regardless of whether they have private insurance or not. Similarly, residents pay lower bribes than non-residents both in state and in private medical facilities. In addition, the difference in the probability and the amount of informal payments between residents and non-residents is higher in private than state

hospitals, regardless of whether patients have private insurance or not. For non-residents, private insurance plays the biggest role in reducing informal spending in private hospitals. I also find that there is no significant difference in bribes between the native Russians and foreign-born.

To the best of my knowledge, mine is the first study to specifically examine informal health care payments of any type of foreign-born population. There is, however, a rich literature that studies informal payments for the general population in health care. This paper contributes to the literature on the health care utilization by the foreign-born population by being the first paper to examine whether non-residents behave differently in terms of informal health care payments (bribes) than residents.

This paper is organized as follows. Section 4.2 describes the Russian health care and the options for care available to residents and non-residents. Section 4.3 describes the data. Section 4.4 explains estimation and main empirical results. Section 4.5 is a discussion of the findings and the conclusion.

4.2 Russian Health Care Market

4.2.1 Health Care and Health Care Access in Russia

Russia provides universal health coverage (state health insurance) to all its citizens and legal foreign-born residents. Those who are foreign-born non-residents do not qualify for state health insurance coverage. In Russia, anyone, regardless of residency status, may purchase private health insurance. Therefore, native Russians and foreign-born residents have an option to

supplement state insurance with private insurance. For non-residents, on the contrary, the purchase of private insurance is the main option to reduce their out-of-the pocket health care costs. However, until 2015, immigrants in Russia were not required to have private insurance.

It is worth noting that Russia is not the only country that provides universal health care coverage to its non-citizens, as long as they are the legal residents. These countries include Israel, Japan, Spain and most other European countries (Davidovitch et al., 2013; Hernandez-Quevedo and Jimenez-Rubio, 2009; Alvarez and Barranquero, 2009; Suguimoto et al., 2012). According to Davidovitch et al. (2013), who compare health care utilization of migrants in Israel, the rate of utilization of health care is higher among migrants who have state provided insurance compared to migrants without such insurance. Since only a small share of foreign-born migrants purchase private health insurance, they do not use health care services very often and the rate of illness among them is higher. Derose et al. (2007) and Ku and Matani (2001) use the data on Latin American migrants in the U.S. and show that the rate of health insurance coverage and, therefore, the rate of health care utilization among legal immigrants are lower for the native-born population.

Though the state does not provide insurance to non-residents, it guarantees free ambulance and emergency room care for them in the case of emergency and life-threatening situations in state (but not private) medical facilities. For all other health care services, non-residents must pay full cost out-of-pocket.

Patients can use state health insurance only in the state facilities. Depending on the type of the service, this insurance can either cover its full cost, which allows to get health care free, or part of it. In private facilities, people can only use private insurance, which can also cover the costs either fully or partially, depending on the plan. Therefore, for native Russians and

foreign-born residents, medical services in state hospitals are cheaper than in private facilities due to state insurance. For non-residents the services are not free in either type of facility. The only exception is ambulance calls and emergency care in the life-threatening cases. The state provides these services in state facilities to non-residents free of charge.

Prior to January 2015, only non-resident migrants from certain countries (all EU members, for example) were required to have private health insurance upon arrival in the country. Migrants from the Commonwealth of Independent States (CIS), the largest group of migrants in Russia, were exempt from this rule, which allowed them to stay in the country without insurance. Most of non-residents from the CIS arrive in the country for low-paid jobs, and in many cases their employment is informal. As a result, they often face problems paying for health care. Not surprisingly, this results in many avoiding care until they need emergency care. In addition, there was a substantial increase in disease incidence among both the non-resident migrant population and even the non-migrant part of the population as well (Romanov, 2014). A frequent use of state emergency care by uninsured non-resident migrants was a high financial burden for the country. Prior to 2015 in Moscow alone, this spending reached 2.5 trillion rubles (approximately 72 million USD) annually (Romanov, 2014). This is a common outcome in other countries as well. The literature shows that uninsured migrants are less likely to go to the hospital for medical care and are more likely to have poor health than their insured counterparts in countries like Spain (Alvarez and Barranquero, 2009), Japan (Sugimoto et al., 2012), and the U.S. (Cunningham et al., 2006; Stimpson et al., 2010).

4.2.2 Foreign Residents and Non-Residents in Russia

In this paper, I differentiate between native Russians, foreign-born residents and non-residents according to the definitions of the Russian migration law. The residents are made up of native-born Russians and foreign-born people who either have permanent or temporary residency in the country. The following categories of people are considered Russian residents: Russian citizens; foreign-born non-citizens, who have a permanent or temporary residency status, regardless of whether they are employed or unemployed; foreign students as long as they pertain their continuous enrollment in school; foreign-born who are legally employed in the country and have a job contract for at least 183 days (Federal Migration Service, 2012). Non-residents are foreign-born without a residency status as outlined above. The biggest groups of non-residents are tourists, workers hired for a short-term (under 183 days) and illegal migrants.

Migrants can be found in all regions of Russia. However, over the last few decades, the three geographical areas with the highest share of migrant population in the country are the cities of Moscow, St. Petersburg, Krasnodar and their surrounding regions (Mkrtchan and Karachurina, 2014). These are the capital city and the major cities of the central, northern-eastern and southern regions of Russia, the major industrial centers and tourist destinations, which makes them attractive to migrants. Therefore, it is likely that these regions have a denser migration network. They also have a wider selection of health care facilities, doctors and medical care of higher quality, which also affects the health care utilization in these regions.

According to Derose et al. (2007), the migrants who arrive in the regions with a high concentration of the foreign-born population are more likely to benefit from the well-developed safety nets, culturally competent health providers, immigrant advocacy and community-based

organizations. Cunningham et al. (2006) show that Hispanic migrants that need health care in the U.S. cities with a low share of the Latino population experience more language problems during the hospital services than those who live in the areas with the dense population of Spanish-speaking people.

In terms of the country of origin, most of the migrants (around 86%) arrive in Russia from the Commonwealth of Independent States (CIS), which is made up of most of the former Soviet Union republics. According to the Russian Federal Migration Service (2016), the three leading countries that supply migrants in Russia are Ukraine, Uzbekistan, and Tajikistan. The share of immigrants arriving from these three countries in the total migrant inflow is 25%, 18% and 9%, respectively (Federal Migration Service, 2016).

4.3 Data

I use data from the 21st round of Russia Longitudinal Monitoring Survey-Higher School of Economics (RLMS-HSE). This are 2012 individual level data with household identifiers. I use the responses of over 7,000 adults who sought any type of health care in Russia in the previous 12 months. Some households have several adult members who received health care services. Therefore, it is possible for some adults in the sample to belong to the same household. Those adults who received health care over the twelve months answer health care related questions for five different types of services: ambulance, inpatient, outpatient, dental and medical check-ups. First, they report whether they paid officially and unofficially. Then, in the case of a positive answer, they report how much they paid out-of-pocket formally and informally. For each individual, I add these payments up across five services and get their total annual official

and unofficial out-of-pocket health care payments. I use two dependent variables: a binary variable indicating whether a person paid a bribe or not, and their total yearly out-of-pocket unofficial health care payments.

Table 4.1 shows that among the adults, 76% are native-born Russians, 9% are foreign-born legal residents and 15% are non-residents. The average legal resident has been living in

Table 4.1: Summary Statistics for the Whole Sample

Variable	N	Mean	Std. Dev	Min	Max
Resident dummy (1-resident; 0 – otherwise)	7,375	0.85	0.36	0	1
Dummy for unofficial payment (1-yes, 0 – otherwise)	7,375	0.14	0.29	0	1
Dummy for official payment (1-yes, 0 – otherwise)	7,375	0.77	0.41	0	1
Unofficial payment, RUB	7,375	1,415	13,749	0	480,000
Official payment, RUB	7,375	8,329	34,517	0	1,214,400
Medical facility type (1-private, 0 – state)	6,913	0.18	0.41	0	1
Private health insurance (1-yes, 0- no)	7,375	0.11	0.23	0	1
Native Russian dummy (1-yes; 0 – otherwise)	7,375	0.76	0.38	0	1
Years lived in Russia	7,324	35.00	19	1	101
Region, in which a person lives (1- region with a high share of migrants, 0 –otherwise)	7,375	0.35	0.43	0	1
Monthly wage, RUB	7,375	8,497	154,899	0	360,000
Age, years	7,375	45	20	14	101
Gender (1-male, 0-female)	7,375	0.51	0.47	0	1
Education level (1 –elementary school...12 – Ph.D.)	7,115	4.83	2.14	1	12
Marital status (1-married; 0 –otherwise)	6,980	0.45	0.49	0	1
Frequency of doctor visits (1-once year....5-few times per month)	7,362	2.98	1.11	1	5
Ambulance dummy (1-received ambulance service; 0 – otherwise)	7,375	0.18	0.39	0	1

Russia for 31 years, while a non-resident has been in the county for 23 years (see Table 4.2).

In the sample, 97% of foreign-born adults are from one of the former USSR countries (over 60% of foreign-born are from Ukraine, Kazakhstan and Belorussia), while only 3% are from other countries. Comparing foreign-born residents to non-residents, the share of adults from non-USSR countries is 3.9% versus 2.8%, respectively. About half of non-residents and only a third of foreign-born residents live in one of three Russian regions with the highest share of migrant population.

In terms of the two types of health insurance: 15% of adults do not have state insurance because they are non-residents. Only 11% of all adults have private insurance. This share is about the same for legal foreign-born residents and non-residents: 8% and 9%, respectively (see Table 4.2).

For the whole sample 77% of individuals paid officially, 14% - paid unofficially, and 9% received medical care for free. Table 4.2 shows that, on average, non-residents paid officially more than the other two groups of adults: 83% of non-residents versus 79% of foreign-born residents and 64% of Russian-born. Similarly, non-residents paid more in terms of unofficial payments than both residents and Russian-born. Around 17% of non-residents paid bribes, while only 14% of Russian-born and 11% of foreign-born residents paid informally. It is worth noting that 22% of Russian-born paid nothing, while only 10% of foreign-born residents had zero unofficial payment. Among non-residents, none of the adults received care free. Most people (82%) used state facilities. This share is higher among non-residents (87%) than foreign-born residents (78%).

As explained earlier, there is a significant difference in the health care services in different types of the Russian health care facilities, which explains why some choose to purchase

Table 4.2: Disaggregated Summary Statistics

Variable	Russian-born		Foreign-born residents		Non-residents	
	N	Mean	N	Mean	N	Mean
Dummy for unofficial payment (1=yes, 0 –otherwise)	5,605	0.14	664	0.11	1,106	0.17
Dummy for official payment (1=yes, 0 –otherwise) ³⁴	5,605	0.64	664	0.79	1,106	0.83
Unofficial payment, RUB ³⁵	5,605	20,766	664	19,077	1,106	35,765
Official payment, RUB ³⁶	5,605	19,156	664	26,842	1,106	22,700
Medical facility type (1-private, 0 – state)	5,207	0.19	588	0.22	1,106	0.13
Private health insurance (1=yes, 0- no)	5,605	0.14	664	0.08	1,106	0.09
Years lived in Russia	5,605	56	664	31	1,106	23
Region, in which a person lives (1- region with a high share of migrants, 0 –otherwise)	5,605	0.31	664	0.28	1,106	0.45
Monthly wage, RUB	5,605	9,398	664	8,308	1,106	7,836
Age, years	5,605	56	664	38	1,106	43
Gender (1-male, 0-female)	5,605	0.43	664	0.46	1,106	0.61
Education level (1 –elementary school... 12 – Ph.D.)	5,529	4.89	656	5	1,090	4.61
Marital status (1-married; 0 –otherwise)	5,516	0.42	658	0.51	941	0.42
Frequency of doctor visits (1- once or less per year... 5-few times per month)	5,421	3.01	663	2.93	896	3
Ambulance (1-received ambulance service; 0 – otherwise)	5,605	0.21	664	0.16	1,106	0.17

private insurance. This is especially important in the case of native Russians and legal foreign-born residents, who have universal health care coverage, therefore have fewer incentives to incur additional costs associated with the purchase of private insurance.

³⁴ The difference between one and the sum of the mean of the amount of official and unofficial payment is the mean of zero payments (free services).

³⁵ The mean of unofficial payment is the mean of those unofficial payments that were above zero.

³⁶ The mean of official payment is the mean of those official payments that were above zero.

Table 4.3 compares the percent of residents and non-residents with different combinations of private insurance and medical facility. Regardless of the type of hospital and residency, most of the patients do not have private insurance. The majority of people who do not have private insurance received health care in state rather than private facilities. This holds true if one compares residents and non-residents separately. On the other hand, there is a difference between residents and non-residents with private insurance. In particular, almost three times more residents with insurance received care in private rather than state hospitals. The distribution is the exact opposite for non-residents, most of whom chose state over private facility if they had a private insurance.

Table 4.3: Percent of Residents and Non-Residents With Different Combinations of Private Insurance and Medical Facility Type

Whole sample		Residents		Non-residents	
		Private insurance		Private insurance	
		Yes	No	Yes	No
Medical facility	State	3.12	76.22	6.39	80.78
	Private	8.29	13.18	2.68	9.95

Therefore, the data reveal that there indeed is a difference in the health care utilization between the residents (native Russians and foreign-born residents). In the next section, I explain the estimation technique and discuss the main empirical findings.

4.4 Estimation and Empirical Results

I study whether Russians residents (native and foreign-born) differ in informal payments

for their health care compared to foreign-born non-residents that do not have state provided health insurance. In addition, I estimate whether there is a difference in the effect of private health insurance and medical facility type on the probability of paying a bribe and on the amount of the unofficial payment among the residents and non-residents. Considering that the main purpose of this paper is to study whether residents and non-residents of the country are different in their informal health care payments, I use a variable “resident”, which distinguishes between the two. It is worth noting that the category of “residents” includes both native Russians and foreign-born. Even though both the natives and the legal foreign-born residents have state insurance, it is possible that their bribery behavior in the health care market can be different. To control for that, I add a dummy variable, which indicates whether the respondent is a native Russian or not.

For the first set of estimations in Table 4.4, the dependent variable is a dummy variable that takes value 1 if an adult is a resident and 0 if he is not. Model 1 includes the main variable of interest – the dummy for the adult’s residency status. In model 2, I add two health care variables: dummy for private insurance and for the type of medical facility (private versus state). Model 3 includes two interaction variables: interaction between residency status and private insurance, as well as between residency and type of medical facility. I include these interactions for two reasons. First, to account for the case when residents purchase private insurance in addition to their state insurance and when residents choose between private insurance and no insurance at all. Second, to control for the difference in the use of state versus private medical facilities by residents and non-residents. In the last model, I add control variables including age, gender, education level, marital status, wage and the amount of official health care payments, frequency of visits to the doctor, dummy for whether the adult used ambulance (to control for

Table 4.4: Estimation Results Using Unofficial Payment Dummy

Dependent variable: dummy for unofficial payment (bribe)	Basic regression. LPM (1)	Regression w/medical variables. LPM (2)	Regression w/interaction variables. LPM (3)	Regression w/full set of variables. LPM (4)	Basic regression. Logit (5)	Regression with medical variables. Logit (6)	Regression with interaction variables. Logit (7)	Regression w/all variables. Logit (8)
Resident (1-resident; 0-otherwise)	-0.02* (0.01)	-0.02* (0.01)	-0.16** (0.06)	-0.23** (0.09)	-0.002* (0.001)	-0.09* (0.04)	-0.11** (0.04)	-0.12*** (0.0002)
Private insurance (1-yes, 0- no)		-0.003 (0.02)	-0.12*** (0.02)	-0.14*** (0.03)		-0.03 (0.02)	-0.05** (0.01)	-0.19** (0.063)
Medical facility (1-private, 0 – state)		-0.13*** (0.01)	-0.14*** (0.009)	-0.19*** (0.09)		-0.27** (0.08)	-0.11*** (0.03)	-0.02*** (0.0006)
Resident*Private insurance			-0.13*** (0.01)	-0.22*** (0.06)			-0.05*** (0.01)	-0.18* (0.09)
Resident*Medical facility			-0.002 (0.046)	-0.19* (0.11)			-0.04*** (0.005)	-0.14*** (0.004)
Native Russian (1-native, 0 – otherwise)				0.01 (0.02)				0.002 (0.51)
Region (1-with a high share of migrants, 0 – otherwise)				0.09*** (0.01)				0.09*** (0.002)
Constant	0.08*** (0.01)	0.21*** (0.02)	0.21*** (0.04)	0.41*** (0.09)	-9.53*** (0.24)	-5.79*** (0.39)	-1.29*** (0.24)	-2.05** (0.61)
N	7,375	6,913	6,913	6,851	7,375	6,913	6,913	6,851
Control variables ³⁷	NO	NO	NO	YES	NO	NO	NO	YES

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.³⁸

³⁷ Here and in all further estimation results tables control variables include: dummy for the official payment or its amount, monthly wage, age, gender, marital status, the highest education level, the number of years lived in Russia, frequency of visits to the doctor and ambulance service dummy.

the free ambulance and emergency care for non-residents). In addition, I use two migration related control variables: the duration (in years) of living in Russia and dummy indicating whether the person lives in one of the three Russian regions with the highest share of migrant population

To estimate the models on the probability of informal payments, I use linear probability (LPM) and Logit models (see Table 4.4, columns 1-4 and 5-8, respectively). For the models on the amount of bribes, I use OLS (see Table 4.5). For all estimations, I cluster standard errors at the household level.

In the case of the probability of unofficial payments, which is shown in Table 4.4, I find that residents are 20.6% less likely to pay informally than non-residents (see Table 4.4, column 4).³⁹ People with private insurance are less likely to pay bribes and so are adults who get the health care in private rather than state medical facilities. The respective difference is 13% and 16% (see Table 4.4, column 4). All of the above is consistent across specifications and estimation techniques.

Table 4.5 presents the results for the amount paid informally. The findings are consistent with those for the probability of unofficial spending. Informal payments are lower for residents than non-residents, in private than state hospitals and for those who have private insurance.

The interaction variables provide more insight into how bribes of residents and non-resident differ depending on whether the individual has private insurance and whether the informal payments are made in state versus private facility (see Table 4.4, columns 3-4, 7-8, Table 4.5, columns 3-4). Tables 4.6, 4.7 and 4.8 are a summary of these findings. The numbers in

³⁹ Here and further, I use the following exponential transformation to get the exact marginal effects for dummy variables: $100*(\exp(\beta)-1)$.

Tables 4.6-4.8 are the total effects, which is a summation of the individual marginal effects and interaction term effects. First, I compare residents with non-residents (see Table 4.6). In private hospitals, residents with private insurance are less likely to pay a bribe than non-residents with private insurance by 35%. Similarly, in state hospitals they are 25% less likely to pay informally

Table 4.5: Estimation Results Using Amount of Unofficial Payment

Dependent variable: Ln of unofficial pay- ment (bribe)	Basic regres- sion. OLS (1)	Regression w/medical vari- ables. OLS (2)	Regression w/interaction variables. OLS (3)	Regression w/full set of con- trol variables. OLS (4)
Resident (1-resident; 0-otherwise)	-0.08* (0.04)	-0.11* (0.07)	-0.18** (0.09)	-0.24** (0.09)
Private health insur- ance (1-yes, 0- no)		-0.07 (0.13)	-0.37*** (0.09)	-0.31*** (0.08)
Medical facility type (1-private, 0 – state)		-0.77*** (0.09)	-0.24*** (0.09)	-0.19*** (0.04)
Resident*Private in- surance			-0.68*** (0.17)	-0.19*** (0.04)
Resident*Medical fa- cility type			-0.12 (0.25)	-0.14*** (0.03)
Native Russian (1-na- tive, 0 – otherwise)				0.03 (0.11)
Region (1- region with a high share of mi- grants, 0 –otherwise)				0.17*** (0.03)
Constant	0.41*** (0.06)	1.1*** (0.11)	1.21*** (0.22)	2.7 *** (0.48)
N	7,375	6,913	6,913	6,851
Control variables	NO	NO	NO	YES

Note. *- significant at 10%; **- significant at 5%; *** - significant at 1%. Clustered standard errors are in parentheses.

than non-residents (see Table 4.6, column 3).⁴⁰ Correspondingly, the amount of bribes paid by residents with private insurance is lower than those of non-residents with insurance as well, by 43% in private and by 34% in state facilities.

Table 4.6: Summary of Results: Difference in the Probability and the Amount of Unofficial Payments Between Residents and Non-Residents, %⁴¹

	Probability of unofficial payment ^a				Amount of unofficial payment ^b	
	Yes ⁴² (1)	No (2)	Yes (3)	No (4)	Yes (5)	No (6)
Private insurance						
Private facility	-47.59	-34.69	-35.4	-23.36	-43.39	-32.02
State facility	-36.3	-20.63	-25.25	-11.31	-34.49	-21.34

Note. a. These are the total effects calculated using point estimates from the Table 4.4, columns 4 and 8. b. These are the total effects calculated using point estimates from the Table 4.5, columns 4 and 8.

Turning to the patients without private insurance, I find that residents are less prone to informal payments than non-residents in any type of medical facility. The amount of residents' bribes is lower than of non-residents as well. In the case of private hospitals, the difference in the unofficial payments reaches 32% in private and 21% in state facilities (see Table 4.6, column 6).

⁴⁰ The 35% result is an exponential transformation of the sum of the coefficients on the resident dummy, on the interaction between the resident and insurance dummy, and on the interaction between the resident and the medical facility type. Similarly, 25% is an exponential transformation of the sum of the coefficients on the resident dummy, and on the interaction between the resident and insurance dummy. In this case, the interaction between the resident and the medical facility type is equal to zero, because the reference group is "state medical facility" dummy, which is equal to zero.

⁴¹ The numbers in Tables 4.6 and 4.7 are summaries of the main empirical findings from Tables 4.4 and 4.5. These numbers are the total effects calculated as the sum of the corresponding individual marginal effects.

⁴² Columns 1 and 2 show the results for the linear probability models (LPM). Columns 3 and 4 show the results for the Logit models. Columns 5 and 6 – OLS models.

Next, I look at unofficial spending within a group of non-residents (see Table 4.7). Similar to Table 4.6, it presents the total effects, which is a summation of the individual marginal effects and interaction term effects. I find that if non-residents in Russia do not have private

Table 4.7: Summary of Results: Difference in the Probability and the Amount of Unofficial Payments Within a Group of Non-Residents, %

	Probability of unofficial payment ^a		Amount of unofficial payment ^b
	LPM	Logit	OLS
No private insurance: private facility relative to state facility	-16.64	-22.12	-17.47
State facility: private insurance relative to no private insurance	-13.41	-17.22	-26.8
Private facility: private insurance relative to no private insurance	-27.82	-35.53	-39.59

Note. a. These are the total effects calculated using point estimates from the Table 4.4, columns 4 and 8. b. These are the total effects calculated using point estimates from the Table 4.5, columns 4 and 8.

insurance, then they have 22% lower probability of paying unofficially in private than state hospitals. It means that people without any health insurance are more likely to bribe in state than private facilities. Combined with the fact that in the sample more non-residents use state facilities over private hospitals, the above result can be explained as follows. It is possible that non-residents are more likely to go to state rather than private hospitals and since they have no insurance to subsidize their out-of-pocket payments, they choose paying informally to reduce the final cost. There are usually less incentives to pay informally in private than state hospitals and unsubsidized cost of medical services in these facilities is, on average, higher than in state hospitals. Therefore, non-residents without insurance pay officially out-of-the pocket and are

less likely to also pay unofficially. Non-residents with private insurance in state facilities are 17% less likely to pay a bribe than non-residents without it. This is even more pronounced in private facilities, in which the difference in the probability of unofficial payments between non-residents with and without private insurance reaches 35%. Results are similar when looking at the total amount paid informally. The difference in the amount of payments is the highest (almost 40%) for non-residents with private insurance in private hospitals versus those without it (see Table 4.7, column 3).

Finally, I compare unofficial payments among the residents in Russia (see Table 4.8). Regardless of the type of hospital, residents with private insurance are 15% less likely to pay informally. Similarly, the residents have 13% lower probability of such payments in private than state hospitals, regardless of whether they have private insurance or not (see Table 4.8, columns 1-2). The findings are consistent for the amount of unofficial payments (see Table 4.8, column 3).

Table 4.8: Summary of Results: Difference in the Probability and the Amount of Unofficial Payments Within a Group of Residents, %

	Probability of unofficial payment ^a		Amount of unofficial payment ^b
	LPM	Logit	OLS
Any type of facility: private insurance relative to no private insurance	-19.75	-15.72	-16.72
With or without private insurance: private facility relative to state facility	-17.72	-13.58	-13.58

Note. a. These are the total effects calculated using point estimates from the Table 4.4, columns 4 and 8. b. These are the total effects calculated using point estimates from the Table 4.5, columns 4 and 8.

In addition, I find that people who live in the highly urbanized areas are more likely to pay a bribe for health care and their bribe is higher than those who live in other regions. They are not only the regions with a lot of migrants, but also have very big and densely populated cities with a wide range of hospitals and doctors. Therefore, a positive relationship between living in these regions and the likelihood of informal payments could capture the effect of a large city and/or a big health care market. Russians traditionally consider the quality of health care to be better in big cities and regional capitals, which those three are. At the same time, a higher quality of services is one of the main determinants of bribes and their likelihood.

I find that there is no significant difference in either the probability of paying informally or in the amount of informal payments between native Russians and foreign-born people (including both residents and non-residents). Considering this, it is unlikely that whether a person is a migrant or not is as important in explaining unofficial health care payments as the residency status is. In turn, in term of health care utilization, one of the biggest differences between residents and non-residents is state insurance. I control for some other important characteristics of the two groups of people, such as their gender, age, duration of stay in the country, region of living and others. Therefore, controlling for these factors, it is evident that state insurance plays a role in determining the difference in the likelihood and the amount of informal payments that are made by country's residents and non-resident.

4.5 Discussion and Conclusion

This paper compares the difference in the probability and amount of unofficial health care payments by residents and non-residents in Russia. In addition, it studies the role of state

and private insurance for residents versus non-residents when they pay informally.

Across different specifications, I consistently find that residents are less likely to pay bribes and their bribes are lower than those of the non-residents. This suggests that non-residents may use bribes to access health care partly because they lack access to state subsidized insurance. This is supported by the finding that there is no significant difference in the unofficial payments of the native-born Russians and foreign-born once I consider foreign-born residents and non-residents together. There are a few possible explanations for this. First, contrary to residents, non-residents do not have state insurance, which could be one of the important factors that makes non-residents use informal payments more frequently than residents. Second, among those who have private insurance, non-residents still pay more informally than residents. This can be explained by looking at the nature of non-residency status. Usually, non-residents are those who have either come to the country for a short period of time or who have arrived recently and have lower income, on average. This implies that non-residents may purchase a cheaper private insurance that may not cover certain services. This category of migrants is also less likely to speak Russian fluently and may not be familiar with the health care system and, therefore, may be more vulnerable to medical staff demanding bribes (Davidovitch et al., 2013).

Beginning in 2015, the Russian government required all non-resident migrants arriving in the country to purchase private insurance. Their main motivation was to reduce the likelihood of diseases being spread by uninsured non-resident migrants who avoid seeking health care due to its high cost, and to decrease the state health care spending burden associated with providing free emergency care to the uninsured (Borodina and Basharova, 2015). The results of this paper show that another potential benefit of private insurance for non-residents is that it could decrease the informal health care spending in this population.

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