CORRUPTION IN EDUCATION: A CROSS-COUNTRY STUDY

By

Antonina Şevcenco

Submitted to Central European University Department of Economics

In partial fulfillment of the requirements for the degree of Master of Arts

Supervisor: Professor Peter Grajzl

Budapest, Hungary 2008

ABSTRACT

While studies of corruption as a general phenomenon are abundant, studies of corruption in education are scant. Drawing upon existing taxonomies of corruption in education, this paper first develops hypotheses about determinants of corruption in education, and, second, empirically tests these hypotheses on a sample of 79 countries. OLS results indicate that besides being affected by institutional quality and factors influencing the extent of corruption in public sector in general, corruption in education is also affected by education-specific factors, such as public expenditure on education, gross enrolment rate, enrolment in tertiary education, and percentage of graduates with degrees in law, economics, and social sciences. The paper concludes with some policy implications for combating corruption in education.

ACKNOWLEDGMENTS

I want to express my gratitude to all those people, whose support was so important for me in the process of writing this thesis. My special thanks go to my family for their understanding and immediate support in all of my undertakings; to Natalia and all of my friends at CEU for moral support and encouragement; to the professors and administrative staff at CEU who helped to make the process of research and writing so much more productive and efficient. I am also very grateful to Thomas Rooney for all the helpful comments on academic style and structure of my thesis. But most importantly, I want to acknowledge my boundless gratitude to my academic supervisor Peter Grajzl, for very inspiring classes which led me to researching this particular field, for priceless support, encouragement and motivation during the whole process of thesis-writing.

TABLE OF CONTENTS

1.	INTE	RODUCTION	1
2.	COR	RUPTION IN EDUCATION: A TAXONOMY	4
	2.1.	CORRUPTION IN EDUCATION AS A SPECIAL FORM OF CORRUPTION	4
	2.2.	A TAXONOMY OF CORRUPTION IN EDUCATION	5
3.	DET	ERMINANTS OF CORRUPTION IN EDUCATION: THE HYPOTHESES	8
	3.1.	MEASURES OF CORRUPTION IN EDUCATION	8
	3.2.	Hypotheses	11
	3.2.1.	General Factors	
	3.2.2.	Education Specific Factors	16
4.	RES	ULTS	20
	4.1.	EMPIRICAL ESTIMATION RESULTS	20
	4.2.	POLICY IMPLICATIONS	24
5.	CON	CLUSIONS	31
A	PPENDI	CES	32
	Append	IX A	32
	APPEND	IX B	
	APPEND	IX C	
	APPEND	x D	
R	EFEREN	ICES	

1. INTRODUCTION

Corruption is a phenomenon that has been extensively discussed and researched at all levels (see, e.g., Mauro, 1995; Bardhan, 1997; Svensson, 2005). However, there is a form of corruption that was much less focused on and which in my opinion deserves much deeper research due to its significance and specific character – corruption in education. It has been only recently that researchers and policy-makers have come to acknowledge the importance of this issue, but still very little empirical research has been devoted to it (see, e.g., Chapman, 2002; Rumyantseva, 2005; Heyneman, 2007). To fill this gap, and in order to gain some new insight about policy implications, this paper empirically investigates the determinants of corruption in education.

Corruption is usually defined as misuse of public office for private gain¹, and as a rule, material gain is assumed, either in the form of money or other favors. However, in the case of education it is not only material gain, but also, for example, social advancement which makes it so distinctive and worth particular attention (Shaw, 2005). Corrupt practices in education allow an individual to improve one's social status in the society, which is expressed either in getting higher grades at an exam of for a term paper, and further in the opportunity to get a better-paid and more prestigious job.

Corruption in education is certainly crucial to development of a society and to some extent it can even be viewed as the root of corruption in all the other spheres. Formation of an individual as a personality begins at early stages in school. Having to pay bribes or "latent bribes" in the form of favors and gifts to the teacher for good grades, or to be promoted to the next grade, certainly affects moral values of a young person in a very detrimental way. Starting from an early age children see that corrupt behavior can help them attain a lot

¹ Definition accepted by Transparency International is "misuse of entrusted power for private gain" (see Transparency International official web-site).

without putting much effort into it. Corruption is accepted as something regular, as a societal norm, and from here spreads to all the other spheres (Transparency International, 2007).

Another channel through which educational corruption affects prosperity of a society is the quality of the labor force (Shaw, 2005). If the education system is highly corrupt, students are accepted to colleges and universities not based on objective reasons such as proficiency in certain subjects, skills and abilities, but rather based on the ability to bribe. University diplomas and degrees can be literally purchased without having to learn or even attend school. The labor force is thus of very poor quality and this has an extremely negative impact on productivity and innovation in the country, and will certainly result in very low or even negative economic growth. In the context of Spence's (1973) job-market signaling model, educational corruption distorts the quality of signals provided by the university diploma and grades should provide a signal about the quality of candidate's skills and abilities, and thus wages, or prices of employee's labor, are established (Spence, 1973). However, if education sector cannot be trusted due to persistent corruption, such signal is non-informative and unreliable, and equilibrium is distorted.

Corrupt admissions to universities also affect equilibrium on the labor market. If one has to pay in order to be admitted to a university, one will prefer to major in such a field which will provide high social status and well-being, that is, a profession that is currently considered highly prestigious and well-paid. This issue also has to do with misallocation of talent (Shaw, 2005). Those professions which provide higher level of social status, as well as higher rents, attract people of all talents. This is true for any time, and for any country. But if educational sector is very much more susceptible to corruption it provides an opportunity for an individual to overcome objective selection criteria based on talent, ability, skills. Thus anyone who has enough funds and/or connections can choose to have a degree which in one's

opinion will provide more benefits. In this way, there is over-supply of labor force with degrees in business, law, economics, and undersupply of specialists with technical specializations, such as engineers, technicians, or more scientific-oriented specializations such as physics, biology, and math, which are not as highly valued but are nevertheless important to economic growth in a country. As one professor from a Middle East University mentioned: "No one in his right mind would study math or physics if he is corrupt" (Heyneman, 2007, p.2).

To the best of my knowledge, there has been no paper written so far about the determinants of educational corruption at the cross-country level. This work is largely based on well-known literature about the determinants of corruption and government quality in general, as well as on the paper by Philip Shaw (2005) about determinants of corruption in higher education based on the example of one country – Ukraine. The contribution of this paper is therefore that it attempts to distinguish corruption in education from other forms of corruption. To this end, upon discussing existing taxonomies of corruption in education, I develop a set of hypotheses about factors affecting corruption in education. I then test my predictions on a sample of 78 countries.

The rest of the paper proceeds as follows. In Section 2 I present some theoretical background by describing the taxonomy of educational corruption in order to provide a general overview of the subject and to suggest the determinants of corruption in education. Section 3 includes hypotheses that I make with respect to possible determinants of educational corruption, as well as data description. Finally, in Section 4 I discuss my empirical findings and suggest some policy implications of those.

2. CORRUPTION IN EDUCATION: A TAXONOMY

2.1. Corruption in Education as a Special Form of Corruption

Before discussing the taxonomy of educational corruption I find it important to set educational corruption in the context of corruption in the public sector in general. Although these are similar in some respects, and have similar causes and effects, there are some issues that distinguish corruption in the education sector in several important ways, and thus affect the methodology and techniques of its investigation and empirical estimation.

Any form of corruption involves waste of financial resources. This is a feature common for corruption in education and that in other sectors (Rumyantseva, 2005). For example, this waste may manifest itself at the level of procurement, and/or use of school facilities for unrelated purposes. Even bribes paid to be admitted to a university represent an unproductive waste of resources. On the other hand, education sector is very important in any state to the extent that it contributes to establishment of moral values and beliefs; it affects young minds which are to form local leadership in the future. In this sense, corruption in education can be distinguished from any other form of corruption as it negatively affects the welfare of a society by bringing up distorted values in the youth (Rumyantseva, 2005).

Although it seems to be commonly accepted that corruption has a detrimental effect on growth (Mauro, 1996; Sartre, 1997 cited in Acemoglu and Verdier, 1998), it is sometimes argued that under certain circumstances corruption may actually be favorable for growth and development. For instance, David Bayley (1966) provides some arguments why corruption may be beneficial, especially in a developing country. However, some of these seem to be irrelevant for corruption in education, rather confirming once again the fact that it should be eliminated by all means. One of the facts that speak in favor of corruption is that it may be viewed as alternative means for motivating and increasing the quality of public servants (Bayley, 1966). While this may be relevant for corruption at higher levels, such as procurement and allocation of funds, this is hardly the case at petty level. Willingness to accept bribes or even insistence on those usually goes along with reluctance to provide proper teaching at regular classes. Besides, the destructive effect that corruption has on moral values of young minds just more than offsets the benefits that it may bring with providing better material motivation for teaching personnel.

Therefore, corruption in education needs to be investigated not only in the framework of corruption in public sector in general, but also independently, in order to take into account all (or most) of its specific features. Hence, one of the objectives of this paper is to fill in the existent gap in the given field and lay ground for further research regarding various forms of educational corruption, its causes and consequences.

2.2. A Taxonomy of Corruption in Education

A quite comprehensive taxonomy of educational corruption, which also allows to emphasize characteristic features of educational corruption as a phenomenon in itself has been developed by Rumyantseva (2005). It distinguishes between two main types: corruption that affects the student directly and the one that affects the student indirectly. Direct impact on the student is exercised through affecting one's values, attitudes, beliefs, opportunities etc., and basically involves direct bribing of teachers, headmasters, university rectors and other educational staff by the student or his parents. Here Rumyantseva (2005) distinguishes between corruption that occurs in the student's relation with the faculty, with the administrators, or those with the staff (librarians, administrative assistants, etc).

Corruption that affects students indirectly (or so-called administrative corruption) mostly occurs at higher levels and involves improper allocation of funds, or improper use of

5

the funds of educational institutions. This may include, for example, diversion of resources intended for purchase of school materials, or using school facilities for personal rent-seeking purposes. One example of this form of corruption in procurement and distribution of resources from central government to schools in the district: in Africa, in the sample of 250 schools for the period 1991-1995 schools received only 13% of central government spending, meaning that most of the funds were just captured on their way down the hierarchy by local administration (Uganda et al, 2004 cited in Svensson, 2005).

Heyneman (2007, p. 2) classifies educational corruption according to the ways in which it may affect education system: "(i) through education functions, (ii) through the supply of goods and services, (iii) through professional misconduct, (iv) in treatment of taxation and property."

In the framework of Rumyantseva's classification, points (i) and (iii) can clearly be defined as affecting students directly. This is also what is sometimes called "petty corruption". This form of corruption alone can be manifested in many ways which are inevitably detrimental to economic and social development and lead to waste of significant monetary resources and devaluation of ethical and moral values. As described by students from Central European University², professional misconduct by teachers and professors at Universities may include requesting bribes for good grades (maybe implicitly); failing to present the material properly in the class and suggesting that students resort to private tutoring which is paid for; having students buy the books published by the given professor in order to pass the exams (whereas the book itself, as a rule, is of poor scholarly quality, but the professor gets part of revenue from sales); selling term papers and dissertations. Personal connections do seem to have an important role everywhere in CIS countries and also in

² The cases and examples described briefly in this section were provided by students of the Central European University, from different countries and departments, who preferred to remain anonymous, in personal e-mail communication.

transition economies of Central and Eastern Europe in the process of admissions or passing final exams.

Thus, whatever is the form in which educational corruption penetrates the lives of the citizens, it is distorting various aspects of social and economic life of a country, threatening the whole future of a nation by bringing up a generation that is not competent enough, and what is worse, a generation that does not appreciate transparency and integrity. What is it that makes corruption flourish in some countries, like Azerbaijan or Moldova, where anything related to academia can be purchased or sold, whereas people in other countries, like Finland or the US do not even view corruption as an issue and cannot imagine even how it can be done? Perhaps, understanding these factors which affect the degree of transparency of education system in different countries would bring us closer to understanding how to promote impartiality and integrity in a society, where knowledge, skills and talent, but not unethical behavior, represent the solid basis for education and development.

3. DETERMINANTS OF CORRUPTION IN EDUCATION: THE HYPOTHESES

3.1. Measures Of Corruption In Education

The main problem with empirical study of corruption in general is that it is so hard to measure. Most of the available indices today rather measure perception of corruption, for instance, opinions of entrepreneurs doing business in different countries. Although there is certain strong positive correlation between the perception of corruption and its actual level, including the perception indicators in the regression may bias the results in several important ways.

Subjective measures of corruption are affected to a great extent by what Kurtz and Schrank (2007) call "cultural blinders", meaning that social values, definitions and perceptions vary across countries, and what is considered extremely corrupt in one country may be viewed as nothing extraordinary in some other country. Therefore, comparing scores and measures provided by respondents from various regions may be simply inadequate. Another issue is that provided scores on perception of corruption may reflect the respondent's opinion about the development of the given sector in general, economic development of the country, quality of government, whether past or current, and do not provide an objective insight on the specific problem being studied (Kurtz and Schrank, 2007).

There are several available measures of corruption in education, all of them taken from Global Corruption Barometer (Transparency International official web-site). These include:

- percentage of the population who evaluated the education sector in the country to be very corrupt and extremely corrupt;

- score from 1 to 5 (where 1 is not corrupt at all, and 5 is extremely corrupt) – to what extent one perceives the education sector to be affected by corruption;

These are clearly the indicators which show perception of corruption by the population rather than the actual level of corruption. But there are also the following indicators which should reflect the situation in a more objective way:

- percentage of the population who have been requested a bribe for the last 12 months in education sector (measured as percentage of those who had contact with an institution in this sector);
- percentage of the population who have paid bribes for the last 12 months in education sector (measured as percentage of those who had contact with an institution in this sector).

Table 3.1. provides correlations between all these measures of corruption:

	Bribe paid	Bribe requested	Perception – percentage	Perception - score
Bribe paid	1	0.8948	0.4664	0.4275
Bribe requested	0.8948	1	0.5603	0.5052
Perception – percentage	0.4664	0.5603	1	0.9786
Perception - score	0.4275	0.5052	0.9786	1

TABLE 3.1. Correlations between various measures of corruption in education

Note: Correlations are calculated for common sample of 52 countries (i.e. for the sample of those countries for which the data on all four indicators are available)

Source: Calculations in E-Views 5.1 based on data from Global Corruption Barometer by Transparency International

As it can be clearly seen from the table there is a quite significant positive correlation between different measures of educational corruption, but it is most significant between the percentage of the bribe paid and the percentage of bribe requested on the one hand, and the perception score and perception percentage on the other hand. Therefore, I found it reasonable to use in the regressions one measure from each group. Due to data availability considerations, I chose dependent variables to be percentage of the population who paid bribes and percentage of the population who perceive corruption in education sector as very corrupt or extremely corrupt in their country (Transparency International, Global Corruption Barometer). Although even an objective indicator is still perhaps only an imperfect proxy for the extent of corruption in education, I found it less arguable and more reliable to use in regressions due to the reasons discussed in the beginning of this section, so I focus more on those results whereas the dependent variable is the percentage of the population who were requested bribes. But I also include the estimation results with perception indicator as the dependent variable, for comparison and check of robustness.

Some descriptive statistics are presented in Table 3.2, in order to provide some idea about the range of corruption, its minimum and maximum values.

	Bribe paid	Perception - percentage			
Mean	6.61	31.58			
Median	3.00	29.50			
Maximum	45.00	74.00			
Minimum	0.00	4.50			
Std. Dev.	8.66	18.29			
Observations	63	66			

 TABLE 3.2. Corruption Measures – Descriptive Statistics

Source: Calculations in E-Views 5.1 based on data from Global Corruption Barometer by Transparency International

The most corrupt country in this sample in terms of percentage of population who had to pay bribes is Cameroon – 45% of those who had contact with education sector there did pay bribes in any form for any kind of services. The least corrupt country is Taiwan, where no one reported to have paid bribes for the given period. About 72.5% of the population in Cameroon deems the education sector as being corrupt whereas the maximum is 74% in Bosnia and Herzegovina. The figure is of course very alarming – if almost ³/₄ of the population consider education to be corrupt, such education is doomed to have very little value. The Swedes seem to view their education system as being very transparent, with only 4.5% of the population considering it to be corrupt or extremely corrupt, followed by the

Finns and the Swiss, with as little as 6% of the population deeming the education sector as being very corrupt in their country. Such contrast in indices and scores again inevitably raises the questions: why do these differences exist? In what respects are the countries so different that the disparities in the levels of educational corruption are so huge? In the next subsection I provide the hypotheses attempting to answer these questions, followed by empirical estimation.

3.2. Hypotheses

The basic equation that I estimated by ordinary least squares in order to determine what are the factors due to which the extent of educational corruption varies across countries is as follows:

$$Y_i = C + \beta' X_i + \varepsilon_i, i = 1, \dots N,$$

where Y_i is the dependent variable, that is a measure of corruption, either actual corruption or perception score; *C* is a constant; X_i is the vector of all explanatory variables that are hypothesized to have an impact on the left-hand side variable, and ε_i is the error term. Coefficients of interest are obviously all the β 's

All the data that I used for empirical estimation in this paper come from commonly accessible data bases of such organizations as Transparency International, World Bank, UNICEF, and IMF. Description of the indicators, years for which they are available, as well as abbreviations are presented in Appendix A hereto.

Most of the indicators that I used show very little variation over the three years on which the regressions are based. Hence, applying panel data approaches is not reasonable in this case. That is why I used averages for the available years of all the explanatory variables, unless otherwise specified. These averages are taken for the three years preceding the two years for which corruption indices are measured (also taken as averages). Therefore, I included lagged values for most of the indicators on the right-hand side, which allowed me to cope with endogeneity issue and reverse causality.

I divided the factors affecting the level of corruption into two major categories: those which are likely to affect the level of corruption in the country in general, i.e. in all spheres of social and economic life, and those which are specific for the level of corruption in education.

3.2.1. General Factors

A factor that is of foremost importance in this kind of study certainly is the level of economic development of a country. Less developed countries find themselves in a development trap which results in general government inefficiency, distorted values, and as a result illegal ways of rent-seeking. It is only natural to presume that countries with lower level of economic development face higher level of corruption in all spheres. However, causation may run both ways here, and it is quite possible that corruption arises as a result of poverty and recession in a country; that is why it is important to include lagged value of GDP per capita as an indicator of economic development in the regression (see, e.g. Mauro, 1995; Montinola and Jackman, 2002).

Hypothesis 1: The level of economic development affects the level of corruption negatively.

Another interesting issue is raised in Bardhan (1997, p. 1334). Referring to a paper by Jean Tirole he claims that "corruption in a society may be explained partly by the bad collective reputation of previous generations", meaning that if in the past the economy of the country has seen some rough recession during which corruption increased significantly, such bad reputation may persist even after the "bad times" are over, and may cause corruption to remain at a high level. There are several transition countries in the given sample which have undergone some significant reforms in late 80s or early 90s causing economic disruption and recession. Instability resulting from economic and political reforms gave rise to numerous illegal actions including corruption. Hence, it may be valid to distinguish transition countries in the sample by including proper dummy. If Tirole's argument is correct, then:

Hypothesis 2: The level of corruption is on average higher in transition countries

I further follow the arguments provided by Svensson (2005) about the factors which distinguish different countries in terms of the levels of corruption. One such factor is institutional quality. Institutions affect corruption through the "choice of economic and structural policies" (Svensson, 2005, p.24), by establishing the level of economic and political freedom, degree of state intervention in various spheres, decision making with respect to provision of public goods, etc. Variables describing institutional quality may be regarded here as a proxy for the level of corruption in society as a whole, which in its turn affects the level of corruption in education. Corruption is certainly a kind of "contagious disease" in a society, and once it appears in one sphere it affects perception and consciousness in all the other spheres, so in this way there is obviously strong positive correlation between corruption in the economy in general and corruption in education.

On the other hand, in this work I consider that variables reflecting institutional quality also represent good indicators of the extent and quality of public goods provided by the government, and education is one of such goods. Therefore, in one way or another, hypothesis presented below should remain valid:

Hypothesis 3: Institutional quality, as proxied by legal origin, latitude and ethnic heterogeneity, has a negative effect on the level of corruption in education³.

The choice of variables reflecting institutional quality is based on the fundamental paper by La Porta et al (1999). One such variable is ethnic heterogeneity. La Porta et al argue

³ A very comprehensive review of determinants of corruption is provided by Seldadyo and de Haan (2005). As cited in the appendix to this article, ethnicity was used as a determinant by Ali and Isse (2003), Tavares (2003), Brunetti & Weder (2002), Fisman and Gatti (2002), etc. Religion was controlled for by Treisman (2000), Paldam (2001). Colonial or legal origin was used as explanatory variable in the works of Ali and Isse (2003), Gurgur and Shah (2000), etc. Following these articles, I deem these variables good proxies for institutional quality and include them as determinants of corruption.

that in those countries where there is a significant degree of ethnolinguistic fractionalization, governments tend to behave differently from countries where such fractionalization is less relevant. In particular, the divergences in cultural values and opinions between various ethnic groups, especially if only one of them is present in the government, will lead the government to provide public goods less efficiently.

La Porta et al (1999) claim that latitude can be also considered as a proxy for institutional quality, since in general countries located farther from the equator, in temperate climate zones tend to develop better and faster due to better conditions for agricultural production, and also their climate is less conducive for all kinds of contagious diseases, unlike tropical climate. Therefore, institutional development should also be better in these countries.

Another proxy for institutional quality as argued by La Porta et al (1999) is legal origin. Legal systems can be classified as English common law, French civil law, Scandinavian law, German law or Socialist law. Originating from these few countries the legal traditions spread around the world through conquest or colonization, and although it is argued that some degree of convergence can be observed between all these systems nowadays, there are clearly some very important differences which affect institutions in every state. For example, a characteristic feature of Socialist law is more interventionist and more extractive state. Bureaucracy is more cumbersome, thus resulting in less efficient government. Civil law puts more constraints on the state power, but nevertheless it has mainly statutory nature and its institutions are aimed at enhancing the dominance of the state power. English common law on the other hand places greater emphasis on the checks and balances on the government, and thus is less interventionist and more supportive of political and economic freedom (Svensson, 2005; Dreher and Schneider, 2006). Stricter regulations and interventionism are generally associated with higher levels of corruption, so in the

14

framework of this paper countries with Socialist and French civil law should exhibit higher levels of corruption in education than English common law countries.

Another important factor that determines corruption is, of course, cultural values. These first of all affect the formation of institutions and in fact, cultural norms, customs and traditions themselves represent so-called informal institutions. On the other hand, corruption in a society depends to a great extent on the moral values which are prevalent in it, the perception of good and bad, tolerance towards some things, and unacceptability of the other things. Of course, culture is something which is impossible to measure in figures or in any other reasonable way to include it in a regression. The most common proxy to account for cultural values is religion, and namely, share of Muslims, Catholics, and Protestants in a country. La Porta et al (1999) argue that countries in which there is a greater share of Muslim or Catholic adherents tend to be more interventionist, because of the religious philosophy, based on supporting the State power and because historically these religions favor for creation of larger bureaucracies with excessive power, which are highly inefficient. Protestantism, on the other hand, according to Treisman's (2000) argument is deemed to be based on more individualistic behavior favoring decentralization and resulting in better institutions. Since historically Protestantism emerged as opposition to major religions prevailing in a state, it is deemed to provide better protection against state abuse, and better provision of public goods. Treisman (2000) also claims that religion can affect the quality of institutions and consecutively the level of corruption through cultural attitude of different people towards hierarchy. Whereas Catholicism and Islam are viewed as being more "hierarchical" religions, Protestantism is certainly more egalitarian and individualistic, and thus countries where Protestantism prevails should exhibit lower levels of corruption. Therefore, summarizing these presumptions, I infer the following:

Hypothesis 4: Countries with higher proportion of Muslim and/or Catholic population on average have higher level of educational corruption.

3.2.2. Education Specific Factors

The first issue that I would like to raise here is the level of public expenditure on education. When the share of government spending on education is too small, schools have to seek alternative sources of funding, and often resort to corruption as a result. Expenditures on education include those on fixed funds of schools, supply of school materials, as well as remuneration of school staff. The level of teachers' salaries should be particularly emphasized here as a part of public spending on education. It is interesting that even bribe-givers are not always reluctant to provide illegal payments to the teachers, whatever the motivation is for that, because this is considered more as a gift, or kind of "tips" to the teacher/professor, whose salary (as everyone knows) is so ridiculously small.

However, it is necessary to bear in mind that most probably the effect of public expenditures in education on educational corruption is non-linear, and it is diminishing and even becomes negative after some threshold value, therefore it might be also necessary to include square value of expenditures on education in the regression.

Hypothesis 5: Public expenditure on education decreases the level of educational corruption, but at a diminishing rate.

Gross enrolment ratio at all levels of education is often considered as an indicator of the overall level of literacy and education in a country (see, e.g., Ahrend, 2002). The effect of this factor is likely to be manifested through the quality of societal consciousness, as greater gross enrolment ratio implies higher level of literacy and awareness, more consistent cultural values and higher level of moral responsibility of the citizens, meaning that less corrupt, illegal or immoral actions are likely to be committed. *Hypothesis* 6: *Higher gross enrolment ratio in a society implies lower level of corruption in education.*

It is also very important how decentralized the system of education is. If the state monopolizes it fully, and the regulations are too strict, then it creates incentives to seek illegal ways to overcome those regulations. If the government allows for existence of private schools it thus creates alternatives for students and their parents, which should imply smaller petty corruption. On the other hand, existence of private schools implies necessity for accreditation in most of the states, i.e. government still holds the monopoly at the higher hierarchical level and has the possibility to allocate accreditations and decide which schools can issue recognized diplomas and which cannot. Corruption may still occur at this level when owner of private school will bribe high official to get accreditation even if the school does not comply with some requirements. Therefore, corruption may still persist even if there is place for private sector in education, so the effect of the share of enrolment in private schools on corruption is ambiguous.

Hypothesis 7: The effect of private enrolment rate on the extent of educational corruption is in general ambiguous.

One reason for corruption in education in the tertiary sector is the high demand for specialists with higher education on the labor market. One of the major requirements of any employer in this case, even for a non-qualified job or low-qualified job becomes a University diploma. Parents certainly want only the best for their children and under such conditions every parent would want to get their child to the University at any price, even if the child clearly is not talented enough or just would do better in a more technical low-qualified job which does not require University degree. Lack of knowledge is compensated for by finding who to pay to get by the admission exams and to be accepted anyway. This includes monetary payments, other material "gifts" or favors, or even non-material favors, such as using one's high social status or the personal connections. To account for this effect I include in the regression the share of labor force with University degree. Although it is not absolutely obvious that this factor should affect corruption in education in every country, this argument seems to be more valid for developing or transition countries, where the economy is at a too low level of development to require so many specialists with University degrees, and higher share of labor force who have completed tertiary education rather provides evidence of misallocation of resources and corrupt education system.

As it has been mentioned in the introduction to this paper, corruption leads to significant misallocation of talent, by letting too many people get a degree in those fields which do not exactly correspond to their competences and talents but provide higher rents and prestige. Such professions traditionally are considered to be related to business, law and other social sciences. Heyneman et al (2007, p.7), having surveyed a number of universities in 6 post-socialist countries, and in particular, based on the example of Kazak-Turkish University, observed that bribery is most widely spread at those faculties which are in highest demand, such as law, economics, finance, and criminology. Therefore, one possible factor that may be related to corruption in education is high share of graduates with such degrees. Again, this factor is more likely to be relevant for transition countries, so an interaction term should be included in the regression.

Hypothesis 8: The larger is the share of labor force having higher education (and/or graduates with degree in business, law or social sciences), the greater is the extent of corruption in education, in particular in transition and/or developing countries.

Another factor that can also be included as an explanatory factor is the level of unemployment. On the one hand it may be treated as a variable reflecting the general level of development of a country (like GDP). In fact it was included in regressions estimating the causes of corruption in a number of papers (see, e.g. Seldadyo and de Haan, 2005). On the other hand, I think it can be viewed as an explanatory factor of educational corruption in particular. If the unemployment rate is too high, higher education may be viewed as a factor increasing one's chances to find a job, therefore an individual (or one's parents) may be willing to resort to all kind of legal or illegal, ethical or unethical actions to get an education, or in the worst case, to obtain confirmation of such education (diploma, certificate, etc). Hence, the hypothesis:

Hypothesis 9: Higher level of unemployment in a country implies higher propensity to commit unethical issues, hence higher educational corruption.

The signs of all the hypothesized effects of explanatory variables described in this section are summarized in Appendix B, column 2.

4. **RESULTS**

4.1. Empirical Estimation Results

I have estimated by ordinary least squares (OLS) the effect of two sets of factors on measures of educational corruption, as described in the previous section. However, the problem with empirical estimation in this case is that due to data availability issues which result in limited number of observations one cannot include too many explanatory variables in a regression at one time. Another problem posed by this kind of estimation is multicollinearity on the right-hand side. Linear relationships between various proxies for institutional quality are quite possible, as well as those between other variables. Therefore, trying to cope with this issue in the best possible and available way in this case I first estimated by OLS the effects of those factors which are hypothesized to have an impact on corruption in general through institutional quality, and then the effects of education-specific factors. Estimation output whereas only institutional factors are included as explanatory variables, one by one, is reported in Appendix C. Principal equations are those in which the dependant variable is percentage of population who paid bribes during the given period. But I also include equations with perception score as dependent variable, to check for robustness.

Log(GDP) has a negative effect on corruption in most specifications, where it is included along with other predictors, just as one would reasonably expect (see Appendix C). Shares of religious affiliations have the effect just as it was predicted, that is, countries with higher share of Protestants experience lower level of corruption in education. Coefficients on *Catholic* and *Muslim* are positive. However, none of these are significant, and redundant variable test⁴ shows that they are also jointly insignificant, so I do not include these variables

 $^{^4}$ The essence of the redundant variable test is that with its help one can check whether a subset of coefficients in the regression all have zero values and thus can be excluded from the regression altogether. If the probability value reported along with the F-statistic or Log likelihood ratio in such test is smaller than 0.10 (0.05; 0.01) such

in further regressions. What is interesting, however, is that they become significant once the dependent variable is perception of corruption, as opposed to actual corruption. This could be due to the fact that religious composition of the population rather affects <u>perception</u> of corruption than <u>actual</u> corruption. Legal origin dummies have the effect as predicted, i.e. only English legal system implies lower corruption, and the coefficients on legal systems are jointly significant.

I further proceed with regressing corruption indices on education-specific variables. Having run a number of simple regressions and having performed redundant variable tests I come up with a set of education-specific explanatory variables which need to be included in the final regression: *public expenditures on education, gross enrolment ratio, percentage of graduates with degree in business, law or social sciences, enrolment rate in tertiary sector, unemployment, ethnolinguistic fractionalization* as proxy for cultural issues, dummy for *transition* and/or developing countries.

It is necessary to bear in mind that enrolment in tertiary sector and percentage of graduates with degree in business, law or social sciences most probably have an effect in transition and/or developing countries, so, interaction terms with *transition* dummy are included. Also, Ramsey RESET test⁵ shows that it is necessary to include squared values of some variables, so I also include squares of log(GDP), expenditures on education, gross enrolment ratio and unemployment. The reasons why log(GDP)^2 should be included in the regression are not so straightforward. One explanation, as suggested by Montinola and Jackman (2002) maybe due to the fact that as GDP goes up, it means better economic development of the country implying higher wages and general well-being of public servants.

subset of variables is jointly significant at 10% (5%, 1%) significance level, respectively (See Manual for E-Views 5.1 software).

⁵ Ramsey RESET test allows to clarify functional form of the regression if it is not linear. Powers of predicted values of dependent variable are included in the regression, and the p-values on these newly-added variables are checked. If they are statistically significant, it means that the functional form should be changed to include square, third, fourth power, etc. of explanatory variables (See Manual for E-Views 5.1 software).

This fact in its turn reduces incentives for corrupt behavior on their side. But the marginal effect of economic growth declines, and hence the relationship is non-linear.

The results of the final regressions are reported in Table 4.1.

TABLE 4.1. OLS Results

	Dependent variable –	Dependent variable –
	bribe paid (percentage)	perception of
		corruption (percentage)
С	166.3702***	382.6137***
	(41.7224)	(126.0315)
Log(GDP)	-4.6296	-27.3807
	(4.7870)	(17.49033)
Log(GDP) ²	0.1752	1.1456
	(0.2019)	(0.707476)
Eduexpend	-3.8441***	-7.1689**
	(1.1828)	(3.120226)
Eduexpend ²	0.1893***	0.3378**
	(0.0576)	(0.1556)
Grossenratio	-3.3104***	-3.1271
	(0.7083)	(1.8164)
Grossenratio ²	0.0211***	0.0149
	(0.0045)	(0.0115)
Businesslawgrad	0.3107**	-0.2583
	(0.1439)	(0.5022)
Businesslawgrad*trans	-1.1836**	3.3070**
	(0.4214)	(1.3537)
Enroltert	-0.1616	-0.1611
	(0.2006)	(0.3904)
Enroltert*trans	0.2006	0.6680
	(0.1621)	(0.4787)
Trans	42.4551*	-172.7500**
	(23.5695)	(80.1849)
Unempl	1.0188	0.5605
	(0.6702)	(2.1110)
Unempl ²	-0.0539**	0.0143
	(0.0227)	(0.0609)
Ethnfract	14.7823**	-19.6635
	(5.9398)	(11.8463)
R-squared /	0.8547 /	0.7741 /
Adjusted R-squared	0.7094	0.5632
Number of observations	29	30

Notes:

Heteroskedasticity robust White standard errors are reported in the parantheses
 ***, **, * denote statistical significance at 1%, 5%, and 10% level respectively.
 For sources and details of the indicators used see Appendix A.

It is obvious that the factors which affect educational corruption the most are expenditures on education and gross enrolment ratio. The effects are exactly as hypothesized and they are both statistically and economically significant. For instance, one per cent increase in expenditures on education would result in approximately 3.84% decrease in percentage of population who had to pay bribes, whereas one percent increase in gross enrolment ratio leads to approximately 3.12% decrease in the percentage of population who deem education sector to be corrupt in their country.

I perform redundant variable test on those variables which are individually insignificant. The estimation output and results of this test are presented in Appendix D. According to these results, even though each of these variables is individually insignificant, they cannot be excluded from the regression altogether, as they are jointly significant at 5% confidence level, and thus do explain some variation in the level of corruption across countries.

Another interesting fact resulting from OLS regressions is that percentage of tertiary graduates in social sciences, business and law has a positive effect on corruption in education. Therefore, indeed higher share of labor force having this kind of diplomas implies higher educational corruption. On the other hand, contrary to what was hypothesized this effect is smaller for transition countries. The reasons for this are not quite clear and require further research.

If one accepts ethnolinguistic fractionalization as a proxy for cultural values and issues in the society, then coefficient on this variable which is statistically significant at 5% level implies that cultural values do affect the inclination of the population towards paying bribes. On the other hand, ethnolinguistic fractionalization may also be an indicator of heterogeneity in a society (Rodrik, 1999); the higher it is, the greater is the possibility of social conflict and disparities in provision of public goods, such as education. Higher values

23

of this variable also reflect inferior institutional quality and imply higher educational corruption, which is confirmed by empirical estimation results.

The results remain qualitatively similar if perception of corruption is regressed on all the same factors, but they are also somewhat controversial. Again, public education expenditure and gross enrolment rate explain most of the variation in educational corruption across countries, though the effect of gross enrolment ratio is not statistically significant anymore. Quite controversial results are obtained on transition dummy and ethnoliguistic fractionalization, but as I have already mentioned, using perception score as a dependent variable has a lot of weaknesses, and results obtained from this kind of regression should not be emphasized too much.

Admittedly, the empirical results presented in this paper are to be treated with caution. I utilized imperfect proxies and variables plagued by measurement errors; there is also a possibility of multicollinearity in explanatory variables. Moreover, the sample size used in this paper is too limited to draw robust conclusions. But given its limitations, this paper claims to extend beyond the existing illustrative studies and anecdotal evidence to explore the determinants of corruption in education. Obviously, much work is left for future research; in particular, extending the sample of the countries to allow for inclusion of additional explanatory variables may help us gain additional understanding of the phenomenon.

4.2. Policy Implications

How do we combat corruption in education? First, I argue there can be no unique solution in this regard, and no cliché mechanism which could be applied to all countries in "one-size-fits-all" manner. Social climate, economic development conditions, cultural and religious perceptions and values are so different across different regions that any measures should be taken with thorough consideration of the details and particularities of the given

country. As it has been mentioned by Kurtz and Schrank (2007) the perceptions of corruption differ across countries, as well as its perceived costs and harmful effect. Therefore, strategies and techniques of combating it should vary as well. Besides, institutions required for sustainable development differ not only across countries, but perhaps even within one country over time (Rodrik, 1999). The history of the country, as well as other socio-economic premises, do matter. Whereas implementing well-established "blue-prints" may be the best strategy in some countries, others need to emphasize "local experimentation"; in any case, "large-scale institutional development by and large requires a process of discovery about local needs and capabilities" (Rodrik, 1999, p.19).

In the light of empirical evidence provided in this paper, it is obvious that education expenditures have a huge impact on the extent of corruption in a country. Indeed, many corrupt actions by teachers are motivated by ridiculously small wages which make educators resort to additional sources of income. This problem may be solved by increasing the funding of public schools and allocating higher proportion of those expenditures to labor remuneration of the staff. This step alone, of course, will not lead to complete eradication and prevention of corrupt actions but only in combination with raising civil consciousness of both bribe-givers and bribe-takers, as well as introduction of sanctions and enforcement techniques and tools.

An increase in budget expenditures on public education must be accompanied by implementation of control mechanisms over distribution of such funds from top to lower levels. It is very often the case that due to corrupt actions of the officials at higher levels of the hierarchy much less than 100% of allocated funds actually reach their destination and are spent on school facilities, materials and supplies as intended. Clearly specified financial rules and regulations on distribution of funds to schools should be elaborated in order to limit the discretionary power of higher authorities and to curb corruption in this field (Transparency International, 2007).

Also, as shown herein, the general level of literacy and education is important. Therefore, more attention should be paid to mandatory enrolment of all children in schools at least at primary and secondary level in developing countries. This process should have some solid regulatory and administrative ground under it, to ensure coverage of all regions by educational institutions and involvement of all the children in the education process. Clearly, individuals with higher cultural level, who are also more knowledgeable and educated are less likely to engage in dishonest behavior.

Although education-specific factors are quite important in determining the extent of educational corruption and have to be dealt with in order to curb it, I have to stress once again the importance of institutional quality in the country in general. Increasing the level of public spending on education in theory, or having special acts instituting independent school assessment agencies just on the paper is not going to eradicate bribery in education by itself. Rule of law and solid law enforcement are extremely important. Efficient implementation of laws, public concern, and compliance with formal norms – these issues have to be emphasized at national and global level in order to achieve sustainable positive results.

In general, fighting corruption in education may be not so different from fighting corruption in public sector in general. (Heyneman, 2004). As shown in Section 3, in the empirical estimation part, corruption in education is in fact affected by those factors which have an impact on corruption in general. Therefore, overall structural reforms aimed at improving institutional quality in a country are necessary. These include, first of all, laws promoting transparency, well-defined accountability system, and responsible and transparent top leadership (Chapman, 2002). Honest practices, compliance with the rule of law, integrity should be promoted from the top, as the functionality of the whole institutional mechanism

largely depends on the qualitative functioning of its "head" – top authorities. Therefore, as mentioned by Chapman (2002) clearly specified and enforceable codes of conduct are necessary. It would be particularly useful to have such codes of conduct at sector-specific level, including education sector. Of course, a well-defined enforcement mechanism is necessary, implying credible commitments and significant penalties for non-compliance.

In this respect I have to emphasize that formalizing norms and behavioral rules is quite important in combating corruption in every sphere, and especially combating corruption in education. Everyone knows that corruption is bad and unethical in general, at the level of commonly accepted informal norms. That being said, having specific norms and rules written down in black and white formalizes such perceptions and makes it more costly to violate them. This is especially valid for a university that treasures its reputation and wants to be widely recognized not only in its own country but also abroad. Such rules and norms have to be very specific; the compliance with them and also application of sanctions for cases of misconduct and bribery should be assigned to school-specific (or university-specific) bodies. These can be the existent administrative departments or bodies, which among others, would exercise the function of maintaining transparency, impartiality and high ethical standards of the education process. Formation and implementation of such establishments may be quite challenging and difficult at early stages but will more than pay off later, not only in the framework of one university but for the whole society in general. At that, sanctions should include not only semi-formal reproof or administrative punishment, but also criminal penalties, the severity of which depends on the extent of material and/or moral damage caused by the infraction. In most societies, threat of severe punishment is the best incentive not to commit illegal actions.

Hence, administrative reforms, structural changes that need to take place in education sector in order to decrease opportunity for corruption include not only norms of behavior, accountability standards, but also sanctions in case of violation and inappropriate behavior, enforcement mechanisms. Elaboration and implementation of these requires significant time and effort but it is worth it, since the costs of corruption are detrimental to growth and development in so many ways as it was noted in the introduction. An interesting suggestion is brought up in this respect in Heyneman et al (2007, p.21): it is claimed that the cost of attending an educational institution with high level of corruption actually "is equivalent to the cost of sacrificing the economic impact of higher education quality". The importance of this fact cannot be neglected in the process of elaboration of regulations and codes in the field of education. It is also very important to have these regulations and codes widely available, published and accessible for everyone.

An important step in the process of eradication of corruption is fostering of good social norms and values, to the extent that these can be influenced bottom-down. As it has been shown empirically, culture as proxied by ethnolinguistic fractionalization or religion does affect corruption in education sector. Thus, it is important to introduce such values that would raise the consciousness of the society by making the community members aware of the costs of corruption, as well as benefits of eliminating it. This is somewhat harder to achieve and to implement than formal rules, as human perceptions and values do not change overnight (Roland, 2004). However, it is not impossible either.

One way to cope with this issue is to raise public awareness. Making the general public knowledgeable of the huge problems and threats posed by educational corruption is likely to enhance the concern about transparency and integrity and reduce the probability of corrupt actions. In particular, this can be done by promoting free and active press which would bring up the issues of professional misconduct in education, not only in education-specific periodicals, but also in general ones, which are widely accessible and have an impact on formation of civic responsibility. Nowadays, with information technologies spreading at

an increasingly rapid rate, Internet may prove to be a very efficient way of distributing the information about negative consequences of bribery in education. Also, television is a widely used and accessible source of information for a large number of people, and can be used as a way of building up social awareness and responsibility⁶.

Moreover, cultural values based on integrity and meritocracy should be built-in at the level of each school or university by holding correspondent trainings, including such issues in curricula for relevant classes, and also through extra-curricular activities. The responsibility for introducing and promoting such values actually lies on everyone involved in education sector, starting from high officials and up to administrative staff of a village school.

Petty corruption that occurs at the level of individual students often happens due to lack of good, solid and impartial selection and assessment process. One way of eliminating petty corruption, in particular bribery at admission and/or graduation exams is to devise a special agency that would be responsible exclusively for holding such examinations, providing compliance with all the standards and rules, ensuring transparency and impartiality. In order to be efficient, such agency should cover all the universities and/or schools at the given level, and provide equal treatment to all. Thus, it requires well-formulated requirements which do not change too often and which are well-known to everyone and have to be strictly complied with in order to be admitted to a university or to pass an exam. An interesting example of successful practice in this respect is mentioned by Chapman (2002, p. 13) – the case of Azerbaijan, where a State Student Admissions Committee was created to perform administration and control over university entrance exams. It is a separate agency overseeing admission exams to all public universities, and it is not connected with any particular university; this is why it is supposed to exercise more impartiality and transparency in this

⁶ In Moldova, for example, local TV stations recently started to broadcast short clips in the form of what is called "social advertisement", demonstrating in a comprehensive and vivid way what dangers may bribery in education pose for the society in general and for each individual in particular.

process. This example is of course the one that can be successfully followed by many postcommunist countries which experience similar problems with educational corruption.

5. CONCLUSIONS

In this way, despite all the weaknesses of cross-country OLS regressions, conclusions can be made about why some countries face more corruption than the others and what governments can do in order to alleviate the situation. The main objective of this paper was to identify factors which affect the extent of educational corruption in different countries. My empirical results show that corruption in education is to a great extent affected by institutional quality factors, which characterize the overall level of corruption in all spheres of public sector in general. On the other hand, there are a number of education-specific factors, which have an impact on corruption in this particular sphere. Such factors include public expenditures on education, gross enrolment ratio at all levels of schooling, enrolment in tertiary sector, and in particular, enrolment in most prestigious faculties, such as business, law, finance. Once these factors are identified it should be easier to elaborate some policy recommendations that need to be implemented in order to eradicate corruption in education.

Combating corruption takes resources, effort, and time. But the benefits of transparent educational sector are also incommensurable with the costs of achieving it, since they will have multiple effects on the eradication of corruption in all other spheres. Honesty and prosperity will dominate in the nation if the new generation is being raised in the conditions of highly ethical behavior, impartiality, integrity, intolerance for corrupt and dishonest behavior, as this is the generation that will form the future leadership of the country and that is responsible for its further development and growth.

APPENDICES

INDICATORS USED							
Name	Definition	Source	Years				
(abbreviation)							
Bribe paid	Percentage of the population who paid a bribe	Transparency	2006-2007				
(percentage)	in education; base sample – those who had	International	(average)				
	period						
Perception of	Percentage of the population who consider	Transparency	2006-2007				
corruption	education sector to be very corrupt or	International	(average)				
(percentage)	extremely corrupt in their country (4 and 5 on the scale from 1 to 5)						
Ethnolinguistic	Average value of five different indices of	La Porta et al	-				
fractionalization	ethnolinguistic fractionalization (range from 0						
ethnfract	to 1)						
Latitude	Absolute value of the latitude of the country scaled to take values between 0 and 1	La Porta et al	-				
Legal origin	Legal origin of the Company Law or	La Porta et al	-				
(English, French,	Commercial Code of each country						
Socialist,							
Scandinavian –							
base)							
Religion (Catholic,	Percentage of the population that belongs to a	La Porta et al	-				
Muslim, Protestant,	given religion						
other)		TT 1. 13T .!					
Transition	Dummy equal to 1 if the country is classified	United Nations	-				
	as transition or developing country by the UN,	Statistics					
CDP	Cross Domestic Product based on purchasing		2003 2005				
GDP	power parity valuation of the country CDP		2003-2003				
	current international dollars millions		(average)				
Gross Enrolment	The number of students enrolled in primary	UNESCO	2003-2005				
Ratio grossenratio	secondary and tertiary levels of education.	CILLECO	(average)				
	regardless of age, as a percentage of the		(
	population of official school age for the three						
	levels						
School enrolment,	Ratio of total enrolment, regardless of age, to	UNESCO	2003-2005				
tertiary	the population of the age group that officially		(average)				
enroltert	corresponds to the tertiary level of education						
Percentage of	Number of tertiary graduates in social	UNESCO	2003-2005				
tertiary graduates in	sciences, business and law as percentage of		(average)				
social sciences,	total tertiary graduates						
business and law							
businesslawgrad			2002 2005				
Public education	Current and capital expenditures on education	UNESCO	2003-2005				
expenditure	by local, regional and national governments,		(average)				
eauexpend	including municipalities (nousehold						
	percentage of the GDP.						
Unemployment	Total, percentage of labor force	World Bank	2003-2005				
		EdStats	(average)				

INDICATODS LISED

Appendix B

HYPOTHESIZED AND ACTUAL EFFECTS OF EXPLANATORY VARIABLES ON MEASURES OF EDUCATIONAL CORRUPTION

	Explanatory Variable	Hypothesized Effect	Actual Effect		
Log(GDP)	-	(-)		
Trans	ition countries	+	+		
	English	-	(-)		
n u	French	+	(+)		
ega rigi	German	+	(+)		
OI L	Socialist	+	(+)		
Latitu	ıde	-	(+/-)		
Ethno	olinguistic fractionalization	+	+		
u	Catholic	+	(+)		
ligic	Muslim	+	(+)		
[Re]	Protestant	-	-		
Government expenditure on education		-	-		
Gross	s enrolment ratio	-	-		
Priva	te enrolment rate	+/-	(+)		
Enrol	ment in tertiary education	+	(-)		
Grade	ates with degree in business, law, social	+	+		
sciences					
Unen	ployment	+	(+)		

Note: The signs that are given in parentheses in the third column represent effects which are statistically insignificant.

Appendix C

	Dependent variable – bribe paid			Dependent variable – perception of		
	. ((percentage) corruption (percent		ntage)		
	(1)	(2)	(3)	(4)	(5)	(6)
С	18.6361**	16.1393*	4.5796	26.1409**	32.5814**	14.8780
	(9.1646)	(9.3977)	(9.8271)	(11.1138)	(14.3626)	(20.7374)
Log(GDP)	-1.3817*	-1.4494*	-0.7527	0.0018	-0.6714	0.1697
	(0.7461)	(0.7549)	(0.7894)	(0.9328)	(1.0439)	(1.2643)
Latitude	1.5281	8.5846	5.6832	-14.3972	2.3265	-2.9644
	(10.0199)	(12.9593)	(10.9227)	(14.8333)	(17.9309)	(15.5383)
Ethnolinguistic	12.8058	14.2684	18.2445**	23.0327**	23.4156**	31.6127***
fractionalization	(8.1230)	(8.7638)	(7.5959)	(10.3402)	(10.9145)	(11.6687)
Catholic		0.0288			-0.0306	-0.0892
		(0.0232)			(0.0548)	(0.0611)
Muslim		0.0276			0.0597	0.0246
		(0.0453)			(0.1088)	(0.1078)
Protestant		-0.0659			-0.2259***	-0.1139
		(0.0525)			(0.0780)	(0.1668)
English			-1.8272			-1.8634
			(3.7849)			(13.5779)
French			6.7182			12.7403
			(4.1563)			(15.2910)
German			2.4921			12.4685
			(3.7934)			(14.4798)
Socialist			7.1826**			17.1261
			(3.2519)			(14.7463)
R-squared /	0.2881 /	0.3529 /	0.4605 /	0.2731 /	0.3833 /	0.4924 /
Adjusted R-	0.2446	0.2686	0.3766	0.2312	0.3078	0.3797
squared						
No. of	53	53	53	56	56	56
observations						

ESTIMATION OUTPUT. GENERAL FACTORS

 Heteroskedasticity robust White standard errors are reported in the parantheses
 ***, **, * denote statistical significance at 1%, 5%, and 10% level respectively.
 For sources and details of the indicators used see Appendix A. Notes:

Appendix D

ESTIMATION OUTPUT - REDUNDANT VARIABLE TEST

Redundant Variables: log(gdp), log(gdp)^2, enroltert, enroltert*trans,
unempl, unempl^2F-statistic3.204966Prob. F(6,14)0.033994Log likelihood ratio25.06730Prob. Chi-Square(6)0.000332

Dependent Variable: <i>bribe_paid</i>						
Method: Least Squares						
Sample: 4 77						
Included observations: 29						
White Heteroskedasticity-Co	onsistent Standa	ard Errors & Co	ovariance			
Variable Coefficient Std. Error t-Statistic Prob.						
С	157.4652	24.13927	6.523199	0.0000		
eduexpend	-3.681664	1.919336	-1.918196	0.0695		
eduexpend^2	0.176188	0.093528	1.883804	0.0742		
grossenratio	-3.533163	0.526204	-6.714436	0.0000		
grossenratio^2	0.020594	0.003317	6.209314	0.0000		
businesslawgrad	0.266500	0.124756	2.136165	0.0452		
businesslawgrad*trans	-0.609717	0.163863	-3.720890	0.0013		
trans	24.69123	6.499856	3.798734	0.0011		
ethnfract	6.442292	10.29341	0.625865	0.5385		
R-squared	0.655104					
Adjusted R-squared	0 517146					

 Adjusted R-squared
 0.517146

 Note: For sources and details of the indicators used see Appendix A.

REFERENCES

- Acemoglu, Daron and Thierry Verdier. 1998. "Property Rights, Corruption and the Allocation of Talent: A General Equilibrium Approach." *Economic Journal*. 108, pp. 1381-1403.
- Ahrend, Rudiger. 2002. "Press Freedom, Human Capital, and Corruption." Working Paper No. 2002-11. Available at <u>http://www.delta.ens.fr/abstracts/wp200211.pdf</u> last accessed June 6, 2008.
- Bardhan, Pranab. 1997. "Corruption and Development: A Review of Issues." *Journal of Economic Literature*. 35:3, pp. 1320-1346.
- Bayley, David H. 1966. "The Effects of Corruption in a Developing Nation." *The Western Political Quarterly.* 19:4, pp. 719-732.
- Chapman, David. 2002. "Corruption and the Education Sector." *Sectoral Perspectives on Corruption.* November 2002; Available at <u>http://www.transparency.org/content/download/23770/355748/file/chapman_corrupti</u> <u>on_education_2002.pdf</u> - last accessed June 6, 2008.
- Dreher, Axel and Friedrich Schneider. 2006. "Corruption and the Shadow Economy: An Empirical Analysis." Discussion Paper No. 1936; Available at <u>http://ftp.iza.org/dp1936.pdf</u> last accessed June 6, 2008.
- Heyneman, Stephen P. 2004. "Education and Corruption." International Journal of Educational Development. 24:6, pp. 637-648.
- Heyneman, Stephen P. 2007. "Buying Your Way into Heaven: The Corruption of Education Systems in Global Perspective." *Perspectives on Global Issues.* 2:1; Available at <u>http://www.perspectivesonglobalissues.com/0201/articles0201/BuyingYourWayIntoH</u> <u>eaven.pdf</u> - last accessed June 6, 2008.
- Heyneman, Stephen P., Kathryn H. Andersson, and Nazym Nuraliyeva. 2007. "The Cost of Corruption in Higher Education." *Comparative Eucation Review*. 52:1, pp. 1-25
- IMF, World Economic Outlook Database. April 2008; Available at <u>http://www.imf.org/external/pubs/ft/weo/2008/01/weodata/index.aspx</u> last accessed June 6, 2008
- Kurtz, Marcus J. and Andrew Schrank. 2007. "Growth and Governance: Models, Measures, and Mechanisms." *The Journal of Politics*. 69:2, pp. 538-554.
- La Porta, Rafael, Florenzio Lopez de Silanes, Andrei Shleifer and Robert W. Vishny. 1999. "The Quality of Government." *Journal of Law, Economics and Organization*. 15:1, pp. 222-279.
- Mauro, Paul. 1995. "Corruption and Growth." *The Quarterly Journal of Economics*. 110:3, pp. 681-712.

- Montinola, Gabriella R. and Robert W. Jackman. 2002. "Sources of Corruption: A Cross-Country Study." *British Journal of Political Science*. 32:1, pp. 147-170.
- Rodrik, Dani. 1999. "Institutions for High-Quality Growth: What They Are and How to Acquire Them". Paper Prepared for the International Monetary Fund Conference on Second-Generation Reforms; Available at <u>http://ksghome.harvard.edu/~drodrik/institutions.pdf</u> - last accessed June 6, 2008.
- Roland, Gerard. 2004. "Understanding Institutional Change: Fast-Moving and Slow-Moving Institutions." *Studies in Comparative International Development*. 38:4, pp. 109-131.
- Rumyantseva, Nataliya L. 2005. "Taxonomy of Corruption in Higher Education." *Peabody Journal of Education.* 80:1, pp. 81-92.
- Seldadyo, Harry and Jakob de Haan. 2005. "The Determinants of Corruption: A Reinvestigation." Paper Prepared for the EPCS-2005 Conference; Available at <u>http://www.hwwi.org/uploads/tx_wilpubdb/HWWI Research Paper 2-11.pdf</u> last accessed June 6, 2008.
- Shaw, Philip. 2005. "The Determinants of Educational Corruption in Higher Education: The Case of Ukraine." Working Paper. September 21, 2005; Available at <u>http://editorialexpress.com/cgibin/conference/download.cgi?db_name=NEUDC2005&paper_id=83</u> - last accessed June 6, 2008.
- Spence, Michael. 1973. "Job Market Signaling". *Quarterly Journal of Economics*. 87:3, pp. 355-374.
- Svensson, Jakob. 2005. "Eight Questions about Corruption." Journal of Economic Perspectives. 19:3, pp.19-42.
- Transparency International. 2007. "Corruption in the Education Sector." Working Paper No. 4/2007. Available at <u>http://www.transparency.org/content/download/23537/350879</u> last accessed June 6, 2008.
- Transparency International. Frequently Asked Questions about Corruption; Available at <u>http://www.transparency.org/news_room/faq/corruption_faq</u> last accessed June 6, 2008.
- Transparency International. Global Corruption Barometer. Available at <u>http://www.transparency.org/policy_research/surveys_indices/gcb</u> last accessed June 6, 2008.
- Treisman, Daniel. 2000. "The Causes of Corruption: A Cross-National Study." *Journal of Public Economics*. 76:3, pp. 399-457.
- UNESCO Institute for Statistics. Data Center; Available at <u>http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=143&IF_La</u> <u>nguage=eng</u> last accessed June 6, 2008.

- United Nations Statistics Division. Standard Country and Area Codes Classifications; Available at <u>http://unstats.un.org/unsd/methods/m49/m49regin.htm</u> - last accessed June 6, 2008.
- World Bank EdStats Query; Available at <u>http://go.worldbank.org/47P3PLE940</u> last accessed June 6, 2008