

“Corporate governance is ... holding the balance between economic and social goals and between individual and communal goals. The governance framework is there to encourage the efficient use of resources and equally to require accountability for the stewardship of these resources. The aim is to align as nearly as possible the interests of individuals, corporations, and society. The incentive to corporations is to achieve their corporate aims and to attract investment. The incentive for states is to strengthen their economies and discourage fraud and mismanagement.”

- Sir Adrian Cadbury, author of “The Financial Aspects of Corporate Governance”,
London Stock Exchange: London, December 1992.

CORPORATE GOVERNANCE AND FIRMS’ PERFORMANCE IN UKRAINE¹

By Vitaliy Zheka

Abstract

This study attempts to find whether the corporate governance matters in transition context. In particular, our main hypothesis is that there is positive causal relationship between corporate governance quality and enterprise performance. We use Standard Production Function (SPF) Approach to address the issue. We apply both within and within IV estimators to the unbalanced panel of Ukrainian open joint-stock companies in 2000-2002. The sample consists in total of 18520 observations.

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Objective

The objective of the project is to investigate the impact of *overall* corporate governance practices on performance for Ukrainian joint-stock companies. The major consequences of poor corporate governance practices are low utilization of employed resources and inability of companies to attract investment. It is widely known that proper corporate governance is vital for enhancing the development of enterprises as well as of the economy as a whole. Yet not many companies in countries of former Soviet Union (FSU) have already transitioned to exercising good corporate governance. Why? Is the change brings more of pain than of gain? What is empirical evidence for this? The study shall provide an empirical argument for the necessity of the *establishment* and *enforcement* of proper corporate governance principles in transitional country, Ukraine.

Introduction: Motivation and Literature Review

If a firm has a multiple ownership, it may result in corporate governance problems (Jensen and Meckling, 1976). The owners/investors want to ensure that the professional managers they hire run the company in line with the best interests of its owners, working with greatest possible efficiency that consequently maximize the added value of the firm and the welfare of all of the owners. On the other hand, the managers or large shareholders want to maximize their own benefits. When interests of managers are not perfectly in line with those of owners, or when some owners expropriate rights of other shareholders there could be a substantial loss in firm's efficiency.

The notion of the corporate governance is quite comprehensive. It is often defined as a field in economics that investigates how to secure/motivate *efficient management* of corporations by the use of incentive mechanisms, such as contracts, organizational designs and legislation (Mathiesen, 2002). In words of Shleifer and Vishny (1997) “[c]orporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment.”

The issue of corporate governance has become extremely important in the last decades because corporations have reached a remarkable output growth and at present produce more than 90% of all world output. On the background of well-known bankruptcies of transnational corporations (e.g. Maxwell Group, Enron, WorldCom)

the corporate governance issue is becoming one of the central issues in the aim of secure and continuous economic development in the world.

The problem of corporate governance is even more critical in transition economies, in particular in the countries of FSU, where the recent dominance of state ownership along with authoritarian-traditions of governance inherited from the past are currently in fight with modern styles of management coming from the West. The outcome of this fight determines the microstructure of industries as well as the infrastructure in these countries. As a result, the level of corporate governance also influences the macroeconomic development. In particular, by determining investor's rights the quality of corporate governance in these countries can partially explain the differences in investment inflows, and, consequently, countries' growth rates. In this respect, the Stiglitz (1999) critique towards transitional reforms is enlightening:

“The divergence of interests between the managers and shareholders in large publicly-traded corporations has been a major source of the economics of agency contracts. Yet the hard lessons of the separation of ownership and control, and the resulting agency problems, have received insufficient attention in the standard western advice in spite of much discussion of ‘the corporate governance problem.’ ... Privatization is no great achievement – it can occur whenever one wants – if only by giving away property to one's friends. Achieving a private, competitive market economy, on the other hand, is a great achievement, but this requires an institutional framework, a set of credible and enforced laws and regulations.” (Stiglitz, 1999, p. 10, 19)

A huge amount of literature studies the association between corporate governance and firms' performance or market value. However, many papers focus on *developed* countries and on *particular aspects* of governance (board composition and size (e.g. Bhagat and Black, 2002), shareholder activism, CEO turnover (e.g. Gibson, 2002), executive compensation (e.g. Schmid, 2003), ownership structure, and takeover defenses). Much less research exists for *developing* countries (e.g. Black, Hasung and Woochan, 2003) and a few papers are done for *transition* economies (e.g. ???????, ??????, 2001; Zheka, 2003; Zelenyuk and Zheka, 2005, Zheka and Zelenyuk, 2003)².

² For more detailed literature review on ownership impact on firm's performance, please, refer to Jensen and Meckling (1976), Ng and Li (1999), Shleifer and Vishny (1986, 1997), Zheng et al (1998), Brown and Earle (2000), Brown, Earle and Telegdy (2004), Kuznetsov and Muravyev (2001), Andreeva (2003), Zheka (2003).

Papers that investigate whether *overall* corporate governance predicts firm performance or market value is very limited. Some most closely related papers are ???????, ????? (2001), Turuntseva, Woodward and Kozarzewski (2004), Black (2001), Durnev and Kim (2003), Zheka (2003), and Black, Hasung and Woochan (2003). ???????, ????? (2001) and Turuntseva, Woodward and Kozarzewski (2004) use a range of governance indicators from survey data to build an index of corporate conflict (intensity) and relate it to companies' performance in Russia. They find correlation between corporate conflict index and performance, however they do not control for possible endogeneity of corporate governance in their study. Black (2001) finds a strong correlation between index of corporate governance (Standard and Poor's (S&P)) and the share prices of Russian firms. However he has a small sample of only 21 firms, very limited control variables, and he does not control for endogeneity. Zheka (2003) investigates the association between the index of corporate governance quality (constructed from five indicators of corporate governance) and firms' efficiency, estimated by non-parametric methods, for 283 listed companies in Ukraine and finds a positive correlation. However he does not control for possible endogeneity problems.

Only two studies, Durnev and Kim (2003) and Black et al (2003) attempt an instrumental variable analysis to address an endogeneity problem. Durnev and Kim (2003) investigate the determinants of corporate governance in emerging markets and briefly address whether corporate governance quality predicts market value. They find that higher scores on corporate governance indexes (Credir Lyonnais Securities Asia (CLSA) and S&P disclosure indexes) predict higher Tobin's q for a sample of 859 firms in 27 countries. While the instruments used by Durnev and Kim (2003) seem to be suspect (since they assume that industry does not affect governance), Black et al (2003) using the specifics of the Korean legislation on corporate governance find very good instrument (asset size dummy variable for companies with assets over 2 trillion won, because different governance requirements are applied to such companies) and use two-stage and three-stage least square analysis to address endogeneity in their cross-section data. They report strong evidence that overall corporate governance is an important factor in explaining the market value of Korean public companies.

Despite the fact that corporate governance is usually analyzed in a framework of its relation to *market value* of a firm (the issue that investors are interested in), due to the high *rigidity* of Ukrainian *stock market* it is not

possible to determine the *market value* of companies and in this study we take a different approach. We investigate the relationship between the degrees to which a company follows sound corporate governance practices and the company's *performance*. Such analysis allows us to look at the root of the corporate governance problem – an inefficient usage of resources – usually not easily observable by outsider such as investor, shareholder, government etc. Referring to the theory of *value creation* (Copeland, 2000) we can argue that corporate *value* and corporate *performance* should go together. Therefore, investigating the association between corporate governance and efficiency can to some extent even predict the link between corporate governance and corporate value in a situation when corporate value is not observable, as it is currently the case in Ukraine. To our knowledge this is the first attempt to investigate intra-firm standards of corporate governance quality as a determinant of company's efficiency in Ukraine. Thus, we also hope to be provocative for more similar and better studies on corporate governance for Ukraine as well as for other transitional countries.

Hypotheses

In evaluating the link between the quality of corporate governance and efficiency of enterprises, our Main Hypothesis is: *'There exist a positive relationship between the overall corporate governance quality and firm's performance'*. In order to enrich the policy implications we will also investigate the importance of separate elements of corporate governance as defined in Appendix 1.

This hypothesis may seem unquestionable, yet firms in Ukraine still do not exhibit high levels of corporate governance and up to this point, there have been no evidence for Ukraine that firms with good corporate governance are performing better.

We will also control for comprehensive list of other factors that we expect influence firm's efficiency, including the ownership structure (controlling for non-linearity in ownership effects³) as well as industry specifics. First, we expect a firm to be less efficient on average the larger the share of *state ownership* it has. Andreeva (2003) using panel data estimation documented that privatization brought more efficiency to Ukrainian firms. On the other

³ Non-linearity of performance effects has been found with respect to managerial and foreign ownership in Akimova and Schwodiauer (2004).

hand, Shcherbakova (2003) using different methods found an indication that state ownership is characterized by relative efficiency at least at some periods of transition. Therefore, still there is no clear evidence whether an increase of state ownership at present will indeed worsen the efficiency. This part of the project will be a complement to the previous work by Brown and Earle (2000), Andreeva (2003) and Melnychenko (2002), in the part where we explain the corporate governance problem of state ownership. We also expect *foreign ownership* to positively affect firm's efficiency. This claim is often used as an argument for promotion of FDI as well as for protection of local producers. It will be interesting to see if foreign firms are truly more efficient than local firms and by how much. Also, many claim the argument that foreign ownership is more efficient but very little empirical support is given for Ukraine⁴.

Certainly, any of these hypotheses may not be true for a particular enterprise and our goal is to investigate the overall tendency in the population, using the sample we obtain and the methods we describe below.

Methodology

In this study we suggest using parametric approach, i.e., production function estimation following the EERC expert recommendations as well as non-parametric approach, two-stage Data Envelopment Analysis (DEA)⁵. We use the first approach because it permits much more easily to address important econometric problems that often arise in research of corporate governance, notably endogeneity. And as a complement we also use DEA approach because of its growing popularity and good reputation in top journals in the world. Besides this, it could also be the case that no endogeneity will be detected as it is in many other studies (e. g. Black et al, 2003; Gillan, Hartzell and Starks, 2003).

Standard Production Function Approach

A general form of specification we plan to estimate is as follows (Wooldridge, 2002),

$$y_{it} = \mathbf{z}_{it} \boldsymbol{\beta} + \mathbf{w}_{it} \mathbf{d} + c_i + u_{it}, \quad (1)$$

where $i=1, \dots, J$ represents J companies, $t=1, \dots, T$ represents T time periods;

⁴ See Talavera (2001) and Konchenko (2003) for Ukraine and Yudaeva et al (2000) for Russia.

⁵ At the current paper only the SPF estimation results are presented, leaving SFA/DEA analysis for subsequent analysis.

c_i is the unobserved firm effect and u_{it} are the idiosyncratic errors, y_{it} is the ln(output), of firm i , \mathbf{z}_i is a set of strictly exogenous variables, such as capital stock, employment etc for firm i in the sense that

$$E(\mathbf{z}_{is}' u_{it}) = 0, \text{ for all } s, t \quad (2)$$

that we expect to influence firms' output through the vector(set) of parameters β .

\mathbf{w}_{it} is a corporate governance index (or a set of corporate governance elements) that we expect to influence firms' output through the vector (or set) of parameters δ , which we aim to estimate. To model possible endogeneity we allow \mathbf{w}_{it} to be *contemporaneously* correlated with u_{it} . This correlation can be due to any of the three problems: omission of an important time-varying explanatory variable, measurement error in some elements of \mathbf{w}_{it} , or simultaneity between y_{it} and one or more elements of \mathbf{w}_{it} . We assume that equation (1) is the equation of interest. In a simultaneous equation model with panel data, equation (1) represents a single equation. A system approach is also possible.

This equation has a causal interpretation: holding fixed the factors in \mathbf{z}_{it} and c_i , it models the effect of an exogenous change in the quality of corporate governance on output. Thus, equation (1) is a structural equation.

The presence of the firm heterogeneity, c_i , in equation (1) recognizes that corporate governance might be correlated with firm characteristics, such as owners specifics (issue addressed by the EERC expert), managerial ability etc that also affect performance. An additional problem is that corporate governance might also be correlated with u_{it} . This correlation could be from a variety of the sources, one possibility is that firms may endogenously and optimally choose different governance practices (optimal differences bias) (Demsetz and Lehn, 1985; Black et al, 2003). Therefore we might add another equation to equation (1) that model dependence of corporate governance on some factors. Since equation (1) is of interest we do not need to add equations explicitly, but we must find appropriate instrumental variables.

To get an estimable model we will first use the fixed effects (FE) or first differencing (FD) transformations to eliminate c_i before addressing the correlation between \mathbf{w}_{it} and u_{it} . From differencing equation (1) we get

$$\Delta y_{it} = \Delta \mathbf{z}_{it}' \beta + \Delta \mathbf{w}_{it}' \delta + \Delta u_{it} \quad (3)$$

In case of FD we can use the entire vector \mathbf{z}_i (industry sector etc) as valid instruments because \mathbf{z}_i is strictly exogenous. However, if \mathbf{z}_i is the only valid set of instruments for equation (1) the analysis probably will not be

convincing: it relies on \mathbf{w}_{it} being correlated with some linear combination of \mathbf{z}_i rather than \mathbf{z}_{it} . Such partial correlation might be small, resulting in poor IV estimators.

One of the ways that will be used for obtaining additional instruments is to follow the standard simultaneous equation models (SEM) approach (Wooldridge, 2002): use exclusion restrictions in the structural equations. For example, we can hope to find exogenous variables that do not appear in (1) but that do affect corporate governance. Later we discuss the instruments we use in this study.

If equation (3) is identified for each t we will estimate it using a pooled 2SLS analysis, while correcting standard errors and test statistics for heteroscedasticity or serial correlation. It could also be possible to use GMM system procedure that exploits general heteroscedasticity and serial correlation in u_{it} instead.

Frontier Production Function Approach

Next step, as a complement, we suggest to estimate technical inefficiency using Stochastic Frontier Analysis (SFA) in Panel Data (Cornwell, Schmidt and Sickles, 1990). Specifically we estimate the following model,

$$\begin{aligned} y_{it} &= \beta_{0i} + \mathbf{x}_{it} \beta + v_{it} - u_{it} \\ &= \beta_{it} + \mathbf{x}_{it} \beta + v_{it}, \end{aligned} \tag{4}$$

where $i=1, \dots, I$ represents I companies, $t=1, \dots, T$ represents T time periods;

v_{it} represents random statistical noise and $u_{it} = 0$ represents technical inefficiency.

$\beta_{0i} = \beta_0 - u_{it}$ (is the production frontier intercept common to all producers in period t , $\beta_{it} = \beta_0 - u_{it}$ is the intercept for producer i in period t , y_{it} is the ln(output), of firm i , \mathbf{x}_{it} is a set of strictly exogenous variables, such as capital stock, employment etc .

Then, we model the dependence of technical efficiency on a range of explanatory variables in panel data SFA framework using model suggested by Battese and Coelli (1995).

Nonparametric Estimation

In this part of analysis we relax a parametrical form of production function using Data Envelopment Analysis. Kneip et al. (1998) shows consistency of the DEA estimator and derives its rate of convergence. The limiting distribution of the DEA estimator for the multi-output-multi-input case is provided by Kneip et al. (2003).

We intend to use Tobit estimator as well as truncated regression on the second stage to analyze the dependency of the DEA efficiency scores obtained on the first stage. For the sake of robustness of our conclusions in this part of research, we plan on trying other methods at the second stage, besides the Tobit estimator. In particular, upon obtaining larger dataset we plan using the approaches recently suggested by Simar (2003), Simar and Wilson (2003), Färe and Zelenyuk (2003) and Simar and Zelenyuk (2003 a, b)

For the details on measurement of each variable, please, refer to the Appendix 1.

Data

Sources

IStock is the only in Ukraine modern centralized system of accumulation and disclosure of corporate information which is open and accessible for everyone. *IStock* was established by the leading stock market trading and information system PFTS, with assistance of FMI/USAID. This database provides annual financial statements in total for 14356 companies, in particular 2215 corporations in 1998, 8325 corporations in 2000 (out of 11850 registered), 7735 corporations in 2001 (out of 12039 registered) and 10213 corporations in 2002 (out of 12010 registered).

Sample

For the preliminary empirical testing we use the dataset of 18520 observations on manufacturing Open joint-stock companies in total, in particular around 7943 firms in 2000, 6006 in 2001 and 4571 in 2002. Thus the sample covers around 67%, 50% and 38% in 2000, 2001 and 2002 respectively of all open joint-stock companies in Ukraine. The data is collected from publicly available information, in particular, from annual financial statements of Ukrainian joint-stock companies (Source: PFTS – First Trading Stock System, *Istock* database: www.istock.com.ua).

We currently work on obtaining and/or improving on data on 1998, 1999 and 2003. We expect it to enlarge the sample by around 30-50% of additional observations. The results of the analysis will be reported in the final report.

Descriptive Statistics for Our Sample

The descriptions and descriptive statistics of available data are given in Table 1. Data covers enterprises of very different size: on average the annual total revenue of a company is about 20 million UAH and varies in the interval from about 100 UAH to 27 billion UAH. To measure ownership structure we use the sums of shares of different classes of owners⁶. In particular, on average organizations (including domestic private and state, and foreign ones) own around 25% ownership rights while individuals and managers own 18% and 14% respectively.⁷ The sample covers all industries and we distinguish it by the first digit of industry code. We do not specify their names since they are quite different and it is difficult to give specific names. This might not be good criteria and we think of better ways to construct industry sector dummies. The reason we use it is that it is relatively easy obtainable and still provides some business sector classification. Enterprises come from all oblasts of Ukraine and we classify them by four regions: west (21% of observations), east(27% of observations), center (36% of observations) and south (17% of observations).

Table 1. Descriptive statistics

Variable	Abbr.	Obs	Mean	Std. Dev.	Min	Max
<i>Output variable</i>						
Net Total Revenue, 1,000, UAH	output	18520	20,300.00	331,000.00	0.10	26,900,000.00
<i>Input variables</i>						
Fixed Assets, 1,000, UAH	capital	18518	12,700.00	79,300.00	0.10	4,390,000.00
Employment, workers	labor	18520	2252	258439	1	35200000
Capital Cost, depreciation, 1,000 UAH	capital_c	18395	908.80	7,332.17	0.10	451,000.00
Labor Cost, 1,000, UAH	labor_c	18455	1,549.85	10,900.00	0.30	673,000.00
Other Cost, 1000 UAH	other_c	18161	12,400.00	120,000.00	700.00	7,030,000.00
<i>Regional dummies</i>						
West (region)	west	18520	0.21	0.41	0.00	1.00
East (region)	east	18520	0.27	0.44	0.00	1.00
Center (region)	center	18520	0.36	0.48	0.00	1.00
South (region)	south	18520	0.17	0.37	0.00	1.00
<i>Ownership variables (sum of the shares)</i>						

⁶ The data on organizations and individuals (but managers) ownership is available only for the owners with at least 5% share stake.

⁷ While it is believed that this ownership classification captures the ownership effects we use it temporarily and I currently work on more detailed classification in order to distinguish foreign, state and domestic organization ownership. The main reason for current classification is that it is easily obtainable from the data we have while to distinguish foreign and state ownership we need to work with the database of about 70000 records on ownership, which requires much more time.

Ownership by organization (including, state, foreign and domestic organizations)	org	18520	25.25	27.90	0.00	100.00
Individual Ownership	ind	18520	18.42	25.26	0.00	100.00
Managerial Ownership	man	18520	14.13	21.18	0.00	100.00
<i>Industry dummies (by first digit)</i>						
	z1	18520	0.42	0.49	0.00	1.00
	z2	18520	0.12	0.32	0.00	1.00
	z3	18520	0.00	0.01	0.00	1.00
	z4	18520	0.00	0.03	0.00	1.00
	z5	18520	0.10	0.31	0.00	1.00
	z6	18520	0.12	0.32	0.00	1.00
	z7	18520	0.06	0.23	0.00	1.00
	z8	18520	0.12	0.32	0.00	1.00
	z9	18520	0.05	0.22	0.00	1.00
<i>Year dummies</i>						
2000	year2000	18520	0.43	0.49	0.00	1.00
2001	year2001	18520	0.32	0.47	0.00	1.00
2002	year2002	18520	0.25	0.43	0.00	1.00

Notion of Corporate Governance Quality and Construction of Corporate Governance Index

There is no one model of corporate governance that works in all countries and all companies. Indeed, there exist many different codes of “best practices” that take into account specific legislation, board structures and business practices in individual countries. Nevertheless, there are standards that can apply across a broad range of legal, political and economic environments. With this in mind, the Business Sector Advisory Group on Corporate Governance to the OECD has articulated a set of core principles of corporate governance practices that are relevant across a range of jurisdictions (OECD, 1999). These are Fairness, Transparency, Accountability and Responsibility.

The results of our hypothesis testing in great extent depend on how we define the corporate governance index of corporations. Under the *quality of corporate governance* at a firm we understand the *extent* to which a firm adopts and conforms to guidelines of good practices of corporate governance *overall* (S&P, 2002). The methodology used to build the corporate governance index is based on the accounting for and weighting for different factors that indirectly indicate on the quality of corporate governance at the firm. In this study we determine the range of governance indicators for Ukrainian companies based on the OECD Principles of Corporate Governance (OECD, 1999), S&P Corporate Governance Scoring Methodology and other codes as well as on the availability of relevant information and divide them in four major elements of corporate governance that are also often used in similar

studies. In particular, we define the following elements: (i) financial stakeholder rights, (ii) transparency/information disclosure (iii) supervisory board effectiveness and (iv) other (external) mechanisms of governance. We provide the explanations concerning the choice of particular corporate governance elements and the specific indicators that they include in Appendix 1.

Measures of Corporate Governance Quality

Since there is no corporate governance index (estimated by some rating agencies) available for the companies in our dataset, one of the main challenges of this analysis is to obtain some appropriate set of indicators that would reasonably proxy the real state of corporate governance at the firms. All the data we use to measure corporate governance quality come from the firms' annual financial statements. We provide detailed explanations on why particular indicators might be used to measure corporate governance quality in Appendix 1. Descriptive statistics for governance indicators are presented in Table 2. It shows that around 88 % of firms in our sample do not report in their annual financial statements on who is the registrar of their shares. 95% of firms have an independent registrar, while around 5% have their own 94% of firms provide information on their auditor while around 6% do not report any information on their auditor and whether their financial statements were audited or not. We also distinguish the companies that have the recognized international auditor or have a large domestic auditing company (which serves at least 20 companies in our sample) as their auditor. Using this variable we attempt to capture the quality of auditing which might be higher if done by large or international company. Thus around 29% of firms in our sample are served by large auditing company while only several have an international auditor.

Surprisingly only 61% of firms in our sample had a mandatory annual general shareholder meeting and around 2% had an extra shareholder meeting. About 67% of firms published their annual financial information in the press timely and only 3% of companies in our sample have their own website.

Around 26 % of companies have a controlling shareholder, and we assume that this should reduce the agency problems and improve the governance. Around 22% and 43% of firms have short term and long term debt respectively, and only 35% of firms reported net profit in the end of year.

Table 2. Corporate Governance Measures

N	Description of variable	Variable	Obs	Mean	Std. Dev.	Min	Max
<i>Indicators of corporate governance quality</i>							
1	=1 if the annual report contains information on firm's registrar	isregist	18520	0.878132	0.327142	0	1
2	=1 if the registrar is independent	inregist	18520	0.95189	0.214005	0	1
3	=1 if the annual report contains information on firm's auditor	isaudit	18520	0.941361	0.234955	0	1
4	=1 if the firm's auditor serves at least to 20 companies	audit	18520	0.288985	0.453303	0	1
5	=1 if the auditor is the recognized international company	intaudit	18520	0.000162	0.012727	0	1
6	=1 if there were an annual general shareholder meeting	zbory	18520	0.613823	0.486885	0	1
7	=1 if there were an extra shareholder meeting at that year	adzbery	18520	0.02014	0.140484	0	1
8	=1 if the annual financial information was published properly (by Sept, 30)	publ	18520	0.675864	0.468064	0	1
9	=1 if the company has a website for communication with its stakeholders	www	18520	0.033099	0.178901	0	1
10	=1 if the company has a controlling shareholder	large	18520	0.255238	0.436006	0	1
11	=1 if the company has a bank debt	bankdebt	18520	0.222246	0.415767	0	1
12	=1 if the company has any longterm debt	longdebt	18520	0.425378	0.494414	0	1
13	=1 if company reported a net profit	profit	18520	0.347084	0.476056	0	1
<i>Constructed indexes of corporate governance quality</i>							
	Simple index of corporate governance (the sum of all indicators of governance)	cgi	18520	5.65351	1.474509	1	11
	Simple index of corporate governance (the sum of first 9 indicators)	cgi_6	18520	4.403564	1.088744	1	8
	Simple sub-index of firm's transparency (the sum of 1, 3, 5, 8, 9).	transp	18520	2.528456	0.70126	0	4
	Simple sub-index of firm's treatment of shareholders (the sum of 2, 4, 6, 7).	rights	18520	1.875	0.708485	0	4
	Overall simple index of governance constructed giving equal weights to transparency and shareholder rights sub-indexes	overallcgi	18520	2.201728	0.544293	0.5	4
	Weighted index of corporate governance, according to the (5)	cgi_w	18520	0.68948	0.13655	532	6409
<i>Supervisory Board Proxies</i>							
	Number of members of supervisory board	sbsize	14873	3.594366	1.596202	1	23

To capture the effects of supervisory board effectiveness we currently use the variable of number of directors in the board, which on average is 3.59 with minimum of 1 and maximum of 23. This is a justified proxy since

many studies has shown its significant relation to enterprise performance; thus it contains some information on the effectiveness of supervisory board. However this information is limited and I currently work on including one more variable for supervisory board that would measure the proportion of unemployed directors in the board. This variable is very important because it would allow judging on relative independence of supervisory board from management. The data on this variable is available and I work on transforming it in suitable for analysis form.

Construction of Corporate Governance Indexes

Based on the indicators presented above we build a broad multifactor index of corporate governance. Its value for each corporation allows judging about the quality of corporate governance at each firm. It should be noted that while the index may not be a good measure of corporate governance quality at some particular enterprise, our goal is rather to measure an overall tendency in the population. We lack a theoretical basis to assign weights to different indicators. We therefore use different approaches to construct the index. In particular we, first, use *simple index* assigning equal weights to all indicators and, second, we use weighted index calculating the numerical value of the index using the formula suggested by Turuntseva, Woodward and Kozarzewski (2004). In general form, the formula for computation of the weighted corporate governance index looks as following:

$$CGI_W_i = \frac{\sum_{k=1}^K d_k w_k}{\sum_{k=1}^K w_k}, \quad (5)$$

where CGI_W is the weighted corporate governance index at the i -th enterprise, d_k is the dummy characterizing the presence of the k -th ($k = 1, \dots, K$) indicator of corporate governance at the i -th enterprise, w_k is the weight given to the k -th governance indicator. The weight of each parameter indicating a corporate governance quality at an enterprise in the aggregate index depends on the degree of its prevalence, i.e.: the more frequently this indicator of corporate governance is detected among the enterprises included in the sample, the less is its impact on the

corporate governance index⁸. Such an opposite impact is taken into account by the use of the following weight coefficients:

$$w_k = \log \frac{1}{m_k},$$

where m_k characterizes the degree of prevalence of the k -th indicator of corporate governance among N enterprises. Since our indicators are binary variables m_k coincides with the mean value of the k -th indicator of corporate governance.

Other ways of corporate governance index construction that we might use are the methods suggested by ???????, ????? (2001) and by Black, Hasung and Woochan (2003).

A multifactor index is important in avoiding omitted variable bias across different governance elements. For example, quality of disclosure correlates strongly with other aspects of corporate governance. When other governance indicators are included as additional independent variables, the power of a disclosure element declines (Black et al, 2003).

We also estimate the effects of separate elements of corporate governance constructing sub-indexes of corporate governance quality, in particular one sub-index for how the company treats shareholders rights and one index for the quality of firm's disclosure/transparency. The way the sub-indexes are constructed is described in Table 2.

Instrumental Variables for Corporate Governance

Following our above discussion on possible estimation problems, notably endogeneity of our corporate governance measures we select a number of potential instrumental variables to be used in two-stage estimation procedure. In particular we define the following list of instruments, see Table 3 for descriptions and descriptive statistics. We

⁸ The problem of weight assignment in the course of construction of overall indicators of corporate governance is rather nontrivial. The method of selection of weights used in this paper is only one from many relevant ones. The major factor behind this choice is that it was assumed that there are present certain "traditional" or "rather frequently encountered," and, respectively, "less frequently encountered" and "more refined" indicators for corporate governance. Specifically, the more frequently the governance indicator is encountered, the more traditional and, therefore, less significant it is. In this case it seems more logical to give a less weight to such an indicator.

follow Andreeva (2003)⁹ using regional and industry average levels of corporate governance in particular year, using (6).

$$Y_{irt} = \frac{\sum X - X_{irt}}{n_{rt} - 1} \quad (6)$$

where Y_{irt} is the regional or industry average level of corporate governance quality for enterprise i in region or industry r in year t .

It should be noted that when calculating the regional and industry average levels of corporate governance we use a dataset of 18520 companies, while in presented below estimation results we use the sample of 14857 companies (due to some missing values on supervisory board characteristics). This must enhance the validity of our instruments.

Descriptive statistics show that around 60 of companies in the sample were privatized through the sale of the shares of open joint-stock company and only about 1% was privatized through the purchase of state property which had been leased with the right of purchase. These two variables are time-invariant, thus we cannot use them in 2SLS with fixed effects. However the other three instruments are time-varying and we will use them for identification of our second equation. In particular, we see that around 5% of firms have the assets less than 340,000 UAH. The average regional score of corporate governance is 2.2017 with minimum at 1.9574 and maximum at 2.4152. The average industry score is 2.2017 with minimum at 0.5 and maximum at 3.

⁹ She uses the share of privatised firms in the region and/or industry as instrumental variables for ownership variables. I use her approach however applying it to corporate governance measure.

Table 3. Instrumental Variables for Corporate Governance Quality

N	Description of variable	Variable	Obs	Mean	Std. Dev.	Min	Max
	=1 if firm was privatized as a purchase of state property, which had been leased with the right of purchase	repurcha	18520	0.011609	0.107121	0	1
	=1 if firm was privatized through the sale of shares of open joint-stock company	sharesales	18520	0.601674	0.489567	0	1
	=1 if the firm's assets are less than 20,000 Untaxed Minimum Personal Wages (340,000 UAH) ¹⁰		18511	0.046567	0.210715	0	1
	Average level of corporate governance quality in the region (west, east, south and center) calculated using (6)		18520	2.201728	0.120306	1.95 74	2.41 52
	Average level of corporate governance quality in the industry sector calculated using (6)		18520	2.201728	0.106976	0.5	3

Preliminary Results

First, if we treat all variables as exogenous we estimate the (1) using one-stage within estimator. The estimation results for different specifications of corporate governance index are presented in the Appendix 2. The results are similar in spite of the specification of governance index. Importantly, our measure of corporate governance either simple or weighted index is highly significant (at 1% level) and has positive sign in all cases. Only when we divide the corporate governance index into two sub-indexes the coefficients are significant only at 10% level. The coefficient for the size of supervisory board is also significant in all cases and has negative sign indicating that the number of directors indeed has a positive correlation with firm's performance. Ownership and industry variables appeared to be insignificant. (We do not present the coefficients for industrial sector.) Industry dummies are not significant perhaps due to low variation across time. Year dummies (2000 is a reference year) are found to be highly significant and positive, suggesting the output grows across time on average. We should also note that here the year and industry dummies capture also inflation rate, which is not corrected explicitly.

Now, suppose that corporate governance quality might be endogenously determined. Using the instruments defined in Table 3 we apply 2SLS estimator with fixed effects to (1). The results are presented in Table 4. If we use

¹⁰ This results from the difference in annual report requirements, stipulated by the Securities Commission. If the balance of the company on the end of the year is less than 20,000 Untaxed Minimum Personal Wages (340,000 UAH which is about 64,151 USD), then it submits the annual

first differencing transformation the results are similar. We should also note that instead of the simple size of supervisory board here we use the variable that measures the board size relative to company's assets. We believe that this might bring more information about the supervisory board arrangements rather than when we use simple number of directors. However the results are the same qualitatively when we use simple number of directors. The only difference is that new variable is more significant while the other corporate governance indicators lose some significance. Which is consistent with what Black et al (2003) observed when they omitted some important element of governance from the specification – other governance indicators become more significant. When the model is specified correctly and no important element is missed then the results are consistent.

Table 4. 2SLS Fixed-effects Estimator

Regressors	Coef.	St.Err.	Coef.	St.Err.	Coef.	St.Err.	Coef.	St.Err.
lncapital	0.0915	0.0212 ***	0.0972	0.0212 ***	0.1028	0.0241 ***	0.0961	0.0213 ***
lnlabor	0.5528	0.0206 ***	0.5629	0.0195 ***	0.5734	0.0247 ***	0.5606	0.0196 ***
cgi	0.1914	0.0791 **						
overallcgi			0.3918	0.1948 **				
transp					0.5060	0.3758		
rights					-0.0839	0.3124		
cgi_w							2.0631	0.9197 **
sbsize/assets	14341.0	4344.8 ***	16588.4	4112.4 ***	16009.3	4312.3 ***	14957.8	4321.2 ***
org	-0.0022	0.0016	-0.0016	0.0016	-0.0022	0.0017	-0.0023	0.0016
ind	-0.0012	0.0017	-0.0014	0.0017	-0.0025	0.0022	-0.0018	0.0018
man	0.0024	0.0016	0.0016	0.0016	0.0025	0.0018	0.0023	0.0016
org_sq	0.0000	0.0000	0.0000	0.0000 **	0.0000	0.0000 *	0.0000	0.0000 *
ind_sq	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
man_sq	0.0000	0.0000 **	0.0000	0.0000	0.0000	0.0000 *	0.0000	0.0000 *
year2001	0.0074	0.0562	0.0504	0.0463	-0.0142	0.0859	-0.0056	0.0660
year2002	0.0868	0.0547	0.1235	0.0475 ***	0.0376	0.1030	0.0725	0.0647
large					0.0248	0.0486		
bankdebt					0.0647	0.0264 **		
longdebt					0.0508	0.0249 **		
_cons	8.9210	0.4596 ***	8.9424	0.5040 ***	8.5769	0.7122 ***	8.4540	0.6521 ***
R-sq:								
within	0.1205		0.1110		0.0214		0.1058	
between	0.6016		0.5773		0.5867		0.5859	
overall	0.5908		0.5675		0.5675		0.5745	
Num. of obs.					14857			

Notes: (i) The regressand is the logarithm of firm's Net Total Revenue;

report in simplified form (some info is not required). This information was kindly provided by Vladyslava Ryabota and Victor Gorbatenko, legal advisors of Ukraine Corporate Development Project, International Financial Corporation.

(ii) *, **, *** - significance from zero at 10%, 5% and 1% levels respectively;

(iii) All instruments for corporate governance index shown in Table 3 are included. Hausman test was used for testing overidentifying restrictions. No significant difference in the estimates were found comparing 2SLS estimator using all instruments to 2SLS using a subset that just identifies the equation for governance.

The 2SLS estimator produces qualitatively the same results as one-stage within estimator, however the quantitatively they are different. In particular now the coefficients of corporate governance variables are much larger indicating that the 2SLS estimator corrected governance coefficients upward, which is again similar picture to what Black et al (2003) observed for Korean listed companies.

While overall governance index is significant when we divide it into two sub-indexes, firm's disclosure and treatment of shareholder rights, their coefficients appeared to be insignificant. This might be due to the lack of appropriate instruments. The results also confirm a significant and negative effect of the size of supervisory board on performance, indicating on possibility that companies in Ukraine have on average larger boards then it would optimally be in terms of performance.

Ownership variables continue being insignificant in our specifications and it might indicate on the necessity to use more detailed ownership data, in particular shares of state and foreign organizations.

The same as in one-stage within estimation the financial structure of enterprise have a strong effect on performance which is consistent with theoretical expectations. This confirms the importance of the debt in disciplining the managers in transition context. Importantly the fact that debt is an effective source of discipline in Ukraine may indicate on some efficiency of appropriate bankruptcy procedure, otherwise it would not work (Hart, 1995). We also might note that the effects of financial structure are weaker when we use 2SLS estimator in comparison to one-stage within estimator.

Finally, the Hausman specification test is used for testing for endogeneity. In particular, we compare the one-stage within and 2SLS estimators of the parameters β and d in (1) as a formal test for endogeneity. If corporate governance measure is uncorrelated with the error term, the one-stage within and 2SLS estimators should differ only by sampling error. The Hausman test for endogeneity failed to reject the null that the difference in coefficients is not systematic. Thus, the possible conclusion given that we trust our instruments might be that no serious

endogeneity is detected in corporate governance effects model when we properly specify corporate governance measures. This result is again consistent with Black et al (2003), who, after careful modelling of corporate governance elements, failed to detect endogeneity in the cross-section data for the dataset of Korean listed companies. They explain the absence of endogeneity by the proper specification of governance variables when no important corporate governance element is omitted. Black et al (2003) detect in their study that when they omit some element of corporate governance then indeed there appear an endogeneity. Similar picture we observe with our model, recall above discussion.

Conclusions and Policy Recommendations

In this paper we find strong empirical support for our main hypothesis that there is a positive and causal relationship between corporate governance quality and enterprise performance. Moreover we establish it for transitional economy, which confirms that corporate governance matters not only for developed and developing economies but also for transitional ones. This also provides a support to Stiglitz's (1999) argument that establishment and enforcement of proper corporate governance principles shall significantly enhance development of individual corporations and economies as a whole. From the point of view of corporations this results mean that they indeed would benefit in terms of performance from raising their standards of corporate governance. So that corporations and/or their owners have a good stimulus to voluntarily improve their governance standards.

In particular we find that all elements of corporate governance are significant in explaining performance. Both the aggregated index of governance and disaggregated sub-indexes of the level of transparency and treatment of shareholder rights are found to have positive significant causal effect on performance. The size of supervisory board is found to be negatively associated with performance in all specifications. Firm's financial structure, in particular presence of either short-term or/and long-term debt is found to significantly explain performance. Overall the results are consistent with theoretical expectations suggesting that the quality of corporate governance must have positive impact on performance. The results are also consistent and similar with the previous empirical evidence e.g. the paper by Black et al (2003) for Korean public companies.

We do not find the significant impact of ownership structure on performance given we control for the level of corporate governance for our sample in contrast to previous studies (e.g. Andreeva, 2003). This might potentially imply that ownership structure itself has no direct effect on performance at least in our current specification of ownership.

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Appendix 1. Explanations for Elements of Corporate Governance Index

Elements of corporate governance/ Indicators of corporate governance quality	Explanations
I. Financial stakeholder (in particular, shareholder) rights (including shareholder equality)	The major goal of corporate governance system is to ensure that corporation is working efficiently maximizing its value in the interests of its financial stakeholders, and, in particular, shareholders. For example, it is important how the company treats minority shareholders that may not be able to protect themselves from expropriation of their rights by managers or large shareholders without legal interference.
1. Shareholder registrar: independent or the own	As summarized in the OECD Principles on Corporate Governance, one of the most basic shareholder rights is the right to reliably verify one's shareholdings. Under the current framework, only companies with more than 500 or more shareholders are obliged to use the services of an independent share registrar. Companies with fewer shareholders are permitted to maintain the register themselves, following procedures set by the SCSSM. Experience in Russia in the early 1990s and Tajikistan in 2000 shows that where company management has the only official copy of the share register, any disagreements between company management and shareholders may result in the shareholders finding that their shareholdings are no longer correctly recorded on the share register. (Rutledge, 2002)
2. Regularity of general shareholder meetings	Some enterprises do not have regular shareholder meetings (at least, once a year). In the two prominent cases on problems with quorum—Ukrnafta and Daewoo/WellCOM—the 40 percent shareholders boycotted the meeting. In both cases, the minority shareholders were endeavoring to obtain proportional representation on the company's supervisory board and thus, be able to influence the decisions by company management. Thus, this indicator tells us about potential problems in company's corporate governance.
3. Shareholder meeting attendance record	
4. Extra shareholder meeting and its attendance	From the other side if some extra shareholder meetings (not mandatory by law) have a place during the year it might indicate on "extra" shareholder activism and that shareholders indeed take part in enterprise governance. Monks (@@@) consider shareholder activism as one of the most important factors that forces managers to make real changes at firm
5. Listing*	If the shares of the company are listed on the stock exchange, this improves its transferability. In particular, investors have an access to the information about prices and volumes of shares trade, and they can sell/buy their shares whenever they want. Since an estimated 85 percent of all trades of the shares of joint stock companies takes place outside of any organized (and licensed) stock exchange in Ukraine (Rutledge, 2002) this variable would indicate on the steps of a firm towards the improvement of corporate governance.
6. Presence of conflicts with financial stakeholders*	We believe that company's corporate governance system should be able to answer the questions of and/or solve the conflicts with its financial stakeholders. Thus, if there are any conflicts we assume that this is the failure of corporate governance system.
7. Presence of violations of legal shareholder rights*	This variable indicates on an evidence of direct violation of corporate governance laws in part of shareholder rights, for instance, non-disclosure of required information to shareholder, dilution of capital etc. This tells about expropriation of shareholder rights, and thus, it results in efficiency loss.
II. Transparency/Information Disclosure	Transparency means accountability of company's management to its financial stakeholders. It involves the timely disclosure of adequate information concerning company's operating and financial performance and its corporate governance

	practices. The higher standards of timely disclosure and transparency a corporation has the more it enables shareholders, creditors and directors to effectively monitor the actions of management and the operating and financial performance of the company. Strong transparency means that financial reporting facilitates a clear understanding of a company's true underlying financial condition (S&P, 2002).
1. Commitment to international accounting standards*	Since in Ukraine accounting standards are limited, a commitment to transparency may mean that the company adopts internationally recognized accounting principles in addition to local accounting standards (Rutledge, 2002).
2. Company's website	Company's website might be an effective way of delivering company reports, summary reports and/or other investor relevant information available in English and the local language. Currently, creation of a web-site is inexpensive, but still only a few companies have done it—perhaps those companies that care about the transparency, communication, etc more than others.
3. Timeliness of publication of annual financial statements	It was required by the Commission that companies published their annual financial statements within nine months after the end of each year. We consider that timely publication and/or early publication is a plus to corporate governance system.
4. Publication of information by an enterprise about its registrar in annual financial statements	These two indicators might seem unexpected to appear among corporate governance proxies, however yet in around 12% of observations we do not observe any information about the registrar and around 6% do not give any information about their auditor and auditor's conclusion about financial statements while these are the essentials of shareholder rights and soundness of reports .
5. Publication of information by an enterprise about its auditor in annual financial statements	
6. Publication of quarterly reports*	In addition, it is a plus for corporate governance system if a company prepares quarterly financial reports for public dissemination. They do provide an update on financial information prepared by company's management and therefore are valuable to investors.
5. Company's auditor	We will add points to the index of corporate governance if compny's auditor is one of the five top world auditors, since it would most probably indicate on true reliability of disclosed information by the firm.
7. Timeliness of filling financial and other statements with the Commission*	If the Commission agrees to provide this information, we will also include this variable, since it measures how company succeed in meeting minimum requirements for its disclosure
III. Supervisory Board Effectiveness	The role of the corporate board is to provide independent oversight of management performance and hold management accountable to shareholders and other relevant stakeholders. Separation of authority at the board level is important. Boards with high accountability often include a strong base of independent outside directors that look after the interests of all shareholders – both majority and minority holders. Conversely, companies with a strong, self-interested majority shareholder – or dominated by a few such shareholders – may have boards with limited accountability to all shareholders. This may be the case when the company's management is heavily represented on the corporate board. (S&P, 2002)
1. Board size	The available literature on the subject argues that there is an optimal number of directors in the board. If the number of directors is too small there could be a possibility for informal agreements between managers and directors, if the number of directors is too large it may result in the difficulties in making effective and timely decisions.
2. Proportion of unemployed	Independent or outside directors should ensure that the long-term interests of all

directors	shareholders are represented by including that the interests of other stakeholders are duly taken into account (S&P, 2002). We will try to construct this variable despite the difficulties of determining the true independence of directors.
3. CEO/Chairman	For a long time the separation of CEO and board chairman functions was a hot debate. Since when the same person is both the CEO and chairman it results in the lack of board independence to fulfill its guiding and controlling functions, and thus, it creates strong possibility for company's mismanagement.
 IV. Other mechanism that might improve corporate governance	
1. Presence of large shareholder	While many believe and it is empirically shown for transitional economy (e.g. Andreeva, 2003) that presence of large shareholder must improve quality of governance, large shareholder still has incentives to expropriate rights of other shareholders (Akimova et al, 2004; Hart, 1995)
2. Presence of short-term bank debt	These two indicators provide information on another important source of discipline on managers – presence of debt. If the company takes on debt, then this creates some constraints for inefficient management, at least if management wants to repay the debt (Hart, 1995).
3. Presence of long-term debt	
4. Presence of reported profit at the end of year	This indicator to appear among governance indicators might seem strange, however it is believed in the governance literature that all the governance is about that free cash flow – because <i>de jure</i> the profit is what remained to shareholders. It is argued that managers have strong incentives to use resources in such a way that no free cash flow remain. This is also supported by the data that in the period 2000-2002 on average only around 37% of firms in our sample report annual net profit.

*The data on these indicators are not available at the moment.

Appendix 2. One stage within estimator

Variables	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
lncapital	0.1075	***	0.1099	***	0.1099	***	0.1085	***	0.1084	***	0.1092	***
lnlabor	0.5670	***	0.5724	***	0.5724	***	0.5664	***	0.5663	***	0.5705	***
cgi	0.0575	***										
overallcgi			0.0451	***			0.0432	**				
transp					0.0253	*			0.0198			
rights					0.0207	*			0.0228	**		
cgi_w											0.4644	***
sbsize	0.0167	**	0.0184	**	0.0183	**	0.0167	**	0.0167	**	0.0174	**
org	0.0015		0.0013		0.0013		0.0012		0.0012		0.0015	
ind	0.0012		0.0012		0.0012		0.0011		0.0011		0.0013	
man	0.0020		0.0019		0.0019		0.0019		0.0018		0.0020	
org_sq	0.0000		0.0000	*	0.0000	*	0.0000		0.0000		0.0000	*
ind_sq	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
man_sq	0.0000	*	0.0000	*	0.0000	*	0.0000	*	0.0000	*	0.0000	*
year2001	0.0997	***	0.1290	***	0.1284	***	0.0973	***	0.0977	***	0.1067	***
year2002	0.1743	***	0.2018	***	0.2010	***	0.1845	***	0.1850	***	0.1806	***
large							0.0439		0.0440			
bankdebt							0.0778	***	0.0778	***		
longdebt							0.0628	***	0.0629	***		
profit							0.1968	***	0.1969	***		
_cons	9.3385	***	9.4844	***	9.4799	***	9.4344	***	9.4373	***	9.2916	***
R-sq:												
within	0.1631		0.1556		0.1556		0.1726		0.1726		0.1595	
between	0.5982		0.5886		0.5888		0.6158		0.6156		0.5928	
overall	0.5930		0.5831		0.5833		0.6095		0.6094		0.5873	
Number of obs							14871					

Notes: (i) The regressand is the logarithm of firm's Net Total Revenue;

(ii) *, **, *** - significance from zero at 10%, 5% and 1% levels respectively.

