Research Proposal

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Effects of corruption on the public procurement efficiency in Ukraine

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Objectives

In Ukraine, where government spending accounts for 48.5% of GDP\(^1\), efficiency in public procurement becomes an extremely important issue. There may be numerous reasons responsible for inefficiencies in public procurement, and in this research we want to investigate the effects that corruption and transparency could have in this regard.

According to the 2012 Corruption Perception Index\(^2\), Ukraine was ranked as 144 out of 176 countries and territories with the score 26 out of 100 possible. This indicates the importance of this issue for Ukraine and corruption prevalence in public and private sectors of economics. Considering the unusually high share of government spending in Ukrainian GDP, it can be expected that the largest flows of bribe payments are related to public procurement. Numerous journalist investigations support this assumption. For example, huge scandal related to purchasing of oil derrick for over 400M USD in 2011 became widely known even outside of Ukraine. In this case, unknown company registered in Great Britain and owned by 2 offshore companies earned around 150M USD by selling one oil derrick to the Ukrainian state owned enterprise. Journalist investigations proved that the winner-company and its only rival during the tender were connected by their ultimate owner – 71-year old tramp from Latvia, who lost his passport long time ago and is apparently, only fictive owner\(^3\).

Absence of any official investigation of this case confirms the prevalence of corruption among the highest authority institutions. Moreover, according to the latest investigations of the Transparency International in Ukraine\(^4\), the State Anticorruption Program, which has been approved by the Cabinet of Ministers, “costs the price of the paper it has been printed on”. The program in fact is not adequately being financed and implemented. First of all, most of the activities financed by the

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\(^1\) 2013 Index of Economic Freedom [http://www.heritage.org/index/country/ukraine](http://www.heritage.org/index/country/ukraine)


Program do not concern fighting corruption, and at the local level, there was no money at all provided for fighting corruption. In addition, citizens know nothing about the plans of the authorities in the Program modifications: amendments prepared by the Ministry of Justice are not available for public and the proposals of the civil society experts are not taken into account.

Here we come to the issue of transparency, which is usually perceived as opposite to corruption. In 2010 Ukraine adopted the Law on Public Procurement, which was recognized by the EU experts as a major step forward to the transparency in government spending. However, the Ukrainian Parliament later made numerous changes to this Law that rendered it non-transparent. The number of procurement contracts awarded without open tenders has gone up. Still, it is required by the Law to make information on all tenders over specific amount available on the public procurement web-portal. Our preliminary analysis of this web-portal revealed its numerous deficiencies with regards to usability and availability of information. Search options are available only within specific bulletins and there might be up to 5 bulletins every day. Moreover, information on every single tender is dispersed over different sections of the web-portal, i.e., it is necessary to conduct one search to find the announcement on the tender and the related documentation, and then conduct different search in another section of the web-site to find the announcement on the winner of the tender. The Law on Public Procurement assumes that information on tenders can also be published on the web-sites of the local state administrations. However, information on these web-sites is very limited and not structured.

Lack of transparency with regards to government spending is also apparent from the activity of the Budget Committee of the Ukrainian parliament. First of all, media is very often not admitted to the meetings of the Committee, and stenography of these meetings is not made public. Furthermore, detailed information on government spending resulted from the decisions of the Budget Committee is not available for the citizens, even though the amounts decided on during these meetings may reach billions of dollars.

All these issues suggest that there is an urgent need to investigate the impact of corruption on the efficiency of public procurement in Ukraine and provide guidelines for mitigating the factors
detrimental to the efficient spending of budget funds. Hence, this research will be directed at defining the magnitude and significance of the impact that corruption may have on the efficiency of government spending; studying the instruments that the corrupt officials may use to overcome regulations on public procurement; analyzing the impact that political factors may have in these regards, and finally, providing guidelines on the actions required to reduce corruption and increase efficiency of public procurement.

We want to conduct our investigation based on the real data from the tenders related to purchasing of tractors and combines in different regions of Ukraine. We selected this kind of purchases because (a) information on such tenders is available on the official web-portal since the price of these products mostly exceeds the limit set by the Law (100K UAH); (b) qualification requirements for this type of products usually specify the exact model of the tractor/combine (or equivalent) allowing for determination of the market price; (c) the model requested is very often the same in different tenders allowing for cross-regional analysis.

**Practical contribution of research**

Findings of the project may have significant practical implications for the related policy. First of all, in this research we want to determine the impact that different instruments used by procurement officials have on efficiency of public procurement, and hereby, define, which changes to the regulations are required to minimize respective practices. Secondly, we want to study if political factors may have an impact on the efficiency of government spending, and determine if control of the political opponents represented in local authority bodies suppresses corruption activities related to public procurement.

**Hypotheses**

According to OECD report (2007), identification of needs and the design of tender are known to be vulnerable to corruption as there are many opportunities for manipulation. The briber and the bribee may for instance decide to: (a) limit the time frame for the tendering process, (b) use specifications that preclude competitive bidding, (c) select additional fictitious bidders or ones unlikely to submit
competitive bids, (d) plan a very low bid price and include "hidden" possibilities to expand the contract at a later stage to recover the economies for the vendor, etc. Furthermore, OECD (2007) in its report specifies that the participation criteria may be excessively selective, specifying features that are provided by only a few businesses, and may or may not be relevant to the project. In addition, unclear or ambiguous clauses may be included and insufficient explanations given as to the tendering arrangements. Further, it is mentioned in the OECD (2007) report that inadequate weighting of the various criteria are further ways to influence the awarding process.

Our preliminary review indicates that procurement officials in Ukraine are likely to use such practices by putting not well-grounded requirements to the offers; assigning low weight to the price (down to 50%); rejecting the offers of the well-known companies with significant experience of participating in tenders and good price offers because of some minor mistakes in the tender documentation, etc.

Burguet and Che (2004) derived the optimal scoring rule, which deemphasizes quality relative to price, and unexpectedly, does not fully handicap, but in some cases even favor the efficient firm. Considering, in addition, that quality characteristics of all the offers are usually very similar since specific model of tractor/combine (or equivalent) is requested, we suggest that the price of the offers should be mainly considered, and hence, we hypothesize that:

\[ H1a: \text{The more criteria used in the evaluation, the less efficient the purchase}. \]

\[ H1b: \text{The greater the weight assigned to price, the more efficient the purchase}. \]

Next, higher number of bids submitted for the tender indicates presence of competition and is likely to result in more efficient purchases. At the same time, high number of rejected bids may indicate favoritism towards specific bidder, who is not the most efficient. Hence, we hypothesize that:

\[ H2: \text{The higher the number of bids submitted, the more efficient the purchase}. \]

\[ H3: \text{The higher the share of rejected bids, the less efficient the purchase}. \]

Moreover, it can be expected that official dealers of the respective machines are likely to provide more attractive offers. Thus, we predict that:

\[ H4: \text{The purchase is more efficient if the winner is the official dealer of the respective product}. \]
In this research we also want to account for political factors that may have an impact on the efficiency of public procurement. Thus, it can be expected that when there is no control from the political opponents in the region, procurement actions are more likely to be subject to corruptive behavior. As a proxy for the presence of political diversity in the region we suggest the share of the pro-government faction in the regional parliament (“oblasna rada”). So, we hypothesize that:

\textit{H5: The higher the share of the pro-government faction in the regional parliament, the less efficient the public procurement of the respective region.}

And finally, we want to apply estimation method more commonly used in social psychology studies, namely mediation analysis. Considering that all potential factors of inefficiency mentioned above are ultimately associated with the corruption activities, we predict that:

\textit{H6: Level of corruption perceptions mediates the effects that characteristics of procurement and political factor have on efficiency of public procurement.}

\textbf{Literature review}

According to Transparency International, the losses associated with public procurement bribery are estimated to exceed $400 billion per year worldwide (Basheka, 2011). Public procurement is a function of government, which is the most prone to corruption, especially in developing countries, where there is insufficient transparency and competition. In the research of Basheka (2011) it is mentioned that due to negative consequences of corruption, its determinants are explored by political scientists, sociologists, economists, psychologists and others. In our research, we are going to investigate mainly the economic determinants, but also partially the political determinants of corruption in public procurement.

Burguet and Che (2004) demonstrated the detrimental role of corruption through studying the competitive procurement administered by a corrupt agent who is willing to manipulate his evaluation of contract proposals in exchange for bribes. The authors argue that the inefficiency cost of bribery is in the same order of magnitude as the agent’s manipulation capacity. With complete information and no corruption, the efficient firm will win the contract. If the agent has little manipulation power, corruption does not disrupt allocation efficiency but simply makes the efficient
firm compete aggressively. On the contrary, if the agent has substantial manipulation power, bribery makes it costly for the efficient firm to secure the win, and inefficient firm is likely to win the contract.

Similarly, Arozamena and Weinschelbaum (2009) show that the existence of corruption makes an honest bidder behave more aggressively. In their research, the authors provided theoretical model for the effects of corruption on the behavior of honest bidders in sealed-bid auctions that are mainly used during public procurement tenders in Ukraine. In particular, they studied the case when the auctioneer has reached an agreement with one of the bidders by which the latter will be shown all of the competitor’s bids and will be allowed to resubmit his bid accordingly. The findings demonstrate that the first-price auction becomes inefficient with corruption. Arozamena and Weinschelbaum (2009) have also established that corruption hurts honest bidders, whereas the members of the coalition (the auctioneer and the favored bidder) always have a positive expected surplus to be divided between them.

The effect of corruption on competition in procurement was also investigated by Compte, Lambert-Mogiliansky, and Verdier (2005). In their analysis, they contrasted the impact of controls on bureaucrats versus controls on firms. Thus, it was demonstrated that controls on firms work when they prevent a rather efficient firm from competing on bribes; then this firm will compete on price, thus forcing the others to compete on prices too. Tighter controls on bureaucrats, in contrast, do not seem to be very effective. Finally, Compte et al. (2005) conclude that promoting and even subsidizing the entry of an outsider who lacks connections to the local corruption network can be quite efficient in securing competition in procurement contracts.

Bandiera, Prat, and Valetti (2009) in their research on active and passive waste in government spending have analyzed purchases of several standardized goods by over 200 Italian public bodies. It was demonstrated that different public bodies pay widely different prices for observationally equivalent goods, with centralized bodies paying on average at least 20% more than semi-autonomous bodies. Still, it was shown that price differences are mostly due to passive waste resulting from pure inefficiency rather than active waste, as in case of bribery.
However, findings of Bandiera et al. (2009), which are based on the evidence from Italy, may not hold for developing countries. So, next we studied the research of Balsevich, Pivovarova, and Podkolizna (2011), devoted to the analysis of public procurement efficiency in Russia. The authors conducted their analysis based on such product as gasoline and used the difference between the price of the public contract and the retail price as an indicator of system efficiency. In their research, Balsevich et al. (2011) considered market characteristics (level of competition), characteristics of procurement (the volume and duration of the contract, type of the procurement procedure) and such institutional factor as the level of information transparency in the system. The results supported the hypotheses of the researchers that open bid auctions provide more incentives to collude and thus generate higher prices; participation of a strong market leader with a high share of public procurement market is associated with higher prices; long-term contracts have higher prices than the short-term contracts; and higher level of competition generates lower prices. At the same time, they received unexpected results with regards to transparency effects. In particular, empirical results indicated that the more transparent system is associated with lower participation in the public procurement procedures and higher prices in public sector for gasoline. In the attempt to explain this issue, the authors suggest that the high level of information transparency combined with high corruption or high level of market concentration creates incentives to withhold from participation in the public procurement procedures, and hence, increases the probability of the “single bidder” procedures, hereby affecting prices solely through altering the number of bidders taking part in the competition (Balsevich et al, 2011).

Methodology

Data: sources and structure

The data will be mainly taken from the official public procurement web-portal (https://tender.me.gov.ua). We are going to search for all tenders related to purchasing of tractors/combines published on the web-portal during the specific period. Preliminarily, we are going to collect data on 400 tenders (observations). To optimize collection of the data we want to
use the Unified Register of the managers and receivers of the budget funds and statistical forms on
the results of public procurement tenders that will be ordered from the regional statistical
administrations.

**Dependent variable.** To estimate the efficiency of public procurement we suggest using such
variable as contract price per tractor/combine divided by market price. Contract prices will be
extracted from the official public procurement web-portal. Market prices will be derived from the
pricelists of the official dealers of respective machines.

**Independent variables.** First, we are going to study tender documentation for each of the tenders in
order to determine number of criteria used in the evaluation and the weight assigned to price when
evaluating the bids. Then, for each tender we will collect information on the total number of bids
submitted and the share of rejected bids. Next, we will search for the announcements on the results
of respective tenders to get information on the winners. The winners will be, then, reconciled with
the list of official dealers in Ukraine published on the web-sites of the machinery producers.

To account for political factors, we will collect information on the share of the pro-government
faction in the regional parliament (“oblasna rada”) from the official web-sites of these institutions.

**Mediator.** Information on the corruption perceptions index across the regions will be taken from the
report on the state of corruption in Ukraine in 2011 provided by the European Research Association
in cooperation with Kyiv International Institute of Sociology.

**Estimation**

We are going to test our hypotheses in four steps:

**Step 1.** Testing the direct effect that characteristics of procurement and political factor have on the
efficiency of public procurement:

\[
\frac{\text{Contract price}}{\text{Market price}} = \alpha + \beta_1 \text{Number of criteria} + \beta_2 \text{Weight of price} + \beta_3 \text{Number of bidders} + \beta_4 \text{Share of rejected bids} + \beta_5 \text{Dealer} + \epsilon
\]

**Step 2.** Testing the effect that characteristics of procurement and political factor have on the level of
corruption perceptions:
Step 3. Testing the effect that the level of corruption perceptions has on efficiency of public procurement:

\[
\text{Contract price} / \text{Market price} = \alpha + \beta_1 \text{Corruption perceptions} + \epsilon
\]

Step 4. Testing the mediation effect of corruption perceptions using the following regression:

\[
\frac{\text{Contract price}}{\text{Market price}} = \alpha + \beta_1 \text{Number of criteria} + \beta_2 \text{Weight of price} \\
+ \beta_3 \text{Number of bidders} + \beta_4 \text{Share of rejected bids} + \beta_5 \text{Dealer} \\
+ \beta_6 \text{Government faction} + \beta_7 \text{Corruption perceptions} + \epsilon
\]

Finally, we will calculate the indirect effect and test it for significance (Preacher and Hayes, 2004).

Expected research outputs

We expect that number of bidders, weight assigned to price when evaluating the bids and selecting the official dealer as the winner of the tender will be positively associated with the efficiency in procurement. Whereas, higher corruption levels, more criteria used when evaluating the bids, higher share of rejected bids, and higher share of pro-government faction in the regional parliament are likely to lower efficiency in public procurement. Furthermore, we predict that level of corruption perceptions mediates the effects that characteristics of procurement and political factor have on efficiency of public procurement.

Bibliography


Participants

- **Kateryna Siedina** (head of the project) is a graduate from the Master of Science Program in *Business and Economics* at BI Norwegian School of Management (Oslo, Norway). Kateryna has a research experience from Kyiv Economics Institute (KEI), where she was working as junior researcher. She will be responsible for literature review, building the hypotheses and estimation model, data analysis and the manuscript writing.

- **Vadym Bizyayev** is an analytic at Kyiv Economics Institute (KEI) since 2007. He was responsible for collecting the data on the projects related to local investments and national...
competitiveness, evaluation of the modernization of social assistance system in Ukraine, mother and infant health, climate change impact assessment for international food market, and others. During current research, Vadym will be responsible for collecting data on the tenders and market prices. In addition, he will provide assistance on other research activities.

**Alternative/additional sources of funding:**

- For Kateryna Siedina an alternative source of funding is the wage received in Ukrsibbank, but her work in the bank is not related to the present research.

- For Vadym Bizyayev an alternative source of funding is the wage received in Kyiv Economics Institute, but his current projects in KEI are not related to corruption and public procurement.

**Project timetable**

<table>
<thead>
<tr>
<th>#</th>
<th>Activity</th>
<th>Time allocated</th>
<th>Starting</th>
<th>Ending</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Extended analysis of the related academic literature. Finalizing the econometric model.</td>
<td>2</td>
<td>June, 2013</td>
<td>Aug, 2013</td>
</tr>
<tr>
<td>2</td>
<td>Collecting the information from the official web-portal and local state administrations websites on the conducted tenders. Creating electronic data set based on the collected information.</td>
<td>3</td>
<td>June, 2013</td>
<td>Sep, 2013</td>
</tr>
<tr>
<td>4</td>
<td>Preparing the interim report.</td>
<td>1</td>
<td>Nov, 2013</td>
<td>Dec, 2013</td>
</tr>
<tr>
<td>5</td>
<td>Extending the sample (if appropriate), conducting data analysis and preparing the draft of the research paper.</td>
<td>5</td>
<td>Jan, 2014</td>
<td>May, 2014</td>
</tr>
<tr>
<td>6</td>
<td>Preparing the final report.</td>
<td>2</td>
<td>June, 2014</td>
<td>July, 2014</td>
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