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# ICT support of Open Budget as a tool to fight corruption

Cases of EAEU countries

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## ABSTRACT

The paper analyzes anti-corruption effects of Open Budget policies and practice by five Eurasian Economic Union countries (Armenia, Belarus, Kazakhstan, Kyrgyzstan, and Russia). We engage the data of international organizations, which analyze current situation in these countries. We assess the impact of open finance data (according to Open Data Inventory, ODIN, produced by Open Data Watch) on corruption for five EAEU countries covering the period between 2013 and 2020 with use of unbalanced panel data analysis.

## KEY CONCEPTS

• Computing / technology policy • Government technology policy • Governmental regulations

## KEYWORDS

Open budget, Open government, Corruption, Anti-corruption efforts, EAEU, Post-Soviet countries

## 1 Introduction

OECD establishes the *Open Budget* transparency criteria the most complete definition: "Fiscal transparency means openness to the public in regard to the structure and functions of government, objectives of fiscal policy, public sector accounts and forecasts. It provides help access to reliable comprehensive, timely understandable and comparable across countries information about government activities in order that voters and financial markets can accurately assess the financial position of the government and the tax costs and benefits associated with the activities of government including its current and future economic and social consequences" (1). OECD Best Practices for Budget Transparency defines budget transparency as "full, timely and systematic disclosure of fiscal information" (2).

Policy 1993, countries of the Eurasian Economic Union (EAEU), namely, Armenia, Belarus, Kazakhstan, Kyrgyzstan and Russia, were a part of the Soviet Union budget system. The collapse of the Soviet Union and the subsequent appearance of independent states allowed the transition to conduct independent

fiscal policies. All the countries implemented a number of reforms, as a result of which fiscal policy organizations were modified, new fiscal institutions were established and new legal bases were created.

In Eurasian context, the development of open government has been associated with e-government services that aimed at providing large volumes of information and data in electronic form and via electronic channels as part of the public information disclosure and openness policies. It was assumed that more open public administrations would lead to the increased interactions between authorities and citizens, on one side, and between political actors, on other side.

According to the Open Budget Index, drawn up by the International Budget Partnership, citizen's participation in budgeting is one of the main components of Open Budget. At the same time, an open budget is the first step towards participatory budgeting, similar to how e-information disclosure is the initial step of a Participatory, in accordance with the UN e-government survey.

We consider "electronic participation" a set of methods and tools that provide electronic interaction between citizens and government in order to take into account the opinions of citizens in national and municipal administrations when making political and managerial decisions. The methods are of the opinion that it is necessary to use an expensive interpretation, since actually it is difficult and impossible to separate a "pure" policy from its manifestations that directly concern the life of citizens. Thus, we expand the scope of civic participation including practice of Open Budget.

The rapid expansion of open data technologies has opened up new opportunities for Open Government advocates and initiatives existing in various cases and practices of such countries. In many cases such technologies have been driving Open Government initiatives and to be converged with the latter. However, the question remains unanswered - whether open data change public institutions and practices? Answering this and other related questions would require taking a closer look at open budget.

The measurement and evaluation of socio-economic and political effects of open data, including the impact on government transparency and corruption level, with various

4 Research approach and findings

We assess the impact of open finance data (according to Open data inventory, ODIN, produced by Open Data Watch) on corruption for five EAEU countries covering the period between 2015 and 2020 with use of unbalanced panel data analysis. Data accessibility was crucial for the choice of sample and period. The regression model shown below is designed according to the literature:

$$CP_{it} = \beta_0 + \beta_1 O_{it} + \beta_2 ODIN_{it} + \epsilon_{it} \quad (1)$$

where CP is Corruption Perceptions Index, O<sub>it</sub> - regulatory quality, ODIN - Open data inventory Category "Government Finance". The data are obtained from Transparency International, World Bank, and Open Data Watch. The software used for the econometric analysis was "Stata 12". In the model, the RQ is taken as control variable, and ODIN as an explanatory variable. For the RQ indicator, values between (-2.5) and (+2.5) were used.

The variables were tested with ADF PP and ADF DF unit root tests in order to check whether they are stationary or not. The auto-correlation presence is tested with ALM test. Breusch and Pagan Lagrange Multiplier test is used to check whether random effects model or pooled model is suitable (see Table 3).

10	Var (σ) = 9	Random Effects, two sided	-10.16 prob. >chi2(1)	-0.006
		LM (χ²(9)=4)		
Chi2(1) = 101.16	ALM Var (σ) = 0	Random Effects, one sided	232.06 prob. >chi2(1)	-0.006
(Prob. > chi2 = 0.0000)		LM (Var)=0		
		ALM Var (σ) = 0	-0.84 prob. >NO(1)	-0.006
		Random Effects, two sided	-1.01 prob. >NO(1)	-0.006

Table 3: Breusch-Pagan Lagrange Multiplier Test

Then Hausman Specification Test was applied to test null hypothesis suggesting that random effect is suitable (see Table 4).

Variables	Fixed Effects	Random Effects	Difference
RQ	-0.5072416	-1.698474096	1.19233944
ODIN	-0.52389576	-0.928282394	0.40283635
Ho: Differences in coefficients not systematic; (RE estimator is consistent)			
Chi2(4) = (b-B)'(V <sup>-1</sup> (b-B)) = 10.35			
Prob. >chi2 = 0.0343			

Table 4: Hausman Specification Test

We can see that random effects estimator is not efficient in the model. The heteroscedasticity in the model is tested with Levene and Brown-Forsythe Tests. The auto-correlation presence is tested with Durbin-Watson Test. Lagrange

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The international community more recently. It is necessary to monitor the states formed on the basis of the Soviet empire, relying on the data provided by Transparency International, all states can be divided into three groups: the first one is formed by the countries where corruption in economy and social life is low, the second one is characterized by the activity aimed at reducing corruption with fluctuating outcome, the third one is characterized by the corruption existing in freedom.

Open Data Index Gov. Budget, 2013	ODIN 2020, Rank Score
http://global.cempra.rokhal.org	

Russia	74 out of 100 points, category "countries that provide important budget information"	10%	58 of 187.59
Kazakhstan	48 out of 100 points, category "countries that provide only some of the budget information"	70%	53 of 187.62
Belarus	6-20, category "countries that do not provide enough budget information"		67 of 187.57
Armenia	No information		89 of 187.57
KYRGYZSTAN	Index raised from 8 points in 2008 to 55 points in 2017. Reconsideration to increase budget transparency	70%	45 of 187.48

The countries of the first group (score equal to or between 50 and 79) are Estonia, Lithuania, Latvia, and, to a great extent, Georgia. The second group (score equal to or between 29 and 49) consists of Armenia (ranking 60th of 179), Belarus (63th), Kazakhstan, Moldova, Ukraine, Kyrgyzstan, Azerbaijan, and Russia (ranked 140th), Tajikistan (ranked 149th) and Turkmenistan (ranked 165th) are in the third group (score less than 29) [12,13].

The assessment of EAEU countries policies and practice by international organizations is accompanied by a generalization and structured data presented in Table 2.

Table 2: Assessment of Open budget practices in EAEU countries by international organizations

6. The role

of Open Budget [29], institutional and legal aspects [30], publications focus on the study of Russian experience [31], national level [36], others have focused on studies, the experience of Russian regions and municipalities [28,29], others compared the Russian experience with a long list [16]. Lindgren and colleagues find a correlation between level of democracy and open government policies in some of the countries. In Russia and Belarus, the policy of the disclosure is aimed at legitimizing the regime with a country, while in Central Asia it is aimed at legitimizing international arena in the eyes of the world community [6].

Table 1 demonstrates some findings in literature on the Budget effects.

Effect	Literature on Open Budget
Budget saving	Williams (2014) [40]
Increase in social expenditures	Khagram, De Renzo, Yang [21]
Identification of ineffective state programs and institutions	Andreola, Chung, Challen [20]
Improving fiscal effectiveness	Grimmelikhuisen, Mejer [21]
Increase / decrease in trust	Grimmelikhuisen, Mejer [21]
Government growth / decline in level of democracy	Ruijs, Grimmelikhuisen, Mejer [21]
Increase / decrease in level of crime	Boilgou et al. (2016) [7]
Increase / decrease in corruption	Basitka, Benito (2007) [3], Wieg (2009) [22], Sedmakovic (2012) [31], Cimponiu (2012) [8]
Detection of public funds misuse	Rajshree, Srivastava (2012) [16]
Increase / decrease in financial	Boilgou et al. (2016) [7]
Country Credit Rating	Khagram, De Renzo, Yang [21]
Investment Growth / Decrease	Khagram, De Renzo, Yang [21]
Inflation rate, stock quotes, GDP/C conceptual framework	Boilgou et al. (2016) [7]
exchange rates	[26]

Table 1: Studies of Open Budget effects

To sum up, almost all the studies confirm a positive effect of open (budget) data on the struggle against corruption. In other words, these factors help to reduce corruption. However, it is worth mentioning authors [22] who note that greater access to information raise the cost of corrupt and rent-seeking behavior, beyond costs of discovery may outweigh the benefits of a cost for the government official.

3 EAEU countries positions in international rankings

Struggle against corruption for many years has been the core task of governments, including those who have not

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detectable. In this study we use the term "corruption" in the narrow sense meaning "corrupt practice", i.e. "acts of bribery". "Bribe" is considered as "money etc. offered in favor or against (often illegal or dishonest) action or abstention from action" [32]. Being broadly defined for instance as "the abuse of public office for private gain" [33] this term, in our opinion, not only becomes misleading, but overbroadens the very fact that there are two parties participating (and often interacting) in corruption.

The hypothesis of the study is the following: open budget implementation within the existing government bodies can decrease corruption. The hypothesis is tested using secondary data analysis. Empirical foundation of the research is formed by publicly available indices of international organizations.

2 Literature Review

A number of researchers studying the role of new ICT in tackling corruption analyze the experience of countries with different level of income and democracy. Among them we should mention works of Graveland [18], Bertel, Jager & Gimes [5], Tsoukas & Chantapong [38], Davis & Pungwa [14], Ben Ali & Sassi [9], Kassar & Dytis [23] and many others, as well as reports of international organizations such as Organisation for Economic Co-operation and Development (OECD) [28] and Asian Development Bank [7]. Moreover, the problem was discussed on the platform of international academic conferences [9].

However, we tend to agree with Bhattacharjee and Shrivastava stating that "while prior studies have demonstrated that ICT is an important tool in reducing corruption... they provide little explanation as to how ICT influences corruption and when does it work best" [8]. It is difficult on the other hand, to accept their idea ICT use reduces corruption by increasing the certainty and severity of punishment for corruption [6].

The open data effects on corruption are studied by Machors [25], Haskins, Durashvili & Jancovic [19], and other authors. Several international organizations attempt to measure open data effects on corruption, such as Open Budget Index (OBI) by International Budget Partnership (IBP), Global Open Data Index (GODI) by Open Knowledge Foundation, Open Data Barometer Index (ODBI) by World Wide Web Foundation, GOData (Open, Open, Openable Government Data) Index by OECD and European Public Sector Innovation Scoreboard.

Literature on open budget effects on corruption can be divided into several groups: studies of political and legal framework of budget transparency and openness [11]; studies of the strengths and weaknesses of the Open Budget evaluation tools [14]; studies of Open Budget tools application (for instance, in public health care) [11]; case studies of countries' experience of municipal, regional and national level, as well as comparative studies [8].

As for the national case studies of Open Budget in EAEU countries, it is worth noting the studies of the technical aspects

5 Conclusion

We analyzed the effect of open budget (according to the data inventory, ODIN, produced by Open Data Watch) in corruption for five EAEU countries covering the years between 2015 and 2020. Our hypothesis about positive effect of open budget on corruption in EAEU countries was confirmed. We found out that regulatory quality and open budget effect on decreasing the corruption level.

Disclosure of budget data on the national level may have the following opportunities to struggle against corruption. First of all, citizens and investors can analyze open budget data, and this is followed by campaigns against corruption. Secondly, an open budget helps to see which budget programs are not being fulfilled. We can conclude that the EAEU countries significantly differ in anti-corruption and open budget policies and practices, as well as in rankings of international organizations.

At the same time, the similar problems in the EAEU countries should be noted:

- With the launch of open budget projects, the involvement of citizens and experts in the process of formulating goals is not clarified of the authorities and from citizens.
- It is necessary to provide additional initiatives in the field of support for civil and export initiatives in the field of budget transparency and reporting; implement projects in the field of secondary processing of budget information.

According to Gaidar Institute of Economic Policy, in draft Russian federal budget, the government classified about 25% of expenses (compared to 8% in the United States, which the share of security costs is much higher than in Russia). Similar problems are typical for Belarus and Kazakhstan. In addition, experts of Gaidar Institute of Economic Policy see an increase in security costs. In their opinion, only citizens and special knowledge can deal with the open budget (of Russia).

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