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TAXING AWAY CORRUPTION: EMPIRICAL EVIDENCE ON THE RELATIONSHIP BETWEEN CORRUPTION AND SPECIFIC ELEMENTS OF THE TAX SYSTEM

səh. 179-196

Abstract

Using panel data collected from 28 ECA countries for the years 2006-2012, we attempt to quantify corruption's relationship with the tax system. Not only do we establish that corruption levels (*as measured by Transparency International's CPI rating*) are inversely related to tax system improvements, we also identify two specific elements within the tax system that significantly impact corruption ratings: the presence of an electronic tax filing system and profit tax rates. After conducting OLS regressions, we find that the adoption of an electronic filing system has a coefficient of 0.423 that is significant at the 1% level; the positive sign of this coefficient indicates that an increase in the CPI rating results in a decrease in corruption. This relationship is clearly substantively significant, since the CPI score only ranges from 0 to 10. We also find that profit tax levels have a second degree polynomial relationship with corruption. This relationship is significant at the 5% level. Up to 11.07% profit tax rates are positively associated with the CPI, signifying a decrease in corruption. Increases in the profit tax rate above 11.07%, however, result in a decreased CPI score. Therefore, we suggest that countries seeking to curb corruption make every effort to encourage the adoption of electronic tax filing and keep profit tax levels at approximately 11%.

Keywords: *taxation, corruption, e-declaration, corporation tax*

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1. Introduction

Tax reform is an essential part of country development. The World Bank continuously reiterates this message; most recently the subject of tax reform arose during the spring 2013 Fiscal Policy, Equity and Long-Term Growth in Developing Countries Conference. In his opening remarks, President Jim Yong Kim stressed the importance of a progressive tax system in bringing developing countries out of poverty:

If we want fiscal policy to help reduce poverty, we need tools to better understand the impact of programs on different segments of society. We should ask ourselves several basic but important questions: How progressive is a government's current tax and transfer system? Who benefits the most from public services? What are the most effective ways for tax and expenditure policies to help reduce poverty and inequality? And how can governments implement these policies in ways that promote sustained growth?[2]

Clearly, a modern tax structure is integral to country growth; however, we hypothesize that management of specific elements of the tax system can also affect corruption levels within a country.

The modernization of the tax structure provides various channels through which to manipulate corruption levels. Certain elements of a modern system, such as the implementation of electronic filing, can provide additional over sight and hinder the ability of crony politicians to divert tax revenue. These corruption "checks" encourage citizens to place greater trust in the state. In turn, when citizens see a benefit to involvement in legal transactions, they monitor themselves and have what Schneider et al. (*2009*) described as increased "taxmorale"-defined as "the intrinsic motivation to pay taxes" (*p. 232*). Earlier research by Fugazza*et al*. (*2001*) also mentioned this self-monitoring, although Fugazza*et al*. referred to it as a cost mechanism used by individuals. For anti-corruption purposes, this increased tax morale is important as it is self-perpetuating. Once citizens perceive the system to be trustworthy, they will engage in less corrupt activities. Therefore, if countries want to promote honest behavior among their citizens, they must first engage in visible reform-e.g. by adopting electronic tax filing.

The purpose of this research is to clearly establish the relationship between tax systems and corruption, and then identify which specific elements of a modern tax system have the most significant inverse effect on corruption levels. In particular, this research looks at profit and labor tax rates, and the presence of electronic tax filing. Using OLS regression, this research finds that the relationship between improved tax systems and corruption is a significant one. An inverse relationship bet-

[2] Jim Yong Kim, "Opening Remarks by World Bank Group President Jim Yong Kim at Fiscal Policy, Equity and Long-Term Growth in Developing Countries Conference" (World Bank/IMF Spring Meetings 2013, Washington, DC, United States, April 21, 2013).

ween corruption and the modern tax structure exists. We also find that profit tax rates can be manipulated to a point of equilibrium with corruption levels. Finally, as expected, the presence of electronic filing is inversely related to corruption.

In the *Main Part* section under *Theoretical Propositions*, we conduct an analysis of past research in order to provide background information on our particular variables. Within *Working Hypothesis and Methodology*, we discuss our specific hypothesis for each variable and our variable operationalization. Our regression models and results are presented in *Modeling and Regression Results*. Our policy prescriptions and the conclusion of our findings are found within the section Conclusion and Recommendations.

2. Theoretical propositions

1. Improving the tax system will significantly decrease internal corruption.

Logically, improving institutional quality-in this case the tax system-should cause a significant decrease in a particular country's level of corruption. Several scholars, while focusing on generalized institutional quality, have provided evidence to support this proposition. Dreher*et al*. (*2005*) states that institutional quality is a valid explanation for the existence (*or nonexistence*) of corruption and shadow, e.g. underground, economies. Additionally, Dreheret al. (*2005*) finds that an increase in institutional quality reduces both the shadow economies and corruption; the total effect of institutional quality on corruption is negative and significant.

In a slightly different approach, Marco Fugazza and Jean-Francois Jacques (*2001*) conclude that increasing an individual's incentives to participate in the formal sector can reduce informal activity; just as increasing an individual's cost of participating in the irregular sector can deter such behavior. Therefore, if governments or institutions can create disincentives for corruption, they will decrease its existence within state systems.

Lastly, Schneider and Torgler (*2008*) argue that institutional weaknesses and corruption are major obstacles to market reforms and that an investigation into the influēntial variables that comprise institutional quality is imperative. If taxpayers believe their interests are properly represented and consider institutions to be efficient, their willingness to stay in the official sector and comply with tax obligations increases. Schneider and Torgler's (*2008*) findings show that the determinants of institutional quality are highly relevant for explaining the size of shadow economy and that a higher level of institutional quality is correlated with a smaller shadow economy-improving institutions reduces the incentives to "go underground". Considering the evidence gathered by the aforementioned scholars, it is safe to assert that the quality and structure of a tax system directly affects the existence and scope of corruption.

2. Alterafions to specific elements of the tax system can have a greater inverse effect on the level of corruption.

Clearly, the overall tax structure matters in regards to corruption. Dreheret al. (*2005*), along with Fugazza and Jacques (*2004*), argue that institutional reform can have a negative impact on corruption levels and the shadow (*or underground*) economy; but do certain elements of tax reform and design have greater impact than others? Toye and Moore (*1998*) and Martinez-Vazquez and McNab (*2000*) suggest that an ideal tax structure-in terms of its negative impact on corruption-may be reached by manipulating particular elements of tax design. Our research seeks to concretely identify these elements and determine if there exists a point of equilibrium in regards to the relationship between corruption and the applicable elements, namely profit and labor tax rates.

A central theme within Toye and Moore (*1998*) is that the simplification of a tax system can inversely affect corruption levels. They specifically focus on the adoption of a VAT in Indonesia and its negative implications for corruption. The introduction of a VAT often results in a simplification of the existing tax structure. This simplification, coupled with the fact that the establishment of a VAT increases the ability to cross-audit, is critical to the VAT's anti-corruption success. In addition to the VAT, governments have manipulated their corporate income tax rates or profit taxes "in order to attract foreign direct investment" (*J.Beckeret al.2012, p. 1495*).[3] In a study conducted by J.Becker*et al*. (*2012*), evidence indicated that fluctuation in corporate income tax rates has a parallel impact on the intensity of labor taxation profitability, which in turn jointly affects the quantity and quality of foreign direct investment (*FDI*) - a form of international assistance that many nations rely on for economic growth and development.

Over a decade ago, Martinez-Vazquez and McNab (*2000*) assessed the transformation from centrally planned to market-based tax systems within former USSR countries. They found that "the most serious mistake" made by these developing economies was to ignore issues related to tax administration (*p. 103*). This oversight has contributed to the in effectiveness of existing tax structures and the subsequent development of the shadow economy. Keeping in mind the date of Martinez-Vazquez and McNab's research, we hypothesis that the introduction of electronic tax systems could be significant in addressing some of these administrative issues and there by reducing the prevalence of corruption. By eliminating some middlemen and increasing transparency, the introduction of electronic tax systems will theoretically allow for the easier detection of corrupt activities. The electronic tax system will improve the quality of tax collecting and administration and thus have an indirect relationship with corruption, as firms will have fewer incentives to join the underground economy.

[3] In this preliminary study, we were unable to include a variable to measure the impact of VAT adoption on corruption levels due to data constraints.

3.Do certain elements of tax reform and design have greater impact than others?

Wang (*2002*) discusses the "perceived credibility" effect that follows the introduction of electronic tax-filing systems (*p. 335*). His research points to an increase in user willingness to engage in electronic tax-filing systems based on "perceived credibility" (*p. 336*).Furthermore, his study suggests that the nature of these systems requires a level of protection (*trustworthiness*) for the security and privacy of personal information in order to ensure continued usage (*p. 345*). Most importantly, an electronic system creates an outlet for governments to access and deliver information to all parties of the public and private sector; thus, increasing the transparency of the tax system as it applies to corruption levels (*p. 346*).

Ching-Wen Chen (*2010*) finds that electronic systems streamline the taxation process so well that tax-payers are incentivized to closely scrutinize their earnings and spending in order to more efficiently pursue deductions and exemptions (*p.314*). Furthermore, if the online tax-filing system could keep the taxpayers' deductibles up-to-date-essentially serving as a kind of record keeper-online usage would increase (*p.314*). Finally, if the government created incentives for the usage of electronic tax-filing systems, the collection process would be much more efficient and theoretically less corrupt (*p.314*).

4. Outside of the tax system, what factors have commonly been identified as contributing to the level of corruption?

It is impossible to indentify all of the economic, social, and political factors that will influence corruption. In our testing, we use five variables, *per capita income, political rights, civil liberties, diversity, and fuel exports* as controls. Regarding fuel exports, Al-Kasim*et al*. (*2013*) indentifies the usage of increased oil revenues as an opportunity for bribery and corruption (*p.138*). Al-Kasim*et al*. (*2013*) also pinpoint the challenges of oil governance due to the often-corrupt nature of domestic laws and regulations that restrict oil. Furthermore, Arezki and Bruckner (*2011*) assert "countries dependent on oil are often characterized by corruption" (*p. 955*). As a result of their study, Arezki and Bruckner (*2013*) discover that oil rents have a significant and singularly positive effect on corruption within a state (*p.961*).

Studies have used per *capita income* as an exploratory variable more often than not. Scholars have suggested that the blurring of public and private sectors may cultivate an environment for corruption. However, Daniel Treisman (*2000*) asserts "openness to foreign trade and economic development reduces corruption presumably through the rationalization of public and private roles, which renders abuses harder to conceal"(*p.440*). Interestingly, Apergis*et al*. (*2012*) claim significance between "corruption and economic freedom on per capita income" specifically in the "negative relationship between corruption and per capita income" and the "positive relationship [that occurs] between economic freedom and per capita income" (*p.225*).

The correlation drawn between these factors alludes to the importance of sound economic policies in the battle against corruption.

The use of *political rights and civil liberties* as controlsstems from literature indicating that presence of institutional checks and balances-democratic tendencies-prevents a misuse or manipulation of the public sector for private gain.Daniel Treisman (*2000*) has determined that the "fact that a country is democratic today makes no difference on how corrupt it is perceived to be"(*p.439*). He believes that the true effect on corruption as it relates to democracy is in the length of the institution within the state and the condition of the economy (*p. 439*).

Furthermore, Chowdhury (*2004*) claims that threat of exposure associated with the freedom of press and the response of the public in elections makes accountability important in democratic communities. Additionally, Goel and Nelson (*2005*) found that countries with less corruption have more freedoms and transparency within their government.

Finally, this research uses diversity as an explanatory variable because it gives context to behaviors that may be associated with a cultural norm or tradition. Daniel Treisman (*2000*) discusses the importance of ethnicdiversity on corruption not just in the perceived predisposition amongst different cultures, but also within the traditions that may dictate the "susceptibility" of the society (*p. 403*).

Glaeser and Saks (*2006*) go on to reference the relevance of education reducing the likelihood of corruption, and argue that the opposing occurrence of ethnic diversity and income disparity may encourage corrupt practices (*p.1067*). Furthermore, Glaeser and Saks (*2006*) state that "ethnic fragmentation also decreases the cost of corruption by creating an incentive to keep certain public officials in power" (*p.1068*).

5. Hypothesis:The manipulation of different elements in the tax structure can affect corruption levels.

A simple redesign of an existing tax system is not enough to eradicate corruption, regardless of the progress that has been made in that area. However, certain elements within a tax system can be introduced or readjusted, such as launching information and communication technology (*ICT*) to reduce the level of corruption (*Martinez-Vasquez and McNab, 2000*). Therefore, we argue that the manipulation of different elements within a tax structure can adversely affect corruption levels.

To assess our hypothesis, we perform a number of OLS regressions on four elements within a tax structure that could influence the level of corruption. The aforementioned four variables are tax system ranking, electronic systems, labor tax, and profit tax. We included data from 2006-2012 for the 28 countries designated in the World Bank's Europe and Central Asia region; we excluded Kosovo and Turkmenistan due to a lack of available data.

3. Working hypothesis and methodology

The purpose of this section is to define the concept, measure, and source of the dependent and independent variables and examine the corresponding working hypotheses. The *dependent variable* for this research is *corruption*. For the purposes of this research, corruption "is the abuse of entrusted power for private gain" (*Transparency International, 2011*).Transparency International uses this as a working definition for its Corruption Perception Index (*CPI*). Accordingly, the source and measure for this variable are Transparency International's CPI. This index gives countries a score that represents how corrupt the public sector is perceived to be and is a "composite index, a combination of surveys and assessments of corruption, collected by a variety of reputable institutions" (*Transparency International, 2011*). In 2012, the scores on the CPI ranged from zero (*highly corrupt*) to 100 (*very clean*). Scores below 50 represent a serious corruption problem. Before 2012, the scores were on a scale from 0 (*highly corrupt*) to 10 (*very clean*), and scores below 5 represented a serious corruption problems. To create uniformity in the data, the 2012 scores for the included countries have been converted to fit on the 0-10 scale used in previous years.

This research analyzed the dependent variable against four independent variables that were developed from the existing literature described above. The first independent variable is dummy variable for the presence of an electronic system for filing and paying taxes. In this research, a (*0*) will represent the absence of an electronic system and a (*1*) will represent the presence of an electronic system. The sources for this variable were the World Bank's"Doing Business" project, OECD Government Studies, countries' tax websites[4], and calls to country embassies. The corresponding working hypothesis for this variable is that the presence of electronic tax systems for filing and paying taxes will result in high CPI score (*i.e. lower levels of corruption*); electronic systems address issues with administration in the tax system and therefore their presence should result in lower levels of corruption.

The second independent variable is labor tax rates, which includes payroll taxes as well as contributions (*i.e. Azerbaijan Social Insurance Fund*). Labor Tax is the amount of taxes and mandatory contributions on labor paid by the business. The source for this variable is the International Finance Corporation's (*IFC, a branch of the World Bank*) "Doing Business" project and is measured as a percentage of commercial profit. The corresponding working hypothesis for this variable is that as labor tax rates rise, CPI scores will go down (*i.e. higher labor tax rates will result in higher levels of corruption*).

The *third* independent variable is profit tax rates. Profit tax is the amount of taxes on profits paid by the business. The 2013 Doing Business Report showed the com-

[4] These countries include: Albania, Romania, Estonia, Czech Republic, Croatia, and Slovak Republic.

mercial profit tax as a percentage derived from the total commercial profit of a company. The source for this variable is the IFCs "Doing Business" Project. The corresponding working hypothesis for this variable is that, up until a particular point, as profit tax rates rise, CPI scores will decline. Business are willing to pay profit taxesuntil they reach a certain level; pushing the tax rate too high will encourage cheating when rates cut into profits too much.

The *fourth* independent variable is tax transparency and the ease of the taxation system for business in a country. For this measure, we will use the IFC's Doing Business project's Paying Taxes ranking. With three indicators-payments, time, and total tax rate - "Doing Business compares and ranks tax systems and tracks tax reforms around the world from the perspective of local businesses, covering both the direct cost of taxes and the administrative burden of complying with them." Countries are ranked 1-185 based on the ease and openness of the taxation system. The corresponding working hypothesis for this variable is higher Paying Taxes rankings will be negatively correlated with CPI score; higher levels of ease and openness in a country's tax system will result in lower levels of corruption.

In addition to these independent variables within the tax system, this research includes five control variables (*external to the taxation system*) that are identified in the literature as influencing corruption levels. These variables are the size of a country's economy, two measures of democracy (*civil liberties and political rights*), diversity, and a country's fuel export levels. This research uses GDP per capita from the World Bank as a measure of the size of the economy, Freedom House's Political Rights and Civil Liberties rankings as measures of democracy, Alesina's Ethnolinguistic Fractionalization as a measure of diversity, and fuel exports as a percentage of all merchandise exports from the World Development Indicators as a measure of oil dependence.

Finally, this research usesan alternative measure of corruption to test the robustness of our results. The alternative measure of corruption is the Control of Corruption index from the World Bank's World Governance indicators. This indicator "captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests" (*The World Bank, 2012*). The Control of Corruption estimate is scored on the aggregate indicator in units of standard deviation; countries fall somewhere between -2.5 (*highly corrupt*) and 2.5 (*marginally corrupt*). Table 1 provides summary statistics.

4.Modeling and regression results

Our initial proposition hypothesizes that corruption levels are influenced by the existing tax structure. We write the following model to depict the relationship between corruption and the existing tax structure:

$$Corrptionit = \alpha+\beta_1 TaxRanking+\gamma_1 GDR_{it-1}+\gamma_2 CivilLiberties_{it}+\gamma_3 PoliticalRights_{it}+\gamma_4 Diversity_{it}+\gamma_5 Oil_{it-1}+e_{it}. \quad (1)$$

In equation (*1*) corruption is the level of Corruption in country i at time t; *TaxRanking* is the World Bank's Paying Taxes ranking of a country's tax system; GDP is per capita income lagged one year; *CivilLiberties* and *PoliticalRights* are measures of a country's democratic accountability; Diversity is a measure of the ethnic tensions within country i; and Oil is a measure of the percentage of merchandise exports that are fuel, lagged by 1 year.e is the error term.

The results of an OLS regression of this initial equation are presented in Column 2 of Table 2. Although the coefficient of *TaxRanking* is small, it is significant at a 1% level. Moreover, the direction of the relationship is as expected. For every 1 point increase in *TaxRanking*-the higher the *TaxRanking* the worse a country's tax structure-the CPI score decreases by 0.008, indicating an increase in corruption.

Our regression results indicate that there is a relationship between corruption and the quality of the tax system, and that this relationship inversely varies. As the quality of the tax system increases, corruption decreases. While our first proposition suggests that corruption levels are affected by the entirety of the tax system, our second proposition requires examining some of the individual elements of the tax structure. In particular, we focus on the following three elements: the presence of electronic tax filing, the amount of taxes on labor paid by the business as a percentage of commercial profits, and the amount of taxes on profits paid by the business as a percentage of commercial profits.

Our hypothesis regarding the relationship between these three elements and corruption has been discussed previously. To test our hypothesis, we write the following two models:

$$Corruption_{it} = \alpha + \beta_1 Electronic + \beta_2 LaborTax + \beta_3 ProfitTax + \beta_4 ProfitTax^2 + e_{it}. \quad (2)$$

$$[Corruption]_{it} = \alpha + \beta_1 Electronic + \beta_2 LaborTax + \beta_3 ProfitTax + \beta_4 [ProfitTax]^2 + \gamma_1 [GDP]_{(it-1)} + \gamma_i \quad (3)$$

In equation (*2*) and (*3*) *Electronic* is a dummy variable for whether a country offers online tax filing, *Labor Tax* (and *Profit Tax*) are the amount of taxes on labor (*or profit*) paid by the business as a percentage of commercial profits. After reviewing a scatter plot of *Profit Tax's* relationship with *Corruption*, we suggest that *Profit Tax's* relationship with Corruption may be polynomial (*non-linear*). As such, we include ProfitTax2 in order to transform *Profit Tax*. The results for the OLS regression of equation (*2*) are found in Table 2, Column 3.

The overall model is statistically significant. The presence of electronic tax filing has the greatest impact on corruption and is significant at a 1% level. *Profit Tax* and *Profit Tax*^{2} are also significant at a 1% level. Electronic filing increases a CPI score

(*indicating decreased corruption*) by 1.037, a substantively significant amount when one considers that the maximum CPI score is 10[5]. As expected, *Profit Tax's* relationship with Corruption is polynomial. After calculating the first order condition of *Profit Tax* and *Profit Tax*^{2}, we find that up to 11.07 *Profit Tax* increases the CPI score; however, after 11.07, additions to Profit Tax decrease the CPI score. Labor Tax does not have a significant effect on the CPI score. The results of this model suggest that countries hoping to reduce corruption should 1) immediately work to adopt electronic tax filing and 2) keep the labor tax rate around 11.07.

To check the robustness of our findings we substituted the World Bank's Control of Corruption estimate for the CPI scale. The results of this OLS regression are in Column 4 of Table 2.

Again, the overall model is statistically significant. *Profit Tax* and *Profit Tax*^{2} are appropriately signed and significant at the 5% and 1% level respectively. The presence of electronic tax filing is still highly significant and substantively important. The presence of electronic tax filing increases the score (*indicating lower amounts of corruption*) by 0.423, a notable increase. In this model, *Labor Tax* is again insignificant.

Equation (3) includes our tax variables along with our control variables. Due to the insignificance of *Labor Tax* in equation (*2*), we excluded *Labor Tax* from equation (3). Using the CPI ranking as our measure of *Corruption*, we receive OLS regression results found in Column 5 of Table 1. The overall model is statistically significant. With a coefficient of .414 the presence of electronic tax filing increases the CPI ranking and is significant at a 5% level. *Profit Tax* is also significant at a 5% level. Although appropriately signed, *Profit Tax*^{2} is no longer statistically significant. We believe that our control variables may suffer from a high level of endogeneity; thus, obscuring the significance of *Profit Tax*^{2}. As such, the statistical insignificance of *Profit Tax*^{2} in this model does not negate the overall significance of our findings.

We again substitute the Control of Corruption Estimate for Corruption in equation (*3*) and run another OLS regression as a final measure of robustness (*see Table 2, Column 6*).

Our three independent variables (*Electronic, Profit Tax, and Profit Tax*^{2}) are signed as expected, although only *Profit Tax* is significant at a 5% level. Again, we suspect that the non-statistical significance is due in part to correlation among our control variables, and as our coefficients are substantively significant-in light of the small range of the Control of Corruption Estimate and the relatively large effect our variables have on that range-countries should still adopt policies that reflect the following policy prescriptions.

[5] Transparency International recently changed their CPI to be a scale from 0-100. We adapted the 2012 scale to be consistent with previous year's 0-10 rating.

5. Conclusion and recommendations

To summarize, our findings indicate that there is a relationship between corruption and the quality of the tax system, and that this relationship inversely varies: As the quality of the tax system increases, corruption decreases. Specifically, we find that the presence of electronic tax filing has the greatest impact on corruption and is significant at a 1% level; and while labor tax rates do not have a significant effect on corruption, profit tax has a curvilinear relationship with corruption. Up until a certain point (*11.07*) increases in the profit tax rate will reduce corruption, after that point it will incentivize countries to engage in corrupt activity. Therefore, the presence of electronic tax filing, as well as, the profit tax rate has an impact on a country's CPI score.

Thus, our results suggest that countries seeking to reduce corruption should immediately work to adopt electronic filling and keep their profit tax rate around 11.07. Our finding that labor tax rates do not have a significant effect on corruption was, in retrospect, unsurprising since labor taxes, such as the payroll tax, are typically withdrawn before those that would have the incentive to cheat (*the labor*) have access to them; there by their contribution to corruption is minimal.

Are there lessons for Azerbaijan? Azerbaijan had remarkable economic growth during the 2007 fiscal year. This growth was reflected in all aspects of the economy due to the various reform policies the country adopted.

These policies aimed to liberalize prices, tighten budgetary and fiscal controls to limit inflation, restructure the banking sector and improve transparency, modernize the tax system, privatize state-owned enterprises, and promote foreign investment (*Deloitte, 2008*).

Despite these reforms, Azerbaijan's CPI score remains quite low-on Transparency International's newly adopted index of 0-100, Azerbaijan scored a 28 (*Transparency International, 2012*).

Moreover, as Schneider et al. (*2009*) suggest, the presence of significant corruption is hindering Azerbaijan's continued development. Based on our research above, Azerbaijan specifically should adopt a profit tax rate that is no more than 11.07% in order to reduce corruption. Currently, Azerbaijan's profit tax rateis 12.9%: a number that we find encourages corruption (*Doing Business, 2012*). Positively, Azerbaijan has recently implemented a world-class electronic tax filing system (*Hacibeyoglu, 2009*).

While the full impact of this modernization on corruption is likely still a few years out, Azerbaijan's initial tax reform is a step in the right direction. With the addition of our suggestion regarding profit tax rates, Azerbaijan could advance even further in protecting its growth from the ill effects of corruption.

Table 1. Summary Statistics

Variable	Mean	Standard Error	Data Source
Corruption Index ranges from 0-10. The higher the score, the lower the level of corruption.	3.672	0.092	Transparency International, CPI Index
Electronic Tax System (ETS) Dummy variable 1 indicates the presence of ETS, and 0 indicates the absence of ETS	0.633	0.035	Word Bank, IFC Doing Business Project OECD government studies Calls to Country Embassies
Labor Tax The amount of taxes and mandatory contributions on labor paid by the business as a percentage of commercial profits.	27.663	0.704	World Bank, IFC Doing Business Project
Profit Tax The amount of taxes on profits paid by the business as a percentage of commercial profits.	10.85	0.397	World Bank, IFC Doing Business Project
Tax Ranking Ranking is based the following indicators: payments, time, and total tax rate. Rankings range from 1-185, with 1 being the best ranked tax system.	114.8	4.616	World Bank, IFC Doing Business Project Paying Taxes Ranking
GDP Per Capita Income in Current US $, lagged 1 year	7624.299	414.817	World Bank, World Development Index
Political Rights Ranking of political rights within a country. Ranking ranges from 1-7, with 7 indicating the lowest level of political rights.	3.25	0.145	Freedom House Ranking
Civil Liberties Rates civil liberties within a country. Ranking is 1-7, with 7 being the lowest level of liberty.	2.944	0.122	Freedom House Ranking

Diversity Measures the amount of ethnolinguistic fractionalization within a country.	33.697	1.494	Ethnolinguistic Fractionalization Index
Fuel Exports The percentage of all merchandise exports of mineral fuels	16.912	1.776	World Bank, World Development Indicator
Control of Corruption Ranked between -2.5 and 2.5, where -2.5 is highly corrupt and 2.5 is marginally corrupt	-0.275	0.046	World Bank, World Governance Indicator, Control of Corruption Index
Years	2006-2012		
Countries	Albania, Armenia, Azerbaijan, Belarus, Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russian Federation, Serbia, Slovak Republic, Slovenia, Tajikistan, Turkey, Ukraine, Uzbekistan		

Table 2. Regression results

(1)	(2)	(3)	(4)	(5)	(6)
	CPI	CPI	WB	CPI	WB
TaxRanking	-.008 (.000)				
Electronic		1.037 (.000)	.423 (.000)	.295 (.012)	.040 (.475)
Profit Tax		.155 (.001)	.064 (.011)	.056 (.047)	.028 (.033)
ProfitTax2		-.007 (.001)	-.003 (.006)	-.001 (.383)	-.001 (.299)
LaborTax		.001 (.880)	.002 (.673)		
GDP	8.100E-5 (.000)			9.954E-5 (.000)	4.923E-5 (.000)
CivilLiberties	.173 (.083)			-.124 (.247)	-.085 (.098)

PoliticalRights	-.273 (.001)			-.218 (.010)	-.075 (.062)
Diversity	-.004 (.084)			.011 (.000)	.004 (.001)
Oil	-.015 (.000)			-.006 (.018)	-.005 (.000)
constant	4.595 (.000)	2.293 (.000)	-.849 (.000)	3.047 (.000)	-.451 (.001)
Adjusted R^2	0.815	0.198	0.174	0.841	0.840
F test ($u_i=0$)	60.323 (.000)	12.925 (.000)	8.574 (.000)	90.059 (.000)	87.155 (.000)

Statistical significance levels (two-tailed) are in parentheses.

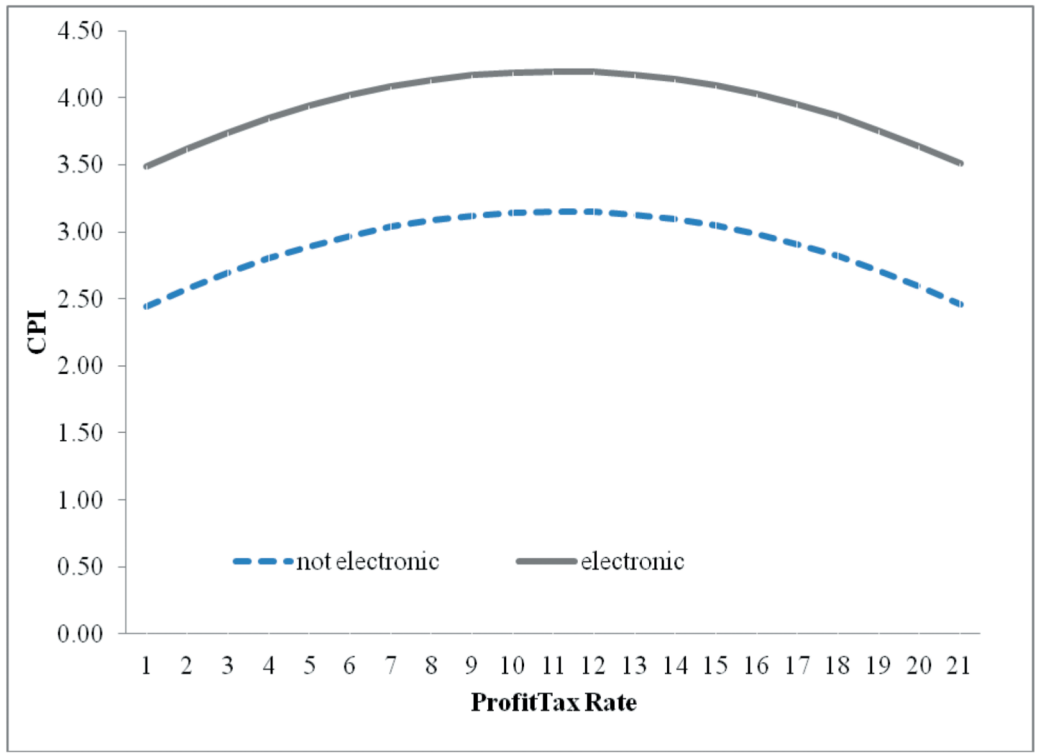

Figure. The effects of (1) adopting electronic system and (2) increasing profit tax on corruption

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Korrupsiyadankənar vergitutma: korrupsiya və vergi sisteminin spesifik elementləri arasındakı əlaqə üzrə empirik dəlil

Xülasə

Tədqiqatda 2006-2012-ci illər üçün 28 Şərqi Avropa və Mərkəzi Asiya ölkəsindən toplanmış panel məlumatlarından istifadə edərək vergi sistemi ilə korrupsiya arasındakı əlaqə qiymətləndirilməyə çalışılmışdır. Biz tədqiqatda nəinki korrupsiya səviyyəsi (*"Transparensi İnternəşnl"ın Korrupsiya Qavrama İndeksi reytinqi*) ilə vergi sisteminin inkişafı arasında tərs əlaqə olduğunu müəyyən etmişik, həmçinin də vergi sisteminin iki xüsusi elementinin korrupsiya səviyyəsi üzərində ciddi təsiri olduğunu da ortaya çıxarmışıq ki, bunlar da elektron vergi bəyannaməsi sisteminin mövcudluğu və mənfəət vergisi dərəcəsidir. OLS reqressiyasını hesabladıqdan sonra bəlli oldu ki, elektron vergi bəyannaməsi sisteminin qəbul edilməsi 0.423 əmsala malikdir ki, bu da 1% səviyyəsində əhəmiyyətlidir. Əmsalın müsbət olması onu göstərir ki, Korrupsiya Qavrama İndeksində artış korrupsiyanın azalması ilə nəticələnir. Aydındır ki, bu əlaqə yetərli dərəcədə əhəmiyyətlidir, çünkü Korrupsiya Qavrama İndeksi yalnız 0-10 arasında dəyişir. Bu, həmçinin onu göstərir ki, mənfəət vergisi dərəcəsi korrupsiya ilə ikinci dərəcəli çoxhədli əlaqəyə malikdir. Həmin əlaqə 5% səviyyəsində əhəmiyyətlidir. Belə ki, mənfəət vergisi dərəcəsi 11,07%-ə qədər olduqda Korrupsiya Qavrama İndeksi ilə pozitiv əlaqəyə malikdir və korrupsiyanı mühüm dərəcədə azaldır. Mənfəət vergisi dərəcəsi 11,07% səviyyəsini keçdikdə isə Korrupsiya Qavrama İndeksində azalma baş verir. Beləliklə, deyə bilərik ki, əgər ölkələr korrupsiyanı məhdudlaşdırmaq istəyirlərsə, elektron vergi bəyannaməsi sistemini tətbiq etməli və mənfəət vergisi dərəcəsini təxminən 11% səviyyəsində saxlamalıdırlar.

Açar sözlər: *vergitutma, korrupsiya, e-bəyannamə, mənfəət vergisi*

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