

Institutional Quality and Underground Economy of 51 OIC Member Countries

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Abstract

Official rules have always acted as the most important factor to manipulate freedom and choice of individuals and businesses working in the formal sector. The main objective of this article is to explain the link between institutional quality and size of underground economy of OIC member countries. For this purpose, three indicators of control of corruption (CC), political stability (PS) and rule of law (RL) are considered as the institutional indicators. Based on empirical evidence, we test three hypotheses of existence of significantly reverse linkages between control of corruption, rule of law and political stability and the size of underground economy. Utilizing a two stage dynamic panel data with GMM estimator of Arellano-Bond during 1999- 2008, we conclude a statically negative relationship between the mentioned institutional quality indicators and size of underground economy. The results also confirm that with larger size of formal economy and more freedom of individuals and firms, the smaller size of underground economy is expected.

Keywords: underground economy, institutional quality, GMM

JEL classification: C33, H10, K49, O17

1. Introduction

Economic activities may be classified under a structural approach into two major group namely formal economy and underground economy. It is stated that the main stimulus behind the actions of economic agents in their inclinations toward underground economy is the creation of a non-transparent setting of activities in order to escape legal frameworks. Such an issue i.e., law evasion, may in its turn be the result of numerous stimulating factors some of which are related with the way of government intervention, some other arise from the structure of macro-economy and some further stimulating factors arise from the nature of a certain economic activity. Among such factors are the system for granting economic privileges, implementation of different rationing systems, tax burden, the specifications of taxation system and totally the factors interfering with competitive environment in economy (Nikopour 2003)

Schneider et al. (2010) define underground economy as all currently unregistered economic activities that contribute to the officially calculated (or observed) Gross National Product. Beside these illegal practices, underground economy also includes income generated through legitimate cash-based or non-cash-based activities such as online trade (Zhuge et al. 2009) and bartering services (Schneider and Enste 2000). Table 1 offers various types of underground activities.

Table 1: A Taxonomy of Types of Underground Economic Activities¹

Type of Activity	Monetary Transactions	Non Monetary Transactions

ILLEGAL ACTIVITIES	Trade with stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling; fraud, human-drug and weapon-trafficking		Barter of drugs, stolen goods, smuggling etc. Produce or growing drugs for own use. Theft for own use.	
	Tax Evasion	Tax Avoidance	Tax Evasion	Tax Avoidance
LEGAL ACTIVITIES	Unreported income from self-employment; wages, salaries and assets from unreported work related to legal services and goods	Employee discounts, fringe benefits	Barter of legal services and goods	All do-it-yourself work and neighbor help
¹ Structure of the table is taken from Lippert and Walker (1997) with additional remarks of Schneider (2011)				

From table 1, it becomes clear that a broad definition of the underground economy includes unreported income from the production of legal goods and services, either from monetary or barter transactions – and so includes all economic activities that would generally be taxable were they reported to the state (tax) authorities. The underground economy includes all market-based legal production of goods and services that are deliberately concealed from public authorities for the following reasons:

1. To avoid payment of income, value-added, or other taxes,
2. To avoid payment of social security contributions,
3. To avoid having to meet certain legal labor market standards, such as minimum wages, maximum working hours, safety standards, etc., and
4. To avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms (Schneider 2011).

Official rules have always acted as the most important factor to manipulate freedom and choice of individuals and businesses working in the formal sector. For example, labor market regulations, trade barriers, and labor restrictions for foreigners increase the cost of economic agents and motivate them to work in informal sector. As Grigorian and Martinez (2002) point out, arguments in favor of strong institutional structure are numerous: (1) transaction costs associated with running business are likely to increase in the presence of corruption and bureaucratic obstacles; (2) barriers to entry and exit might become very high without a clear and transparent legal and regulatory mechanisms governing entry and exit; and (3) gains from trade are easier to realize when transactions are carried out through efficiently functioning market mechanisms. As

described in Botero et al. (2004), regulation of labor markets¹ may take several forms. First, governments forbid discrimination in the labor market and endow workers with some basic rights (maternity leaves, minimum wage, etc.). Second, governments regulate employment relationships and may affect hiring and firing costs. Third, governments may legally empower labor unions to represent workers (Onnis, Tirelli 2011). In addition, Biswas et al. (2011) identify that regulatory control is weakened when economic agents in the informal economy can bribe corrupt regulatory officials, which enables firms to continue their polluting activities in the shadow economy² even after detection. They show that the destructive effects of the shadow economy are higher in countries with pervasive corruption.

Huther and Shah (1996, 1998), define governance as “all aspects of the exercise of authority through formal and informal institutions in the management of the resource endowment of a state. The quality of governance is thus determined by the impact of this exercise of power on the quality of life enjoyed by its citizens”. This index is compiled of six indicators that were first developed in 1999 by Daniel Kaufmann et al. these indicators are Voice and accountability, Political stability and absence of violence, Government effectiveness, Regulatory quality, Rule of law and Control of corruption³.

The existence and increase of an underground economy gives rise to three major sets of concerns. The economic and social conditions of individuals, household and countries are evaluated in a biased way if one relies on the official statistics.

Thus, the official number of unemployed persons may hide that an (unknown) share of them actually work and receive wage income. As a consequence, the macroeconomic policies are likely to be too expansionary and social policy too excessive. A second concern is the loss of tax revenue as underground activities escape taxation. A third concern interprets the underground economy as an indicator of an unhealthy state between citizens and government. The taxpayers are dissatisfied with what public services they get for their contributions and seek to restress the

¹ - See Giles and Tedds (2002)

² - Some other terms which are used for underground economy in different papers are shadow economy (Johanna and Méon 2012), regular (Dallago 2002), black (Kumar 2006), hidden (Albu 2010), unrecorded (Bloem and Shrestha 2000), unreported (Gupta and Gupta 1981) and parallel (Sarkar 2010) that we have used some of them in this paper.

³ - a. Voice and accountability (VA): This cluster includes a host of primary indicators such as orderly transfers, vested interests, accountability of officials, human rights, freedom of speech, institutional stability, link between donations and policy etc.

b. Political stability and absence of violence (PV): This cluster includes indicators on military coup risk, insurgency, terrorism, political assassinations etc.

c. Government effectiveness (GE): This cluster aggregates available indicators on personnel turnover, government capacity, global e-government, institutional failures, time spent by senior officials dealing with government officials etc.

d. Regulatory quality (RQ): Diverse indicators on trends in exports, imports volumes attributable to change in government regulation, regulatory burdens on business, restrictions on foreign ownership and distortions in tax system etc.

e. Rule of law (RL): Primary indicators include losses and costs of crimes, kidnapping of foreigners, contract enforceability, incidence of crimes etc.

f. Control of corruption (CC): This cluster draws upon primary indicators such as losses and costs of corruption, public trust, incidence of bribes, political influence, instability of the political system and number of officials involved in corruption (KaziIqbal and Anwar Shah 2008)

balance by evading to the underground economy. It is feared that such reaction makes government unable to finance the public goods necessary for an economy and society. In contrast, opponents of government welcome such a development (Frey and Schneider 2000).

The rest of this paper is organized as follows:

Next section reviews the empirical researches about the relationship between institutional factors and underground economy; Section 3 discusses the linkage between them; Section 4 presents data and methodology; Estimation results are offered in section 5 and finally section 6 concludes this paper.

2. Literature Review

Biswas et al. (2011) study how the shadow economy affects pollution and how this effect depends on corruption levels in public administration. Using a panel data covering the period from 1999–2005 from more than 100 countries. They confirm that the relationship between the shadow economy and the levels of pollution are dependent on the levels of corruption. In another study, Johnson et al. (1998), approves a positive and statistically significant between informal economy and corruption of 49 Latin American, OECD and Former Soviet Bloc countries. Ytsma (2008) constructs a general equilibrium model in which bureaucrats, households and entrepreneurs interact on the bribe market, labor market and goods market, in both the underground economy and the official economy. By analyzing the decisions these agents make with respect to public good provision, bribery, official and underground labor and consumption of the official and underground good, the dynamics of the triangular relationship between corruption, governance and the underground economy are studied. He finds that a stronger rule of law has the desirable two-sided effect, but only in underdeveloped and developing countries and at the cost of a higher corruption level. A higher regulatory quality is, in any country, associated with more official activity. Friedman et al. (2000) are next ones who across 69 countries confirm that, higher tax rates are associated with less unofficial activity as a percent of GDP but corruption is associated with more unofficial activity. Entrepreneurs go underground not to avoid official taxes but to reduce the burden of bureaucracy and corruption. Dodging the 'grabbing hand' in this way reduces tax revenues as a percent of both official and total GDP. They conclude that, corrupt governments become small governments and only relatively uncorrupt governments can sustain high tax rates. Researchers like Tanzy (1982, 1999), Feige (1989), Ferry and Pommerehne (1984), Poza (1996), Lippert and Walker (1997), De Soto (1989), Zilberfarb (1986) and Thomas (1999) also believe in the tax burden as one of the reasons of underground economy.

Alexandru et al. (2011) estimated size of the shadow economy as % of official GDP is estimated using a MIMIC model with four causal variables (taxes on corporate income, contributions for government social insurance, unemployment rate and self-employment) and two indicators (index of real GDP and civilian labor force participation rate). Then, they analyzed the relationship between shadow economy and unemployment rate using a Structural VAR approach for quarterly data during the period 1980-2009 and confirmed that in the short-run, a rise in the unemployment rate in formal sector will lead to an increase in the number of people who work in the shadow economy. Schneider and Teobaldelli (2012), analyze the influence of direct democratic institutions on the size and

development of the shadow economies. The framework developed predicts a negative relationship between the degree of direct democracy and the size of the shadow economy. Countries where direct democratic institutions support democratic life are expected to be characterized by a lower informal sector, *ceteris paribus*. Also, Singh et al. (2012) analyze the determinants of the underground economy, with particular emphasis on the role of institutions and the rule of law and find that when businesses are faced with onerous regulation, inconsistent enforcement and corruption, they have an incentive to hide their activities in the underground economy. Empirical analysis suggests that institutions are a more important determinant of the size of the underground economy than tax rates.

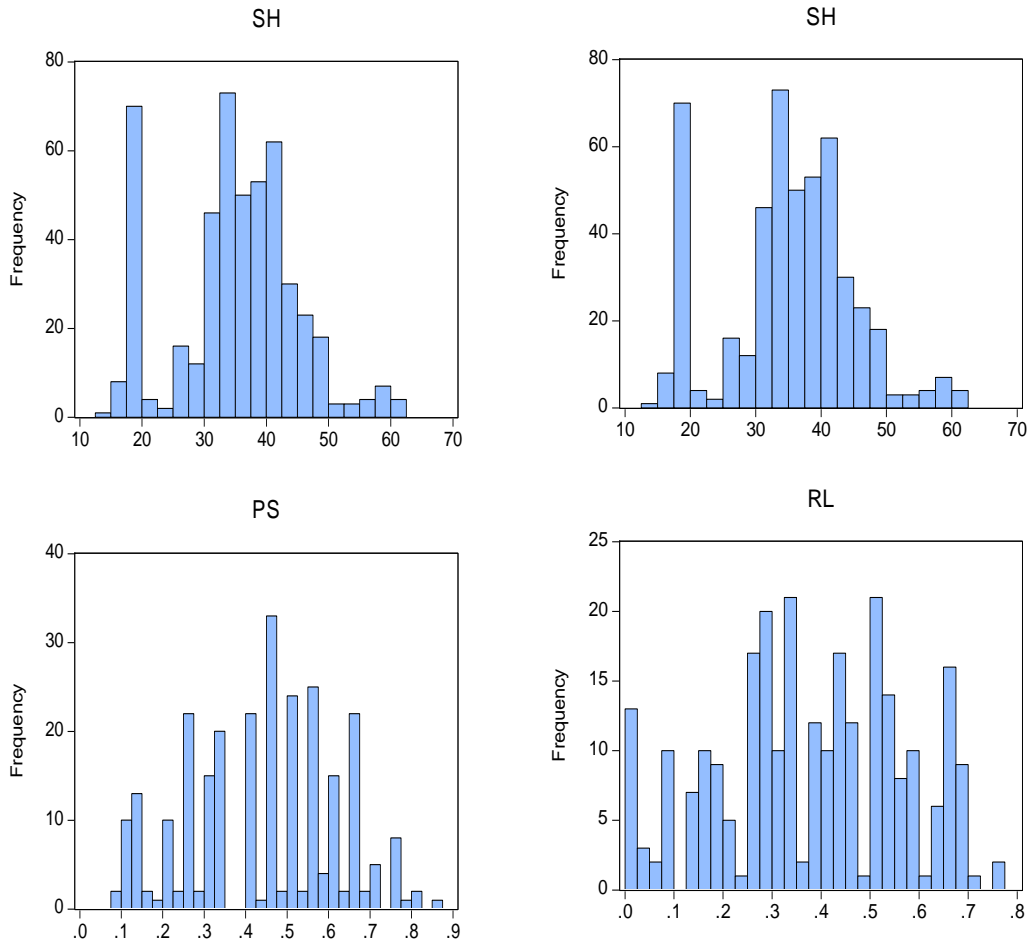
3. Underground economy and institutional quality

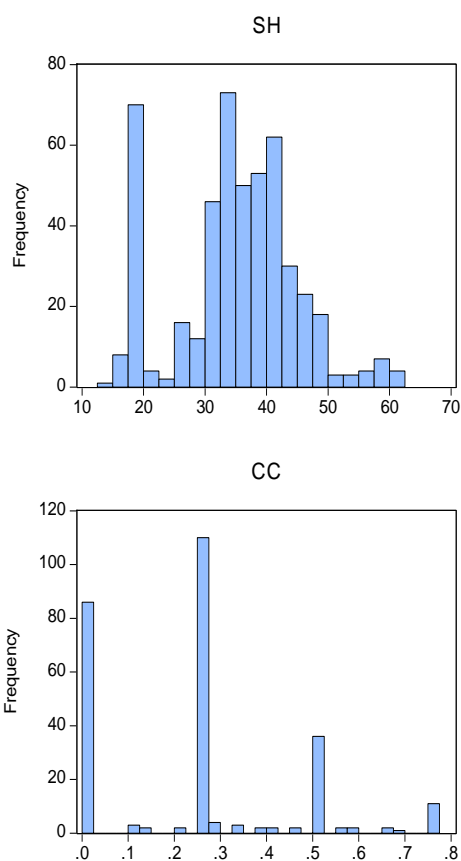
Bird et al. (2006) stress that if poor countries want to become richer, they need to spend more on public infrastructure, education, and so on. Therefore, they need to tax more. But a key reason why they do not do so also seems obvious: "it is not in the interest of those who dominate the political institutions of such countries to increase taxes. If this is the story, then economists, who do not readily take to the revolutionary barricades, have a problem in suggesting a viable solution". The outcome in many countries is explainable as the underlying political conditions in these countries have not, for the most part, changed significantly over this period: "Countries may tend to achieve an equilibrium position with respect to the size and nature of their fiscal systems that largely reflects the balance of political forces and institutions, and stay at this position until 'shocked' to a new equilibrium" (Schneider and Torgler 2007).

In developing economies, privatization, liberalization, fairer taxation, and less regulation were all associated with a smaller underground economy and smaller state capture. Better provision of public goods to the official economy was associated with a relatively larger official economy. Developing countries with less tax and regulator systems collected more tax income and provided more public goods to their official economies. There was a positive relationship between governance, privatization, regulation, bureaucratic discretion, and corruption in developing countries. Progress in privatization was associated with a higher quality of governance in these countries. The relationship between government expenditures and economic performance is a subject of continuing discussion in economics and public policy making. Considering both lines of theoretical argument about the effects of government size on government effectiveness, the effects of an increase in the size of the shadow economy on government effectiveness may be ambiguous (Jamalmanesh 2011). Dreher and Schneider (2006) observe the tendency that shadow economy and corruption are substitutes in high-income countries, but complements in low-income countries. In countries where corruption is systemic and the government budget lacks transparency and accountability the obligation of paying taxes cannot be assumed to be an accepted social norm. Institutional instability, lack of transparency and rule of law undermine the willingness of frustrated citizens to be active in the formal economy. Citizens will feel cheated if they believe that corruption is widespread, their tax burden is not spent well, their government lacks accountability, and that they are not protected by the rules of law. This increases the incentive to enter the informal sector. Thus an increase in corruption increases the size of shadow

economy. Figure 1 shows the frequency distribution of shadow economy with institutional quality indicators for 51 OIC member countries during 1999- 2008.

Figure: Frequency distribution of shadow economy with institutional quality indicators for OIC member countries during 1999- 2008





Ion (2004) suggests that “a strong society can create a strong economy more often than a strong economy can create a strong society”. Strong society means good and equitable rules, indiscrimination and equal access to resources and equal treatment in front of law. An economy will develop successfully in conditions offered by this strong society. When administrative and judicial systems are inefficient, the likelihood of informal economic agents being tracked down and prosecuted becomes too low to be an effective deterrent. Among government regulations, those related to worker’s welfare are considered the most restrictive and costly for firms (Loayza 1996).

3.1. Hypotheses

In sum, improving the institutional quality decreases the size of underground economy, thus, following hypotheses are formulated:

Hypothesis 1 = There is a reverse relationship between control of corruption and volume of shadow economy.

Hypothesis 2 = There is a reverse relationship between rule of law and volume of shadow economy.

Hypothesis 3= There is a reverse relationship between rule of law and volume of shadow economy.

4. Econometric Model, Estimation method and data

The following represents the panel data estimation equation employed in this paper:

$$SH_{it} = \alpha + \beta_1 SH_{i,t-1} + \sum_{j=1}^h \beta_j IQ_{j,i,t} + \beta_k Y_{i,t} + \beta_2 EF_{it} + U_{it}$$

$$U_{it} = \mu_i + \lambda_t + V_{it} \quad i = 1, 2, \dots, N \quad 1, 2, \dots, T$$

Where SH_{it} is the size of shadow economy as % of official GDP in country i at year t , $\sum_{j=1}^h \beta_j IQ_{j,i,t}$ is a vector of the explanatory variables (including control of corruption, rule of law and political stability) and Y_{it} and EF_{it} are the control variables of the model which stand for the growth rate of GDP per capita and Economic freedom respectively, α represents intercept and μ_i and λ_t are country-specific effects, are period specific effects and V_{it} is the error term. Summary statistics for the variables are given in Table 2.

Table2: Summary Statistics for Variables

Variable	Mean	Std.Dev.	Maximum	Minimum	Observation	Source
SH	33.124	10.89	58.60	17.10	489	Schneider and Buehn (2012)
CC	0.24	0.20	0.75	0.00	270	Governance indicators ⁴
RL	0.38	0.18	0.75	0.00	270	Governance indicators
PS	0.44	0.16	0.80	0.09	270	Governance indicators
Y	5.71	3.94	34.50	-1.88	496	World Bank
EF	6.28	0.62	7.66	4.91	306	Economic Freedom Reports

This article estimates a dynamic panel data model using GMM estimator. The GMM estimator proposed by Arellano and Bond (1991) that is designed for situations small T, large N panels, meaning few time periods and many individuals. This method Arellano and Bond proposed two estimators - one- and two-step estimators- with the two-step estimator being the optimal estimator. The Sargan/Hansen test of over-identifying restrictions is performed which is a joint test of model specification and appropriateness of the instrument. Arellano- Bond estimation starts by transforming all regressors, usually by differencing, and uses the Generalized Method of Moments and so is called Difference GMM. The Arellano-Bover/Blundell-Bond estimator augments Arellano-Bond by making an additional assumption, that first differences of instrument variables are uncorrelated with the fixed effects. This allows the introduction of more instruments, and can dramatically improve efficiency. It builds a system of two equations-the original equation as well as the transformed one- and is known as System GMM. It is preferred to

⁴ - Data from Economist Intelligence Unit www.eiu.com

difference GMM since finite sample bias problem caused by weak instruments in first differenced GMM will be addressed by using system GMM. It also offers forward orthogonal deviations, an alternative to differencing that preserves sample size in panels with gaps. And it allows finer control over the instrument matrix. (Nikopour et al 2009). The Sargan test is distributed chi-squared with degrees of freedom equal to the number of moment restrictions minus the number of parameters estimated (Gonzalez-Marrero et al 2011). According to Anupam and Biru Paksha (2011), GMM technique allows us to control for simultaneity bias. Using valid instruments will also take care of the problem of endogeneity for all the explanatory variables. Moreover, the so-called memory effect of economic growth can also be captured by incorporating lagged growth in our model. Therefore, this technique is expected to generate consistent and efficient estimates which are robust. Arellano and Bover (1995) and Blundell and Bond (1998) were other ones who also offered system GMM estimator.

5. Research Findings

5.1. Unit Root and Co-integration Test

The stationarity test for the research variables are shown in Table 2. Based on the unit root test by Levin, Lin and Chu, it was found that all the research variables had similar degrees of integration. This indicated the possibility of there being a long-term relationship between institutional quality indicators and shadow economy.

Table 3: Stationarity Test

variables	Levin, Lin & Chu statistics	Prob	Stationarity
SH	-4.84	0.000	I(0)
CC	-10.14	0.000	I(0)
PS	-45.74	0.000	I(0)
RL	-11.56	0.000	I(0)
GG	-14.74	0.000	I(0)
EF	-19.41	0.000	I(0)

Following, a panel co-integration test was carried out to determine whether or not this long-term relationship actually exists or otherwise.

Table 4: Panel Kao Co-integration Test

	t-Statistics	Prob
ADF	-1.723	0.042

Results show that there exists a long-term relationship between the shadow economy and other explanatory variables.

5.2. Estimation Results

The results from estimating the equation specified in the earlier section, are reported in Table 4. Our estimation meets the Arellano-Bond criteria for valid specification. This evidence of AR (1) is acceptable. So, there is no autocorrelation for error term during the time. The Sargan test of

overriding restrictions doesn't reject the hypothesis that GMM instruments are valid. It should be mentioned that we considered the first lag of all the variables used in this study as instruments.

Table 5: Estimation Results

Regressor	Coefficient
SH (-1)	0.32 ^{**} (8.63)
CC	-0.49 ^{**} (-2.38)
PS	-1.01 ^{**} (-3.58)
RL	-0.86 ^{**} (-5.95)
GG	-0.19 ^{**} (-27.45)
EF	-1.28 ^{**} (-12.31)
Sargan Test (DF=32)	27.67 (Prob = 0.68)
AR (1) Test	-2.29 (Prob = 0.02)
AR (2) Test	-1.61 (Prob = 0.10)

As it is observed, all variables are statistically significant at 1% level. The coefficients for CC, PS and RL, according to theoretical literature, reveal their negative relationship with the size of underground economy. So, three hypotheses in this paper cannot be rejected. The coefficients of GDP per capita growth and economic freedom unable to be rejecting at 1% significance level too and their coefficients are both negative. This result approves the Elgin (2009) who argues that a large (small) informal sector resulting in a small (large) formal sector; therefore, a small (large) tax base could lead to a low (high) level of tax revenue and therefore reduce (increase) the tax burden which makes the informal sector size and the tax burden to be negatively correlated.

6. Conclusion

In this paper, we considered the impact of institutional quality on the size of underground economy of OIC member countries. Comparing our findings with other empirical studies, we obtained similar results and econometrics estimations support the hypothesis formulated. Our model estimation result, using a dynamic panel data method in the context of the OIC member countries indicate that institutional quality indicators have a meaningfully negative effect on the volume of underground economy of these countries during 1999- 2008. We also conclude that the more freedom for individuals and firms will lead to the smaller activities in shadow. As a whole, based on the results it can be stated that some actions such as clarifying and streamlining the legal and formal rules, making appropriate regulations, committing senior government officials to the laws and establishing the Anti-Corruption Commissions are necessary to limit the size of underground economy.

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