ANALYZING THE DETERMINANTS OF THE INFORMAL ECONOMY IN MENA REGION

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ABSTRACT

The consequences of informal economy is of utmost important for policy makers, and the issue attracts some scholars to identify the effective factors on informal economy. We find that unemployment rate, corruption level, GDP per capita and trade openness are highly significant in MENA region with expected sign. However, although some researchers has focused on taxation, our results show that the tax burden does not play a crucial role in informal economy in MENA region. To diminish the size of informal economy we suggest the governments in this region introduce the value added tax which is an effective way as stepping stone for developing holistic efficient tax system.

Keywords: Informal Economy, MENA Region, Panel Data

INTRODUCTION

The informal economy is associated with some dire consequences such as diminishing the government's revenue, developing the income inequality, spreading low-return technology (Blackburn et al., 2012), (Capasso and Jappelli, 2013). It is of utmost importance for policy makers to investigate what factors affect on informal economy in order to diminish the size of which. Between 1999 and 2005, the size of informal economy were approximately 16% and 35% of GDP in OECD countries and developing countries respectively (Schneider, 2007). (Sheehan and Riosmena, 2013) investigate the relation between immigration and informal economy between 1970 and 2000. They conclude the households that experienced immigration are more tendentious to participate in informal economy. (Ariyo and Bekoe, 2011) by using money demand approach between 1975 and 2010 in Nigeria conclude that the size of informal economy and tax evasion were 79.32% and 42.54% respectively. (Angel-Urdinola et al., 2011) found that between 20% and 40% of employment in Middle East and North Africa were in informal economy and most of them occupied in Small and Medium Enterprises. In most studies, the main focus is on public finance for individuals to participate whether in formal or informal economy (Blackburn et al., 2012; Dreher et al., 2009; Friedman et al., 2000; Schneider and Enste, 2000). We tend to analyze the factors playing major role in MENA region. We employ Panel EGLS for estimation of the model and then Panel Two-Stage EGLS method for addressing the endogeneity problem .Our sample countries consist of 15 countries of Mena region from 2006 to 2012. We also employ Eviews8 for estimation of the model.

REVIEW OF LITERATURE

Taxation

Tax can be viewed as a cost of participating in formal sector. So, if higher tax rate be imposed we can expect the more motivation to take part in informal economy. Therefore, some part of studies assume positive correlation between taxation and tax evasion (Ihrig and

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Moe, 2004; Busato and Chiarini, 2004; Amaral and Quintin, 2006; Prado, 2011; D'Erasmo and Boedo, 2012; Mitra, 2013; Charlot et al., 2015). However, there is so much controversy between the relation of taxes and informal sector. (Johnson et al., 1997, 1998) after investigating the OECD countries, they have made a conclusion that the rate of tax has a negative correlation with informal economy. (Djankov et al., 2010) find a positive correlation between corporate tax rate and informal economy in 85 countries which the majority of them were developing countries. (Elbahnasawy, N. G. et al., 2016) assume the main drive force of informal economy is inefficiency of imposing taxes by governments. Given S is the size of informal economy and Ɵ indicate the inefficiency of tax collection because of collection costs. They proposed

$$S=S(\Theta) \quad (1)$$

Which the size of informal economy rises as the inefficiency of tax collection increases. So we expect the sign of tax burden in MENA region will be positive due to inefficiency of tax system.

Unemployment

(Boeri and Garibaldi, 2002) find a positive correlation between average unemployment rate and average informal economy among 20 region of Italy between 1995 and 1999. (Dell'Anno and Solomon, 2007) investigate the relationship of unemployment and US informal economy between 1970 and 2004. They find a positive among them. So we expect the sign of unemployment will be positive in the estimation.

Corruption

A significant part of literature recommend high level of corruption leads to higher informality (Ahlin and Bose, 2007; Chaudhuri et al., 2006; Dabla-Norris et al., 2008; Dixit, 2004; McKenzie and Sakho, 2010). Fundamental corruption among authorities such as monetary agencies, politicians, law makers makes new businesses in the formal sector more costly. So we expect the sign of corruption be positive in the estimation.

GDP per capita

(Schneider et al., 2010) find the GDP per capita as a determinant of informal economy. Their result show that GDP per capita was highly statistical with negative sign. The fact behind this is individuals with experiencing high income can make end their need then less motivation to take part in informal economy. Therefore, the sign of GDP per capita will be expected negative in our estimation.

Trade Openness

(Goldberg and Pacvnic, 2003) find that the effect of trade openness on informal economy actually depend on degree of labor market freedom. To be more specific, a less flexible labor market, the more reallocation from formal to informal sector. (Aleman-Castilla, 2006) conclude that because of trade liberalization, cost of the trade will be low. Consequently, it will be a strong motivation to participate in formal economy rather than stay in informal sector. Therefore, we expect the sign of openness in our estimation to be negative.

DATA

Because of hidden activities are integral part of informal economy, calculating the accurate size of informal economy is almost impossible. Researchers have used a number of approaches in order to estimate the size of informal economy that are associated with merits and drawbacks (Schneider and Enste, 2000). We draw the size of informal economy based on

(Hassan and Schneider, 2016) which estimated the size of informal economy of 157 worldwide countries between 1999 and 2013. Because tax revenue is total sum of direct and indirect taxes (Prichard et al., 201 4), we introduce governments' tax revenue as a share of GDP as tax burden. Moreover, we use unemployment rate (as percent), logarithm of GDP per capita and openness of economy which calculated sum of import and export of each country as a share of GDP, which all above variables obtained from Word Bank's World Development Indicators (WB—WDI; World Bank, 2014). We also use Transparency International Corruption Perception Index as an indicator of corruption level.

The statistical descriptive of variables and the correlation matrix is illustrated in table 4 and 5 respectively in appendix.

EMPRICAL METHODOLOGY

In Eq (2), $INFORMAL_{it}$ is representing the size of informal economy as a share of GDP, α_i represents a specific effect by each cross-section. Tax Burden is tax revenue of governments as a share of GDP, X_{it} is a vector of explanatory variables. Besides, ϵ_{it} and C_0 are regression's error term and constant term of the model respectively. The estimation of the model by using of the panel data has some advantages such as more efficiency, experiencing more degree of freedom, less multicollinearty between variables (Baltagi, 2008).

$$INFORMAL_{it}=C_0+\alpha_i+X_{it}\beta+\epsilon_{it} \qquad (2)$$

EMPERICAL RESULTS

Firstly, we employ F-Limer test for the below econometrics model to choose between pooled or panel data that result of which indicates in table 1.

Table 1. F-Limer test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	333.839301	(14,83)	0.0000

Based on tabale1, we reject pool method of estimation as null hypothesis because of quantity of p-value is under 0.05. (Johnston and Di Nardo, 1997) suggest because of the low number of Units (countries), we should use fixed effect for the estimation of panel data model, so we neglect the Hausman test. Moreover, fixed effect allow the intercepts to be different by countries (Wooldridge, 2008). Table2 shows the result of fixed effect estimation as below:

Table 2. Panel EGLS estimates[i]

Dependent Variable: INFORMAL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	38.82569	3.298131	11.77203	0.0000
Income	-1.915527	0.430899	-4.445423	0.0000
Corruption	0.053370	0.010156	5.255254	0.0000
Unemployment	0.077913	0.043442	1.793474	0.0765
Openness	-0.016944	0.007397	-2.290811	0.0245
Taxburden	0.055179	0.017326	3.184785	0.0020

Effects Specification

[i] GDP per capita shown as Income in our estimation

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Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0.992965	Mean dependent var	31.88979
Adjusted R-squared	0.991354	S.D. dependent var	17.24074
S.E. of regression	0.760215	Sum squared resid	47.96797
F-statistic	616.5723	Durbin-Watson stat	1.479545
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.985133	Mean dependent var	23.99126
Sum squared resid	59.44949	Durbin-Watson stat	1.240424

However, the results that reported in table 2 are not reliable because of endogeneity problem. To address the endogeneity problem we employ Panel Two-Stage EGLS method of estimation. Also, we consider C_0, corruption and lag of dependent variable and other explanatory variables (Unemployment, Income, Openness and Tax Burden) as instrumental variables. The result of estimation after addressing the endogeneity problem depicts in table 3 as below:

Table 3. Panel Two-Stage EGLS estimates

Dependent Variable: INFORMAL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	62.16235	13.44922	4.622004	0.0000
Income	-4.918531	1.372327	-3.584082	0.0006
Corruption	0.085593	0.016398	5.219734	0.0000
Unemployment	0.576737	0.133952	4.305564	0.0001
Openness	-0.034116	0.015910	-2.144364	0.0356
Taxburden	0.028907	0.027516	1.050581	0.2972

Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0.984187	Mean dependent var	31.94721
Adjusted R-squared	0.979769	S.D. dependent var	12.66006
S.E. of regression	1.152307	Sum squared resid	90.29115
F-statistic	609.9811	Durbin-Watson stat	1.996937
Prob(F-statistic)	0.000000	Second-Stage SSR	33.30737
Instrument rank	21	Prob(J-statistic)	0.567651
Unweighted Statistics			
R-squared	0.969391	Mean dependent var	23.83864
Sum squared resid	103.6844	Durbin-Watson stat	1.264517

As can be seen in table3, Income, Corruption, Unemployment, Openness became significant with expected sign. Therefore, growth in income, decrease the rate of unemployment,

fighting with corruption and moving toward free trade reduce the size of informal economy. However, tax burden is not significant. The fact behind this is due to low rate of tax rate that taxation does not play major role in MENA region. In fact, tax revenue accounts for a little portion of government revenue in some countries of this region and levying tax is almost inefficient. We recommend that in order to reduce the size of the informal economy governments in this region should introduce value added tax that is incorporated in the price because proposed plan minimize the tax evasion (individuals are paying it at every purchase) and is most efficient way that ensure the permanent revenue for governments.

CONCLUSION

We investigate the effective factors playing crucial role in informal economy in MENA region. The results show that all but tax burden were highly significant. Contrary to significant part of literature, we find evidences that tax burden does not play a role in MENA's informal economy Because of governments' tax revenue rooted in low rate of tax in this region. In order to diminish the size of informal economy in MENA region, we suggest that governments introduce value added tax because in this kind of tax there is no inefficiency due to least collection cost.

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