

Estimating Shadow Economy and Tax Evasion by Considering Behavioral Factors

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Abstract

The purpose of the study was to estimate the shadow economy and tax evasion considering behavioral factors during 1967-2015 in the Iranian economy. In doing so, different models were estimated at first, and the final model was selected with the multiple indicators-multiple causes (MIMIC) approach. Then using the side information and calibrating the time series, the relative size of the shadow economy and the absolute size of the shadow economy, and ultimately the tax evasion due to it are calculated. The results showed that the tax morale and import tax burden are among the main causes of the emergence of shadow economy. Hence, unlike developed countries, tax morale increases the shadow economy and tax evasion resulting from it, which reveals tax non-compliance in Iran.

Keywords: shadow economy, tax evasion, behavioral factors, tax morale, MIMIC model.

JEL Classification: E17, E26, H26.

1. Introduction

Tax has always been considered by economic policy makers and numerous studies have been carried out on various aspects of taxation due to its importance in compensating public expenditures and its economic effects which tax evasion is an important aspect of these studies. In most developing countries, high level of corruption and uncertainty about a fair tax system leads to tax non-compliance which is included Iran. The main objective of this research is to estimate the shadow economy and tax evasion with respect to behavioral factors during the period of 1965-2015 in Iran's economy. For this purpose, three hypotheses are tested: 1- Increasing the tax morale will reduce the size of the shadow economy in Iran and the tax evasion caused by it. 2- Increasing tax fair will reduce the size of the shadow economy in Iran and the tax evasion caused by it. 3- Increasing the tax complexity will increase the size of the shadow economy in Iran and the tax evasion caused by it.

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2. Theoretical background, method and data

In order to estimate the shadow economy, there are various methods that are generally divided into micro direct and macro indirect approaches, which in this study are used to estimate the shadow economy and tax evasion resulting from it from the macro indirect approaches and the multiple indicators-multiple causes (MIMIC) approach. Most estimate methods of shadow economy just consider one indicator all shadow economy impacts, but shadow economy effects appear simultaneously in production, labor, and monetary markets. The model approach explicitly considers the multiple causes of the existence and growth of the shadow economy as well as the multiple indicators of shadow economy over time.

The MIMIC approach is based on the statistical theory of observable variables. Using information of covariance among the observable variables, the unobservable variables in the first stage are related to the observable variable in a factor-analytic approach, called the measurement model. Secondly, relations between the unobservable variable and the observable variables are regulated through a structural model. In this sense, the MIMIC model tests the stability of the "structural" theory through data.

The structural equation system used for this model faces with the problem of identification, which to solve the problem; one of the elements y (indicators) is limited to pre-determined value (equivalent to one). In this case, the unique estimation of the parameters will be possible. However, estimated values for each parameter cannot be interpreted absolutely, but rather relatively (to the estimation of other parameters).

Based on MIMIC model, the size of the shadow economy is estimated by considering the variables of behavioral factors for the Iranian economy for the period of 1967-2015. Based on theoretical principles and the use of variables of different causes and indicators, the following final model is used to estimate the shadow economy index.

$$lcp = \lambda_1 SE + \varepsilon_1 \quad (1)$$

$$le = \lambda_2 SE + \varepsilon_2 \quad (2)$$

$$lrh_2 = \lambda_3 SE + \varepsilon_3 \quad (3)$$

$$SE = \gamma_1 ltbimp + \gamma_2 lni + \gamma_3 lun + \gamma_4 rci + \gamma_5 ltaxmorali + \gamma_6 taxfair + \gamma_7 complexity + \varsigma \quad (4)$$

Where lcp is the logarithm of household expenditures, le is the logarithm of energy consumption, lrh_2 is the logarithm of liquidity volume growth, SE is the shadow economy index, $ltbimp$ is the logarithm of import tax burden, lni is the logarithm of Income derived from natural resources, lun is the logarithm of unemployment rate, rci is the logarithm of Per capita income growth, $ltaxmorale$ is the logarithm of tax morale, $taxfair$ is the tax fairness, $complexity$ is the tax complexity.

3. Finding

In order to estimate shadow economy, eight models are estimated at first and among them, the final model is chosen with the multiple indicators-multiple causes approach (MIMIC). In selecting the final model of the shadow economy index measurement, two criteria are considered. The first criterion, used by Frey & Weck_Hannemann (1984) is adaptation of the parameters to the theoretical prediction and their significance, and the second criterion, used by Giles (1999), puts more emphasis on the model fit. In this study, first, models that provide a significant indicator of the shadow economy are selected, and then, among these models, a model that has better general fit criterion was selected among them. Then using the side information and calibrate the time series, the relative size of the shadow economy and the absolute size of the shadow economy, and ultimately the tax evasion resulting from it are calculated.

Estimated values of the shadow economy index by software are ranked numbers. The calibration method is used to calculate the relative size of the shadow economy. The average size of the shadow economy in 2001 in four existing studies is 31.725. The average value is divided on the shadow economy index in 2001 in this research and then the obtained number (13.05) is multiplied in the shadow economy index in other years and the relative values of shadow economy are obtained in different years (as a percentage of the official GDP). The absolute size of the shadow economy of each year is also obtained by multiplying the relative values of the shadow economy in GDP in the same year, and the value of tax evasion of each year is also obtained from multiplying the absolute size of the shadow economy (in Milliard Rials) in ratio of total tax to gross national product (GNP). Based on the result of average relative size of the shadow economy equal to 28.3, the maximum value in 2014 is 34.8 and the minimum value in 1970 is 17.7. The average absolute size of the shadow economy is 355011.5 Milliard Rials. The maximum absolute value of the shadow economy in 2011 is 731771.4 Milliard Rials and its minimum amount in 1965 is equal to 95168.9 Milliard Rials. The average tax evasion during the period is equal to 17968 Milliard Rials. The maximum value is 47756.5 Milliard Rials in 2009, and the minimum value is 4210.5 Milliard Rials in 1967.

4. Conclusion

According to the research results, all three research hypotheses are rejected. The tax morale variable increase the shadow economy and tax evasion caused by it, and the variable of tax fairness and tax complexity does not affect the shadow economy.

According to the results, import tax burden, unemployment rate and the tax morale have a positive effect on the shadow economy index, among which the tax morale has a greater impact on the rise of the index of the shadow economy, and unlike developed countries, the tax morale increases the size of the shadow economy, which is caused by very low tax compliance in Iran. On the other

hand, the effect of increasing the shadow economy on the energy consumption and household expenditure is positive, which has a greater effect on the household expenditure index.

According to the research results, tax compliance in Iran is low, and transparency and accountability and increasing government oversight to reduce corruption can play a major role in increasing tax morale and increasing compliance. On the other hand, in spite of the negative effect of income derived from natural resources on the shadow economy, according to Rahbar and Salimi (2015), in Iran, often backed up by oil revenues, the government increases its spending level in the economy, and this increase can be useful in the short run. In the long run, it reduces prosperity, which has a negative effect on the behavior of taxpayers, so the need to change government policies and reduce the use of oil and gas revenues in the state budget is felt in order to be reduced the negative effects of oil revenues.

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