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The Relation between the Optimal Informal Employment Ratio and Improvement Level

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Abstract

This study is an attempt to analyze the relation between the optimal informal employment ratio and improvement level of the country. Informal employment has advantages and disadvantages. Informal employment causes revenue losses consisting of both tax and social security premium. But also it causes economic growth. The previous study analyzed the optimal informal employment ratio for Turkey and in this study, the relationship between the Gross Domestic Product (GDP) and informal employment ratio (IER) for other economies will be analyzed according to their improvement level. Because in the literature there is an opinion about low informal employment ratio for high income countries and high ratio for low income countries. Because of the effect of public policy and economical structure on underground economy, it will be tried to assess the place of Turkey according to the development level.

Keywords: informal economy, developed and developing countries

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1. Introduction

Underground economy may affect economic growth rate in country positively and negatively. Some researchers thought that there is a positive relationship among growth of underground economy and growth of official economy. Some other researchers found empirical results that show negative relationship among them by using their model. They thought that increasing (decreasing) underground economic activities might decrease (increase) tax revenue of government, and decreasing (increasing) tax revenue may diminish (increase) public infrastructure investments, which are basic element of economic growth. Briefly, there is no consensus on relationship among growth of underground economy and growth of official economy. In the literature there is an opinion about low informal employment ratio for high income countries and high ratio for low income countries. Because of the effect of public policy and economical structure on underground economy, it will be tried to to assess the place of Turkey according to the development level.

2. Informal Economy And Development Level

Most authors trying to measure the informal economy face the difficulty of how to define it. One commonly used working definition is: all currently unregistered economic activities which contribute to the officially calculated (or observed) Gross National Product. A comparison of studies on the informal sector in developed countries and studies in less developed countries has shown that they converge on some basic criteria –undeclared labor, tax evasion, unregulated or unlicensed enterprises, illegality or criminality– used to characterize it. The essential divergence is related to the use of the ‘survival’ criterion. Consequently, studies in developed countries show that the informal sector offers possibilities for growth, whereas research in less developed countries provides evidence that survival is the main characteristic of the informal sector there. As Pardo (1995) observes, survival always ‘legitimizes’ law avoidance in extreme situations, where a conflict between morality and individual rationality emerges: agents justify their actions by lack of choice.

In Schneider’s study *SIZE AND MEASUREMENT OF THE INFORMAL ECONOMY IN 110 COUNTRIES*; estimates of the size of the informal economy in 110 developing, transition and OECD countries are presented. The average size of the informal economy, as a percent of official GNI in the year 2000, in developing countries is 41%, in transition countries 38% and in OECD countries 18%. A large burden of taxation and social security contributions combined with government regulations are presented as the main determinants of the size of the informal economy. So the study makes true the assumption about the low informal economy in developed countries and high informal economy in developing or less developed countries.

3. Informal Economy In Turkish Economy

In Turkish economy Gross Domestic Product (GDP) values are explained quarterly by TUIK (Turkish Statistics Institution) and informal employment ratio by monthly from the datas of TUIK. In the previous study we used the data GDP-Constant (1998) prices (Thousand) (Quarterly) between 2013 December and 2005 January so the inflation effect got rid of. By getting the average of the monthly informal employment ratios we get the quarterly informal employment ratio. Because of the informal employment has both advantages and disadvantages, it is thought that there is a parabolic relationship between the informal ratio and GDP

The model yielded no significant results when informal employment ratio used alone, but significant results were obtained when the informal employment ratio the previous period were used, which could be attributed to the fact that structural characteristics of a preceding terms determine those of the following terms in an economy. For instance, financial authorities take account of the

changes in the tax revenues for the previous year and a higher tax rate is required to meet increasing public expenditures with an increase in the GDP of the previous year.

The model is below:

$$\ln \text{GDP} = 2.822259 \text{ IER} + 0.968453 \ln \text{GDP}(-1) - 3.459556 \text{ IER}(-2)^2$$

As is seen in model, GDP increased with increasing informal employment IER) and decreased with an increase in the informal employment ratio squared. All the coefficients in the model are statistically significant and have a high explanatory power (R^2). Moreover, the model does not present any problems of autocorrelation, multicollinearity, and heteroscedasticity. All these factors make the estimated model a good model.

By using the coefficients in model, the rate that maximizes GDP was calculated for the periods between 2005 and 2013 with the help of the formula $\text{IER}_{\max} = (\alpha + \beta / 2\lambda)$ that maximizes the $\ln \text{GDP}$ and this optimal informal employment ratio is calculated as $2.822259 / (3.459556 * 2) = 0.407893238 = \mathbf{\%40,7893}$. This ratio is the optimal informal employment ratio that maximizes the GDP.

Table 1. Results of the ADF Test

Variables	Level	First Order Difference
LNGDP	-0.32	-20.651*
LNGDP(-1)	-0.2922	-19.95*
IER	0,80	-1.40 *
IER ²	-0.0239	-1.77*

* Rejection of the unit root hypothesis at the 1% level. k is the chosen lag length.

As is clear from Table 1, all of the variables are stationary at first order difference. So model was estimated using Engle-Granger Two-Step Estimation procedure. The estimated model is as follows:

$$\ln \text{GDP} = 2.822259 \text{ IER} + 0.968453 \ln \text{GDP}(-1) - 3.459556 \text{ IER}(-2)^2$$

(0.320447)
(0.005851)
(0.408461)

$R^2=0.82$ $dw=1.6171$

As seen in the Table 2 when the informal employment ratio was applied there is an improvement amount like 2,599,509,782 TL and nearly %2 increase at GDP in 2013.

Table 2: Realized and Calculated Maximum GDP dependent to IER between 2009-2013

Years	Realized Informal Employment Ratio (%)	Realized GDP with fixed 1998 prices (thousand TL)	Maximum GDP with fixed 1998 prices (thousand TL)	Difference (thousand TL)
2009	0.43748	97,003,115	99,433,492	2,430,377
2010	0.43322	105,885,644	107,395,072	1,509,428
2011	0.41927	115,174,724	117,642,482	2,467,758
2012	0.39034	117,625,021	121,178,619	3,553,598
2013	0.36742	122,476,094	125,075,603	2,599,509

So the informal employment ratio maximizing the GDP is approximately %41 for Turkish economy.

4. Conclusion

They are political, economic and social reasons for informal economy. To use informal economy for simulating formal economy as an public policy takes place in the literature.

The sub-criteria used with respect to the political aspect of the informal sector are:

1. government regulation;
2. illegal activities; and
3. national statistics (GNP).

The idea behind this classification is that it captures the influence of the informal sector on politics [involving lack of government regulation, illegal activities and consequently substantial errors in measuring the national product (GNP)].According to the Schneider’s analysis on developed and less developed countries focused on the informal economy, Turkey is not a developed country but its informal employment ratio is decreasing significantly so it is going on to develop and to take place in Western Europe countries.

Appendix 1.

Table 3: Quarterly GDP according to fixed 1998 Prices and Informal Employment Ratio For Turkish Economy

Term	GDP-Fixed (1998) prices (Thousand) (Quarterly)	Informal Employment Ratio
2005-1	19,947,282.90	0.468138125
2005-2	21,577,563.30	0.492339762
2005-3	25,323,570.10	0.49388692
2005-4	23,651,314.50	0.475804192
2006-1	21,133,291.10	0.451005893
2006-2	23,678,188.10	0.475500915
2006-3	26,916,390.20	0.487553312
2006-4	25,010,450.80	0.464917253
2007-1	22,844,200.30	0.446334164
2007-2	24,581,028.30	0.461994502
2007-3	27,772,166.80	0.471454035
2007-4	26,057,230	0.439114072
2008-1	24,445,513	0.413084409
2008-2	25,226,374.60	0.441171162
2008-3	28,009,691.80	0.450829031
2008-4	24,240,150.50	0.431282703
2009-1	20,842,792	0.4096469
2009-2	23,267,231.30	0.443263369
2009-3	27,233,059.80	0.458753275
2009-4	25,660,031.40	0.438294113

	GDP-Fixed (1998) prices (Thousand) (Quarterly)	Informal Employment Ratio
2010-1	23,467,329.70	0.420260216
2010-2	25,692,251.50	0.439052482
2010-3	28,669,613.20	0.445973897
2010-4	28,056,449.60	0.42762776
2011-1	26,382,817.20	0.410743107
2011-2	28,082,510.30	0.42774753
2011-3	31,176,686.60	0.432779781
2011-4	29,532,710.10	0.405838087
2012-1	27,196,829.30	0.378003478
2012-2	28,854,661.80	0.396907613
2012-3	31,643,556.50	0.401364911
2012-4	29,929,973.50	0.38508666
2013-1	28,026,509.50	0.364587796
2013-2	30,183,794.20	0.376788889
2013-3	32,983,071.70	0.376116611
2013-4	31,282,718.60	0.352222334

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