The Effect of Informal Economy on the European Debt Crisis

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Abstract

The informal economy poses a problem not only for developing countries today; it also appears to be a growing problem in all advanced countries of the world. This paper empirically investigates whether the size of informal economy has any effect on overindebtedness in the context of Europe. Thus, we attempt to provide empirical evidence that it is not a coincidence that those countries most severely affected from the crisis are also the ones with the highest size of informal economy, such as Greece, Italy, Spain and Portugal.

The empirical analysis is based on the official data published by European Statistical Agency and the World Bank. The relationship between the informal economy and indebtedness is examined through GMM model on the panel data of 27 EU countries for the years 1999 through 2007. Findings show that there is a significant relationship between informal economy and indebtedness.

Key words: EU Debt Crisis, Informal Economy, Overindebtedness, Budget Deficit

JEL Classification: E26, H6

Informal Economy

Since 1960s, the informal economy, or as called by some, underground economy has taken place in the agenda in almost all the countries. Though it cannot be adequately defined and measured, the efforts of Schneider (1998, 2005), Fiege (1986, 1990, 1996), Tanzi (1983, 1999) and other scholars involved, a serious academic infrastructure and considerably large literature have developed in this subject. It emerges in various forms in different economies, and therefore, it may be named under different names.

According to Schneider (1986), informal economy consists of all the economic activities that cannot be measured due to the absence of any official statistics, although they contribute to the value addition and, therefore, must be considered within the national income calculation. Tanzi (1982) and Smith (1994) define informal economy as market based goods and service production, being legal or illegal, that cannot be included within official GDP calculations. Bagachwa (1995) thinks that underground economy can be classified under three groups: *1)* Informal sector, *2)* parallel economy and *3*) black market economy.

The phenomenon of informal economy is defined under various names in the literature, indicating various aspects of it: underground economy, informal economy, unobserved economy, shadow economy, second economy, parallel economy, hidden economy, illegal economy, unrecorded economy, marginal economy, unreported economy, unofficial economy, dual economy etc. This variation makes it difficult to develop a common definition. In academic studies the term "underground economy" is considered as the most comprehensive definition, as it includes the illegality (Kök and Şapçı, 2006: p.2).

The most essential characteristics of informal economy that determine its content are being illegal, untaxed and unmeasured.

The principal causes behind the existence of informal economy can be summarized as follows:

- Economic causes (unjust distribution of income, inflation, tax system, unemployment)
- Fiscal causes (high tax rates, deficiency in auditing, insufficient accounting services)
- Legal causes (complicated and unclear laws, frequent change in regulation, degeneration in unitary structure)
- Administrative causes (organization of tax authority, technical structure, personnel profile and auditing mechanism)
- Social and psychological causes (tax ethics, taxpayer psychology and historical causes)
- Political causes

Being a phenomenon that affects the economy in general, informal economy destabilizes economic and social balances, and harms macroeconomic indicators and monetary and fiscal policies. The negative consequences of informal economy can be summarized as follows:

- Underreported GNP and growth rates (real levels are usually much higher).
- Deceptive tax burden and therefore, tax injustice.
- Inadequately calculation of public sector volume.
- Budget deficit due to insufficient taxation
- Instability in economic balances due to high borrowing or issuing money
- Inadequate assessment of creditworthiness of firms due to inadequate financial reporting (Saraç, 2010, p: 117)
- Overreported unemployment rates
- Overreported inflation rates
- Inadequate reporting in export, import and current balance indicators
- Inadequate reporting in productivity indicators

- Dollarization (State Planning Organization, 2001, p:8)
- Deviation from economic policies (Yetim, 1999, p:13)
- Welfare loss
- Unjust income distribution (Yılmaz, 1996: p.97)
- Corruption in the society
- Inefficiency in the legal system
- Consumer damnification due to nonstandard, poor quality products
- Unjust competition (Karagül, 1997: p.191).

Along with the negative aspects listed above, informal economy also makes some contribution to the economy, though a few:

- It functions as a kind of "social relief valve" during crises by creating employment and income opportunities, causing increase in supply (Ilgın, 1995: p.45).
- Lower prices on the products due to low cost production, flexibility in working times and conditions (Carter, 1984: p.219).
- Providing dynamism to the economy and causing capital accumulation and growth

While these positive consequences have been observed in some emerging economies like Turkey, informal sector is still an undesirable element and widely considered as an indicator of underdevelopment. It is a negative factor that corners the economy in the long run.

The Size and Development of Informal Economy In EU Countries

Informal economy is no longer a problem of a certain group of countries. It has become an international problem since it is in the agenda of almost every government all over the world. So far, no country has been able to decrease the size of informal economy to zero.

The Informal Economy in Old EU Countries

In this section, the size of informal economy in the European countries is analyzed in two periods: 1) Old EU countries (EU14) and 2) New members except for South Cyprus and Malta (EU8). Table 1 exhibits the ratio of informal economy to formal economy for some OECD countries, including EU14 countries (Yılmaz, 2006: s.134).

Table 1: The ratio of informal economy to the formal economy in certain OECD countries for the period 1960-2001 (%)

	1960	**1978**	**89-90**	**90-93**	**94-95**	**96-97**	**99-2000**	**2001/01**
Sweden	5.4	13.2	15.8	17.0	18.6	19.5	19.2	19.1
Belgium	4.7	12.1	19.3	20.8	21.5	22.2	22.2	22.0
Denmark	3.7	11.8	10.8	15.0	17.8	18.2	18.0	17.9
Italy	4.4	11.4	22.8	24.0	26.0	27.2	27.1	27.0
Nederland	5.6	9.6	11.9	12.7	13.7	13.8	13.1	13.0
France	5.0	9.4	9.0	13.8	14.5	14.8	15.2	15.0
Norway	4.4	9.2	14.8	16.7	18.2	19.4	19.1	19.0
Austria	4.6	8.9	5.1	6.1	7.0	8.6	9.8	10.6
Canada	5.1	8.7	12.8	13.5	14.8	14.9	16.0	15.8
Germany	3.7	8.6	11.8	12.5	13.5	14.8	16.0	16.3
U.S.A.	6.4	8.3	6.7	8.2	9.2	8.8	8.7	8.7
U.K.	4.6	8.0	9.6	11.2	12.5	13.0	12.7	12.5
Finland	3.1	7.6	-	-	-	-	18.1	18.0
Ireland	1.7	7.2	11.0	14.2	15.4	16.0	15.9	15.7
Spain	2.6	6.5	16.1	17.3	22.4	23.0	22.7	22.5
Switzerland	1.1	4.3	6.7	6.9	6.7	7.8	8.6	9.4
Japan	2.0	4.1	-	-	10.6	11.3	11.2	11.1
Greece	-	-	-	27.2	29.6	30.1	28.7	28.5
Australia	-	-	10.1	13.0	13.8	13.9	14.3	14.1
New Zealand	-	-	9.2	9.0	11.3	-	12.8	12.6
Portugal	-	-	-	15.6	22.1	22.8	22.7	22.5
Average	5.1	8.7	11.9	14.4	15.9	16.8	16.8	16.7

Source: F. Schnider, İllegal Activities and The Generation of Value Added: Size, Causes and Measurement of Shadow Economies", Bulletin on Narcotics, Vol. LII, No. 1/2, 2000, p.11

In summary, Table 1 reveals the following:

- The size of informal economy had a rising trend from 1960 to 1997 in EU14, along with all other OECD countries.
- Those countries with the largest size of informal economy for the period 1989-2001 are also the ones that are most frequently cited with regard to the current debt crisis in Europe: Greece (28.5%), Italy (27%), Spain (22.5%) and Portugal (22.5%).
- On average, the size of informal economy is one fourth of formal economy

in these four countries. That is primarily what makes the average size of informal economy in EU14 higher than that of OECD.

- Austria, United Kingdom and The Nederland have the lowest informal economy within EU14. The average rate of informality was nearly thirteen percent in these countries for the period of 2000-2001.
- It can be inferred that the informal economy is a structural problem and, therefore, hard to minimize in the short run.

The Informal Economy in New EU Countries. In 2004, EU realized the fifth and largest expansion by accepting ten new countries, and reached the total of 25. The following expansion has occurred in 2007 by accepting two new members, making the total 27. Eight of those countries which were accepted in 2004 are from former *Socialist Block*, and are also called "transition economies". Among these countries, Estonia, Latvia and Lithuania are from the former *Soviet Union*, and the others from former *Eastern Block*. Table 2 shows the size of informal economy in these eight countries according to different prediction methods and their ranks with respect to informal economy.

As seen from Table 2, the average informality ratios of Estonia, Latvia and Lithuania, which were the members of Soviet Union, have always been lower than the former Soviet Union average. This may be considered an additional indication that these three new EU members have achieved faster structural change compared to other former Soviet Union members like Azerbaijan, Kirgizstan and Georgia. When compared to the EU8 countries, on the other hand, these three EU countries generally have been in the first three positions in terms of the informality. Thus, it can be concluded that these three are less successful in the structural change process compared to other EU8 countries.

Table 2: The size of informal economy in new EU Members (except for Malta and South Cyprus) according to different prediction methods and their ranks with respect to informal economy, from the highest to the lowest.

	Physical Input Method				DYMIMIC Method				Labor Force Participation Method	
Countries	**1990 - 93**	**Rank**	**1994 - 95**	**Rank**	**1990 - 93**	**Rank**	**2000 - 01**	**Rank**	**1998 - 99**	**Rank**
1. Estonia	33,9	1	38,5	1	34,3	1	39,1	2	33,4	1
2. Latvia	24,3	3	34,8	2	25,7	3	39,6	1	29,6	2
3. Lithuania	26	2	25,2	4	26	2	29,4	3	20,3	6
Average (1-3)	28		32,8		28,7		36		27,8	
Soviet Union Avrg.	32,8		40,4		32,9		44.8		37,1	
4.Checz Rep.	13,4	8	14,5	7	13,1	8	18,4	7	12,6	8
5. Hungary	20,7	5	28,4	3	22,3	5	24,4	6	20,9	4
6. Poland	20,3	6	13,9	8	22,3	6	27,4	4	20,9	5
7. Slovakia	14,2	7	15,2	6	15,1	7	18,3	8	16,3	7
8. Slovenia	22,4	4	23,9	5	22,9	4	26,7	5	21,6	3
Average (4-8)	18,2		18,98		19,14		23		18,5	
Inner&Eastern Europe Average	22,4		25,1		23,4		29,2		23,3	
EU8 Avrg. (1-8)	**21,9**		**24,3**		**22,7**		**27,9**		**21,9**	

Source: Schneider, 2003, p. 27.

The remaining five countries of EU8, namely, Czech Republic, Hungary, Poland, Slovakia and Slovenia are from the former Eastern Bloc. The average of this group is lower than the average of *Inner and Eastern European* region. This indicates that these countries have done better in coping with the informal economy. (Savaşan, 2005: p.22)

Table 3 provides the descriptive information with regard to indebtedness of EU countries.

Table 3: General government gross debt per GDP for EU countries

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Euro area (18)	**68.1**	**68.0**	**69.1**	**69.6**	**70.2**	**68.5**	**66.2**	**70.1**	**79.9**	**85.4**	**87.2**	**90.5**
EU (28)	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**:**	**74.3**	**79.8**	**82.3**	**85.1**
Belgium	106.5	103.4	98.4	94.0	92.0	87.9	84.0	89.2	95.7	95.7	98.0	99.8
Bulgaria	66.0	52.4	44.4	37.0	27.5	21.6	17.2	13.7	14.6	16.2	16.3	18.5
Czech Republic	23.9	27.1	28.6	28.9	28.4	28.3	27.9	28.7	34.6	38.4	41.4	46.2
Denmark	49.6	49.5	47.2	45.1	37.8	32.1	27.1	33.4	40.7	42.7	46.4	45.4
Germany	59.1	60.7	64.4	66.2	68.6	68.0	65.2	66.8	74.5	82.5	80.0	81.0
Estonia	4.8	5.7	5.6	5.0	4.6	4.4	3.7	4.5	7.1	6.7	6.1	9.8
Ireland	34.5	31.8	31.0	29.4	27.2	24.6	24.9	44.2	64.4	91.2	104.1	117.4
Greece	103.7	101.7	97.4	98.6	100.0	106.1	107.4	112.9	129.7	148.3	170.3	156.9
Spain	55.6	52.6	48.8	46.3	43.2	39.7	36.3	40.2	54.0	61.7	70.5	86.0
France	56.9	58.8	62.9	64.9	66.4	63.7	64.2	68.2	79.2	82.4	85.8	90.2
Croatia	:	:	:	:	:	:	:	:	36.6	44.9	51.6	55.5
Italy	108.3	105.4	104.1	103.7	105.7	106.3	103.3	106.1	116.4	119.3	120.7	127.0
Cyprus	61.2	65.1	69.7	70.9	69.4	64.7	58.8	48.9	58.5	61.3	71.5	86.6
Latvia	14.1	13.6	14.7	15.0	12.5	10.7	9.0	19.8	36.9	44.4	41.9	40.6
Lithuania	23.0	22.2	21.0	19.3	18.3	17.9	16.8	15.5	29.3	37.8	38.3	40.5
Luxembourg	6.3	6.3	6.2	6.3	6.1	6.7	6.7	14.4	15.5	19.5	18.7	21.7
Hungary	52.7	55.9	58.6	59.5	61.7	65.9	67.0	73.0	79.8	82.2	82.1	79.8
Malta	58.9	57.9	66.0	69.8	68.0	62.5	60.7	60.9	66.5	66.8	69.5	71.3
Netherlands	50.7	50.5	52.0	52.4	51.8	47.4	45.3	58.5	60.8	63.4	65.7	71.3
Austria	66.8	66.2	65.3	64.7	64.2	62.3	60.2	63.8	69.2	72.3	72.8	74.0
Poland	37.6	42.2	47.1	45.7	47.1	47.7	45.0	47.1	50.9	54.9	56.2	55.6
Portugal	53.8	56.8	59.4	61.9	67.7	69.4	68.4	71.7	83.7	94.0	108.2	124.1

Romania	25.7	24.9	21.5	18.7	15.8	12.4	12.8	13.4	23.6	30.5	34.7	37.9
Slovenia	26.5	27.8	27.2	27.3	26.7	26.4	23.1	22.0	35.2	38.7	47.1	54.4
Slovakia	48.9	43.4	42.4	41.5	34.2	30.5	29.6	27.9	35.6	41.0	43.4	52.4
Finland	42.5	41.5	44.5	44.4	41.7	39.6	35.2	33.9	43.5	48.7	49.2	53.6
Sweden	54.7	52.5	51.7	50.3	50.4	45.3	40.2	38.8	42.6	39.4	38.6	38.2
U. Kingdom	37.3	37.1	38.7	40.3	41.7	42.7	43.7	51.9	67.1	78.4	84.3	88.7
Iceland	:	:	:	:	26.0	27.9	28.5	70.4	87.9	93.0	99.1	96.4
Norway	29.2	36.1	44.3	45.6	44.5	55.4	51.5	48.2	42.8	42.5	28.2	28.8
Turkey	77.9	74.0	67.7	59.6	52.7	46.5	39.9	40.0	46.1	42.4	:	:

Source: Eurostat, http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&

Empirical Study

The Hypothesis, Data Source and Model

We hypothesize that the indebtedness of a country is positively affected by the size of its informal economy. In other words, the more the size of informal economy, the more the indebdetness is expected, other factors being held constant. We also use the budget deficit as the control variable, as it is accepted the primary cause for borrowing.

The hypothesized relationship between the size of informal economy and indebtedness of European countries is analyzed through a panel data regression. The panel data consist of annual figures of 27 countries for nine-year-period. Since the time span in this study is not too long for such studies, unit root test is not needed and original levels are used for all variables, not the differences.

The data set consists of the size of informal economy, indebtedness and budget deficit of all 27 EU countries for the period from 1999 to 2007. The informal economy data are obtained from a working paper published by The World Bank. Both indebtedness, as measured by the ratio of public debt over GNP, and budget deficit, as measured by the ratio of budget deficit over GNP, are obtained from Eurostat official database.

We employ the GMM procedure suggested by Arellano-Bond (1991). GMM estimator which uses more instruments (especially dynamic instruments) can produce more efficient estimates than simple instrumental variable estimator (Güloğlu et.al., 2012). It is commonly accepted that GMM method is more appropriate than the fixed effect method when N is larger than T. Since our data consist of 27 countries (N) and 9 periods (T), we use GMM method in this study.

Dynamic models such as GMM include lagged values of endogenous variables along with pure independent variables. While static models explain how exogenous variables determine the endogenous variable in period t, dynamic models also explain how the "change in the pure exogenous variables throughout the time" determines the endogenous variables. We in this study take the t-1 value of indebtedness as the instrumental variable estimator so that we have lagged value of the endogenous variable. The model is formulated as the following:

$$\boldsymbol{DEBT_{it} = \alpha + \beta_1\, INFORMAL_{it} + \beta_2\, DEF_{it} + \beta_3\, DEBT_{it-1} + \varepsilon_{it}} \qquad (1)$$

where,

$DEBT_{it}$ (Dependent variable)	: Public debt / GNP,
α	: The constant term,
INFORMAL (Explanatory v.)	: Size of informal economy,
DEF (Control variable)	: Budget deficit / GNP
$DEBT_{it-1}$	: Previous year's Public Debt / GNP
ε_{it}	: Error term.

The Findings

The test results for the model are exhibited in Table 4.

Table 4. GMM Model Test Results

DEBT (Dependent Variable)	
Number of Groups	27
Number of Observations	188
$INFORMAL_{it}$	1.5472 (0.000)**
DEF_{it}	0.5626 (0.000)**
$DEBT_{it-1}$	0.5944 (0.000)**
Wald Chi-Square	660.88 (0.000)**

Notes: Numbers in the parantheses indicate the probabilities. Two asterisks indicate the significancy in 1% level, while one asterisk at 5% level.

The results indicate that there is no constant term. All dependent variables are found significant at 1% level. Wald test result also indicates that the model as a whole is significant. The findings show that there is a positive relationship between the size of informal economy and the indebtedness, as hypothesized. In other words, the size of informal economy significantly explains the indebtedness of EU countries. When the size of informal economy increases 1 unit, indentedness is expected to increase 1.54 units.

The results suggest that the budget deficit is also signficantly related with indebtedness. That is, if budget deficit increases 1 unit, indebtedness is expected to increase 0.56 units. This result supports the common sense that budget deficit is one of the essential causes of the high debt volume of a country.

Table 5. Autocorrelation and Sargan test of overidentifying restrictions

Arellano-Bond Test for AR (1)	-2.49 (0.002)**
Arellano-Bond Test for AR (2)	-0.36 (0.722)

Arellano-Bond (1991) test of no serial correlation and Sargan test of overidentifying restrictions results are illustrated in table 5. The null hypothesis in serial correlation test in a GMM procedure represents the absence of serial correlation. Note that the second order test must prove the absence of serial correlation for a GMM estimator to be valid. Since the second order test –AR(2) provides a probability higher than 0.05, the null hypothesis cannot be rejected. In other words, there is no serial correlation. Thus, there is no model misspecification and the moment conditions are valid.

As a result, the model can be formulated as the following:

$$DEBT_{it} = 1.5472\ INFORMAL_{it} + 0.5626\ DEF_{it} + 0.5944\ DEBT_{it-1} + \varepsilon_{it} \quad (2)$$

CONLUSION

The European Union has been successful to some extent in achieving integration among 27 countries that have quite different characteristics. Although the underlying vision aims further integration –like the United States, the current situation provides not too much hope for the future: economic problems are so serious and pervasive that no one can see a clear way out from the crises or can talk about a stable future with certainty. This study provides a contribution to the analyses of European financial crisis by focusing on its relationship with the informal economy issue.

The empirical analysis proves that there is a meaningful relationship between informal economy and overindebtedness of EU countries. It is no coincidence that those countries suffering from debt crisis most, namely Greece, Italy, Spain and Portugal are also the ones having the greatest size of informal economy within EU.

The econometric model suggests that 1 unit increase in the size of informal economy causes 1.54 units increase indebtedness, while the size of budget deficit is held constant. 1 unit increase in the size of budget deficit ratio, on the other hand, causes 0.56 unit increase indebtedness.

These results may well provide valuable insight in developing long term economic and fiscal policies for EU.

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