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Abstract

The corruption is a complex and generalized phenomenon all over the world, with cultural, social, psychological, political and economical dimensions. The defining and the studying of the phenomenon are going through the most different thinking filters known in the specialized literature: social-cultural, political, administrative and economic. The article's aim is to quantify and analyze the relationship between corruption and political, administrative and economic determinants factors, through a regressive "pool data" model. The sample includes 135 countries of the world, from all continents, with different degrees of economic development and political-administrative structures, for the period 1996-2008. What is interesting is that, the study shows the distortion into the government intervention function in the economy, seen as a significant proliferation factor for the corruption phenomenon. This connection has different intensity, as the state is developed, developing or in transition. Moreover, there is a number of unobserved factors, which emphasizes or temperate in temporal approach the relationship between corruption - political, administrative and economic determinants factors.

JEL Classification: D73, H10, I30, K20

Keywords: corruption, factors, interventionism, limits, analysis

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1. Introduction

The corruption is a complex and generalized phenomenon all over the world, with economical, cultural, social, psychological, political, administrative and religious dimensions. By consequence, defining and the studying of the phenomenon are going through the most different thinking filters known in the specialized literature: economic, social-cultural, political, administrative and religious. In the economic approach, the government controls the distribution of revenues and the taxation of onerous costs. The private individuals and firms, in such context, tend to receive the advantages from public authority. If the "payment for advantages" is illegal, then we can talk about corruption. In an institutional view, for Rose-Ackerman (1999), the corruption is a symptom for the situations in which the management of the state is inefficient.

All these factors are acting differently, as countries are developed, developing or in transition. According to Cyper & Dietz (2008), performed over time, it was observed that the developed economies, with strong industrial sectors and competitive market, have a low level of corruption. On the opposite side, corruption proliferates in the developing countries and those in transition, with poorly developed economic sectors and weak competitive markets. Moreover, the factors intensity can be "accentuated or temperate" temporally under the parallel influence of unobserved factors, such as: culture, psychosocial individual profile, technological changes, change of government fiscal policies, natural cataclysms, wars or other internal conflicts.

2. Theoretical fundaments

In the economical view, Shleifer and Vishny (1993) see the corruption as a problem related to the monopolistic market structure, not a competitive one, and recommend that policies should focus more closely on the phenomenon of corruption and not on the public sector itself. In a particular way, Al-Marhubi (2000) finds a significant relationship between inflation and corruption, which suggests that a high rate of inflation came with a high corruption. For Wang & Rosenau (2001), the corruption is the secret collaboration between public officials and private actors for private financial gains in contravention of the public's interest

Drehel and Schneider (2006) connect the shadow economy with corruption, as an inverse or direct relationship, depending on the degree of the state development. Based on a model of

general trade policy and fiscal economic equilibrium, Carraro et al. (2006) shows that corruption affects economic growth with different intensities from one period to another (many studies refute this results). Moreover, connecting with economic growth, a couple of authors identify and analyze the inverse relationship between corruption and the level of social welfare. From this group we regard Svensson (2005).

In the social-cultural sense, Nye (1967) considers the corruption as a deviation from the formal duties of a public role, in individual compartmental approach: personal, close family and private clique. The definition summarizes a group of elements, such as bribery, theft, nepotism and misappropriation. Hungtington (1969) identifies different degrees of corruption, from one culture to another, with higher intensity in the modernization periods, the corruption being a social pathology, according to Carvajal (1999).

Husted (1999) describes a cultural profile of a corrupt country as one in which there is high uncertainty avoidance, high masculinity, and high power distance (without individualism, which is highly correlated with GNP per capita). Getz & Volkema (2001) revealed that uncertainty avoidance moderated the relationship between economic adversity and corruption, whereas power distance and uncertainty avoidance were positively associated with corruption.

Nichols et al. (2004), based on a study that includes two states on different continents, argues that the corruption perception seeks the recent history of a population, determined by the foreign domination, the democratic change and the transition periods. Barr and Serra (2006) see the corruption as a phenomenon set of preferences and rules, following the slogan "not engaging in bribery because it is harmful to society". They conclude, concise, that the corruption is, in parte, a cultural phenomenon.

In the political-administrative approach, Hungtington (1969) reveals that the phenomenon of corruption is an effective absence of the political institutions and Rose-Ackerman (1978) shows that the decentralization of government decision-making power increases the risk of corruption, because the review and detection limits are confirmed. Tanzi (1998) accepts the definition of the World Bank, in which the corruption is the simplest kind of public power abuse for private benefits, gifts, mainly related to the state monopoly and the way the government perceives the power. Simply, in a similar way, Rajib and Subarna (2000) develop a general definition of the corruption, as an abuse of public power for private benefit. Referring to the quality of

bureaucratic apparatus, Drehel and Schneider (2006) show that the better quality of the public institutions reduces corruption.

In the religious perspective, a previous research has found that religion influences the tendency of the corruption phenomena. According to Deveterre (2002), the high attention to virtue ethics is the most effective way to combat corruption. Moreover, religions, such as Christianity, may limit the effects of this global problem. Particularly, Paldham (2001) founds that the percentage of Protestants was negatively related to corruption, after controlling for known economic predictors (real gross domestic product per capita). Several years after, Jude (2004) considers that the percentage of Protestants within a nation will be negatively related to the level of corruption within a national economy.

This scientific approach is intended to analyze the relationship between corruption and its determinant factors of political-administrative and economic nature. According to the mentioned premise, all the theoretical presented elements allow us to formulate a series of theoretical working assumptions, which consider two of the approaching coordinates of corruption: one politico-administrative coordinate and another economical one.

The hypotheses are:

H1: The level of corruption is growing as the civil liberties are less respected; the government structures and the government intervention in the economy are more extended.

H2: The level of corruption is growing as the social welfare is decreasing.

In summary, the meanings of the hypothesis' work relations are:

Table 1: The sense („the sings") of the hypothesis' work relations

The trend of corruption level	The determinant factors of corruption	The trend of determinant factors of corruption
+	1. Civil liberty	-
+	2. Public administration structures	+
+	3. Government intervention in economy	+
+	4. Social welfare	-
-	1. Civil liberty	+
-	2. Public administration structures	-

-	3. Government intervention in economy	-
-	4. Social welfare	+

The fundamental assumption is that corruption is a complex phenomenon determined by a couple of factors, such as: civil liberties, the administrative government structure, the intensity of state intervention in economy and the level of social welfare. The linkages are in the same sense for the case of administrative government structure and the intensity of government intervention and contrary for the case of civil liberties and social welfare. Moreover, these factors are acting differently over the time from one type of economy to another and there are a number of unobserved disturbances.

3. Methods and results

To quantify and analyze the relationship between corruption (dependent variable) and politico-administrative and economic determinants factors (independent variables), were considered the period 1996-2008 and a sample of 135 countries of the world, from all continents, with different degrees of economic development and political-administrative structures. According to Cyper & Dietz (2008), for a complex approach, the data set was divided into three cross-sectional panels, as economies are developed - 34 countries, developing - 87 countries and in transition - 14 countries (UNCTAD classification 2009 - Annex). The corruption is quantified by the "Freedom from corruption" index - FC (the component of the Index of Economic Freedom), developed by The Heritage Foundation, on a scale from 0 to 100, where 0 indicates a very high level of corruption and 100 an extremely small one.

The "Civil Liberties" (L) factor is founded by Freedom House - Civil Liberties, the "government structure" (GS) factor is quantified by The Heritage Foundation - Government Size (the component of the Index of Economic Freedom) and "social welfare" (HDI) factor is constructed by the United Nations Development Program - The Human Development Index.

1. The "Civil Liberties" index includes the freedom of expression, assembly, association, education and religion and has a range of intensity between 1 and 7; the value of 1 is assigned to the states in which the degree of freedom is very high and 7 to the ones which have a very small one.

2. The "Government size" index is a component of the "Index of Economic Freedom", which considers the level of government expenditure as a percentage of GDP, including all levels of government, such as central/federal, intermediate/state and local level. The scale value is between 0 and 100. The minimum level corresponds to the states which have a small government spending of GDP, with a reduce redistribution of GDP and government intervention in economy and vice versa.

3. The "Human Development Index" measures the degree of human development by combining life expectancy, education levels and realized income, on a scale from 0 to 1, where 0 denotes a minimum level of welfare and 1 a maximum one.

Because the considered factors have different scales of measurement, for a comparative analysis, the levels of variables were normalized:

$$FC, L, GS_{Normalized} = \frac{FC, L, GS_{Max} - FC, L, GS}{FC, L, GS_{Max} - FC, L, GS_{Min}} \tag{1}$$

$$FC, L, GS_{Normalized} \in [0,1] \tag{2}$$

$$HDI \in [0,1] \tag{3}$$

In this case, for FC - 0 indicates a very high level of corruption and 1 an extremely small one; for L - 0 is assigned to the states in which the degree of freedom is very high and 1 to the ones which have a very small one; and for GS - 0 is the minimum level corresponds to the states which have a small government spending of GDP and 1 to the ones which have a high government spending of GDP.

Based on the normalized illustrated variables, the sense of changes existing between corruption and its determinant factors, in according with theoretical assumptions made above, is as follows:

Table 2: The expected sense („the sings") of the relations between FC - L, GS and HDI, according to working hypothesis

The trend of FC index	The determinant index of FC	The determinant index expected trend
-	1. L	+
-	2. GS	+
-	3. HDI	-
+	1. L	-
+	2. GS	-
+	3. HDI	+

The method of analysis used is the econometrical modeling (with software EViews 5.0), elaborating three "Pool Date"[1] regressive models, with time-fixed effects, one for each type of economy, with this shape:

$$Y_{it} = \alpha + \beta x X_{it} + \lambda_t + v_{ij} \quad (4)$$

where Y_{it} represents the dependent variable - FC, α intercept term, β independent variables coefficients, X_{it} independent variable - L, GS and HDI, λ_t time-varying intercept (captures all of the variables that affect Y_{it} and that vary over time but are constant cross-sectionally), v_{ij} the remainder disturbance (capturing everything that is left unexplained about Y_{it}), *i* cross-sectional units observed for dated periods - (the number of states) and *t* the period of time (years 1996-2008).

With dummy variables, the model could be:

$$Y_{it} = \beta x X_{it} + \lambda_1 x D1_t + \lambda_2 x D2_t + ... + \lambda_T x DT_t + v_{ij} \quad (5)$$

where D_1 represents the dummy variable that takes the value 1 for the 1996 year and 0 elsewhere, and so on.

Finally, the model becomes:

[1] For econometric model we used the econometric software Eviews 5.0.

$$FC_{it} = \beta_1 xL_{it} + \beta_2 xGS_{it} + \beta_3 xHDI_{it} + \lambda_1 xD_{1996} + ... + \lambda_T x\, D_{2008} + v_{it} \quad (6)$$

For testing of three models, I corrected both period heteroskedasticity and general correlation of observations (except the second model, only with heteroskedasticity correction) within a given cross-section because the observations are not equal weight in estimation. Moreover, to obtain the robust coefficient standard errors I applied the Period SUR (PCSE) method.

The econometric analysis of three type economy has two steps:

a. The econometric tests of the „pool data" time-fixed effects models.

b. The "unit root test" of the residuals.

a. The econometric tests of the „pool data" time-fixed effects models, for each type of economies, are presented in Appendix, Tables A1-A3.

For all type of economies, the tests of models show the following:

- the absolute values of the standard errors corresponding to the coefficients of the function are lower than the values of the coefficients, witch sustains the correct estimation of these coefficients (a conclusion reinforced by the low values of the probabilities);
- the value of the correlation coefficient, shows a significant statistical correlation between the dependent variable - FC and the independent variables - L, GS and HDI (the changes in the FC are reflected considerably in the changes of L, GS and HDI);
- the value of F-statistic is bigger then the F-critical value (the probability is almost 0), showing that the model is relevant;
- the Durbin-Watson test (with a resulting value under the critical point of 2) shows that the residual variables are not autocorrelated.

b. The "unit root test" of the residuals. For verifying the stationarity of the residuals are used the „unit root tests" proposes by Levin, Lin & Chu, Breitung t-stat, Im, Pesaran & Shin W-stat, ADF, PP and Hadri Z-stat. The results are illustrated in Appendix, Tables A4-A6.

For the developed and developing economies the tests Levin, Lin & Chu; Im, Pesaran & Shin W-stat; ADF and PP indicate that the null hypothesis is rejected (except Hadri Z-stat test and, partially, the Breitung t-stat), meaning that the „residuals of the cross-sectional group" is stationary.

At limit, for economies in transition, the tests Levin, Lin & Chu; the Breitung t-stat; Im, Pesaran & Shin W-stat; ADF and PP indicate that the null hypothesis of the unit root can be rejected (except Hadri Z-stat test).

In conclusion, all three models may be considered representative to describe, at international level, the connection between FC and L, GS & HDI.

4. Discussion

The obtained results based on the three constructed models show that corruption is mainly the result of political-administrative and economic factors. The main information can be summaries in this way:

Table 7: The main results of relationship between "FC-L, GS and HDI" in the case of Developed economies, Developing economies and Economy in Transition

Type of economies	Developed economies	Developing economies	Economies in transition
	Coefficients		
C	-2.2014	0.1424	0.1651
L	-0.2824	-0.1159	-0.1091
GS	-0.0407	-0.1705	-0.1873
HDI	3.1875	0.5449	0.3190
Year	Period fixed (dummy variables)		
1996	0.0948	0.0426	-0.0246
1997	0.0621	0.0392	-0.0268
1998	0.0819	0.0244	-0.0070
1999	0.0547	0.0225	-0.0068
2000	-0.0018	0.0083	0.0147
2001	0.0070	0.0108	0.0090
2002	0.0083	0.0149	-0.0026
2003	-0.0421	-0.0050	0.0159
2004	-0.0435	-0.0194	0.0216
2005	-0.0584	-0.0262	0.0031
2006	-0.0623	-0.0227	-0.0044
2007	-0.0534	-0.0128	0.0019
2008	-0.0474	-0.0132	0.0061

All three elaborated models confirm the proposed theoretical hypotheses, following the idea that the increasing of corruption (minimizing FC index) is the result of the limitation of civil liberties

(maximizing L index), the extension of public administration structures, the augmentation of government intervention in economy (maximizing GS index) and the damage of social welfare (minimizing HDI index).

In other words, the corruption is high, if the civil liberties are reduced, the structure of government is extended, the government intervention in the economy is increased and the social welfare is decreased. Per a contrario, the corruption is low, if the civil liberties are higher, the structure of government is reduced, the government intervention in the economy is decreased and the social welfare is increased.

These influences are different intensity as the economies are developed, developing or in transition. More, there are other several disturbing unobservable factors, with constant and periodic action. The periodic factors act on the corruption differently, from one year to another, in positive or negative sense, but they have very little effect on corruption (the impact is less than 10% annually).

In the **developed economies** the main factor of corruption is the social welfare, followed by civil liberties, government structure and intensity of the state intervention in economy. In developing economies and economies in transition the corruption depends mainly on the social welfare, then on the state intervention in economy and civil liberties.

On this basis, a low level of corruption is assimilated to developed economies, with high life expectancy, strong literacy and educational attainment and high level of GDP per capita. In this country people have freedoms of expression and belief, associational and organizational rights and personal autonomy without interference from the state. Moreover, the bureaucratic structures are less extensive and state intervention in economy is more temperate, encouraging the private initiative and market competition rules.

Unfortunately, in the developed economies there are significant unobserved factors that constantly stimulate corruption, but also there is a set of unobserved factors with periodical positive or negative actions, with insignificant influence.

A high level of corruption is characteristic for **developing economies or economies in transition**, because the life expectancy is low, the degree of literacy and education is precarious and the level of GDP per capita is low. In addition, freedoms of expression and belief are low, associational and organizational rights limited and personal autonomy has strong interference from the state.

In these economies the state has developed an excessive bureaucratic structure and the state's corrective intervention in economy determines often distortions and inefficiencies in the resource allocation.

In contrast to developed economies, in the developing economies and the economies in transition the constant unobserved factors have a major destructive influence on corruption. Similarly, the unobserved factors with periodical acting have an insignificant positive or negative influence.

5. Conclusions

As a complex phenomenon, the corruption hits the entire world, regardless of the geographical location, population, level of economic development, political regime or type of government.

There are two categories of factors that influence the corruption: some are observed and have constant periodic influence (social welfare, civil liberties, government structure and intensity of the state intervention in economy), while others factors are unobserved, with stimulative or nonstimulative, constant or periodic influences.

Main observable factors act differently as the economies are developed, developing or in transition.

In the developed economies the most important factor is the level of social welfare, followed by civil liberties and government size. In other economies, social welfare is followed by the government size, not by civil liberties. In addition, all these factors are "corrected" by a set of unobservable influences, positive or negative, with constant or periodic acting.

In such conditions, the improvement of corruption phenomenon is difficult to undertake. However, based on the described results, we believe that the corrective measures of corruption must be identified and divided in two categories: one for the developed economies and other for the developing and economies in transition.

a. The improvement of corruption in developed economies must be focused mainly on the public health system efficiency (maximizing life expectancy) and the consolidation of educational system (maximizing the degree of literacy and the level of educational attainment).

A second action, in order of importance, is strengthens of all freedoms of expression and belief, associational and organizational rights and personal autonomy toward state.

In the developed economies, the extension of bureaucracy and the state intervention in economy may be adjusted from a minimum level of efficiency to a maximum level, which corresponds to the point where they exceed the degree of social welfare and civil liberties.

A great attention should be paid in these economies on unobserved factors that have a strong, stimulative and constant influence on corruption and exceed the positive unobserved periodical factors (period dummy). Therefore, regarding corruption, the countries with developed economies have a high sensitivity to certain nonperiodical factors.

b. The improvement of corruption in developing economies and economies in transition must be focused preponderant on the public health reforms (increase of the life expectancy level) and the reconstruction of the educational system (positive effect on degree of literacy and level of educational attainment).

A second step should be polarized on compression of the bureaucracy structures, the increase of the bureaucratic professionalism and performance and implementation of the measures to correct the market allocations, distribution and stabilization. Moreover, the state must "cement" the private initiative and the market competition rules.

Not least, these countries must make serious efforts to strength democracy, respecting the freedoms of expression and belief, associational and organizational rights and personal autonomy toward state.

A big advantage of developing and in transition economies is given by unobserved nonperiodical factors that have a small but destructive influence on corruption (highest in the transition economies). Moreover, these constant factors counteract successfully the unobserved temporal negative factors.

In conclusion, we can appreciate that the improvement measures of corruption phenomenon should be adapted as economies are developed, developing or in transition. Moreover, in a state with developed economy a great attention must be focused on the unobserved constant factors, these types of economies showing a high sensitivity in this sense.

The main results suggest that the corruption is a “key question” especially in developing and in transition economies, but the disturbance constant unobserved factors decrease the phenomenon and compensate the periodical negative unobserved factors.

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Appendix

Table A1: The econometric tests of the „pool data" time-fixed effects model

FC-L, GS and HDI - Developed economies

Dependent Variable: FC?
Method: Pooled EGLS (Period SUR)
Date: 05/23/09 Time: 18:09
Sample: 1996 2008
Included observations: 13
Cross-sections included: 34
Total pool (balanced) observations: 442
Linear estimation after one-step weighting matrix
Period weights (PCSE) standard errors & covariance (no d.f. correction)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.201361	0.271578	-8.105822	0.0000
L?	-0.282434	0.052179	-5.412787	0.0000
GS?	-0.040743	0.020367	-2.000468	0.0461
HDI?	3.187540	0.298404	10.68196	0.0000
Fixed Effects (Period)				
1996--C	0.094760			
1997--C	0.062134			
1998--C	0.081941			
1999--C	0.054703			
2000--C	-0.001758			
2001--C	0.007019			
2002--C	0.008297			
2003--C	-0.042120			
2004--C	-0.043547			
2005--C	-0.058358			
2006--C	-0.062332			
2007--C	-0.053380			
2008--C	-0.047359			

Effects Specification

Period fixed (dummy variables)

Weighted Statistics

R-squared	0.680544	Mean dependent var	1.385802
Adjusted R-squared	0.669296	S.D. dependent var	1.732771
S.E. of regression	0.996462	Sum squared resid	422.9913
F-statistic	60.50123	Durbin-Watson stat	1.978590
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.632566	Mean dependent var	0.649946
Sum squared resid	8.396228	Durbin-Watson stat	0.304257

Table A2: The econometric tests of the „pool data" time-fixed effects model

FC-L, GS and HDI - Developing economies

Dependent Variable: FC?
Method: Pooled EGLS (Cross-section weights)
Date: 05/23/09 Time: 18:09
Sample: 1996 2008
Included observations: 13
Cross-sections included: 87
Total pool (balanced) observations: 1131
Linear estimation after one-step weighting matrix
Period weights (PCSE) standard errors & covariance (no d.f. correction)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.142492	0.020791	6.853494	0.0000
L?	-0.115900	0.011634	-9.962188	0.0000
GS?	-0.170513	0.019265	-8.851125	0.0000
HDI?	0.544997	0.016274	33.48911	0.0000
Fixed Effects (Period)				
1996--C	0.042580			
1997--C	0.039202			
1998--C	0.024439			
1999--C	0.022467			
2000--C	0.008307			
2001--C	0.010848			
2002--C	0.014932			
2003--C	-0.004954			
2004--C	-0.019449			
2005--C	-0.026229			
2006--C	-0.022748			
2007--C	-0.012767			
2008--C	-0.013192			

Effects Specification

Period fixed (dummy variables)

Weighted Statistics

R-squared	0.740736	Mean dependent var	0.437109
Adjusted R-squared	0.737248	S.D. dependent var	0.308896
S.E. of regression	0.158338	Sum squared resid	27.95410
F-statistic	212.3757	Durbin-Watson stat	1.960999
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.316376	Mean dependent var	0.296764
Sum squared resid	28.36319	Durbin-Watson stat	0.129329

Table A3: The econometric tests of the „pool data" time-fixed effects model

FC-L, GS and HDI – Economies in transition

Dependent Variable: FC?
Method: Pooled EGLS (Period SUR)
Date: 05/23/09 Time: 18:33
Sample: 1996 2008
Included observations: 13
Cross-sections included: 14
Total pool (balanced) observations: 182
Linear estimation after one-step weighting matrix
Period weights (PCSE) standard errors & covariance (no d.f. correction)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.165086	0.021603	7.641883	0.0000
L?	-0.109092	0.006595	-16.54245	0.0000
GS?	-0.187252	0.004235	-44.21857	0.0000
HDI?	0.318981	0.027749	11.49523	0.0000
Fixed Effects (Period)				
1996--C	-0.024648			
1997--C	-0.026826			
1998--C	-0.006954			
1999--C	-0.006837			
2000--C	0.014686			
2001--C	0.008961			
2002--C	-0.002604			
2003--C	0.015910			
2004--C	0.021613			
2005--C	0.003104			
2006--C	-0.004368			
2007--C	0.001884			
2008--C	0.006079			

Effects Specification

Period fixed (dummy variables)

Weighted Statistics

R-squared	0.990013	Mean dependent var	2.168570
Adjusted R-squared	0.989111	S.D. dependent var	9.939635
S.E. of regression	1.037226	Sum squared resid	178.5890
F-statistic	1097.040	Durbin-Watson stat	1.998995
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.346309	Mean dependent var	0.210363
Sum squared resid	1.155049	Durbin-Watson stat	0.542193

Table A4: The "unit root test" of the residuals - Developed economies

Group unit root test: Summary
Date: 05/23/09 Time: 18:54
Sample: 1996 2008
Series: RESIDAUSTRALIA, RESIDAUSTRIA, RESIDBELGIUM,
… RESIDUNITEDSTATES
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 2
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.9395	0.0000	34	389
Breitung t-stat	-0.29030	0.3858	34	355
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-8.18247	0.0000	34	389
ADF - Fisher Chi-square	191.506	0.0000	34	389
PP - Fisher Chi-square	199.824	0.0000	34	408
Null: No unit root (assumes common unit root process)				
Hadri Z-stat	8.56268	0.0000	34	442

** Probabilities for Fisher tests are computed using an asympotic Chi -square distribution. All other tests assume asymptotic normality.

Table A5: The "unit root test" of the residuals - Developing economies

Group unit root test: Summary
Date: 05/25/09 Time: 18:09
Sample: 1996 2008
Series: RESIDALGERIA, RESIDARGENTINA, RESIDBAHRAIN,
… RESIDZAMBIA
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 2
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-12.8730	0.0000	87	1000
Breitung t-stat	-0.68155	0.2478	87	913
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-5.71864	0.0000	87	1000
ADF - Fisher Chi-square	319.317	0.0000	87	1000
PP - Fisher Chi-square	337.890	0.0000	87	1044
Null: No unit root (assumes common unit root process)				
Hadri Z-stat	14.3549	0.0000	87	1131

** Probabilities for Fisher tests are computed using an asympotic Chi -square distribution. All other tests assume asymptotic normality.

Table A6: The "unit root test" of the residuals - Developing economies

Group unit root test: Summary
Date: 05/23/09 Time: 19:06
Sample: 1996 2008
Series: RESIDARMENIA, RESIDAZERBAIJAN, RESIDGEORGIA,
… RESIDMACEDONIA, RESIDUKRAINE
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic selection of lags based on SIC: 0 to 2
Newey-West bandwidth selection using Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-2.98818	0.0014	14	164
Breitung t-stat	-1.41211	0.0790	14	150
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-1.25651	0.1045	14	164
ADF - Fisher Chi-square	33.0172	0.2351	14	164
PP - Fisher Chi-square	42.5182	0.0387	14	168
Null: No unit root (assumes common unit root process)				
Hadri Z-stat	4.57709	0.0000	14	182

** Probabilities for Fisher tests are computed using an asympotic Chi -square distribution. All other tests assume asymptotic normality.

Annex

Developing economies	ElSalvador	Namibia	UnitedArabEmirates	Netherlands
	EquatorialGuinea	Nepal	Uruguay	NewZealand
	Ethiopia	Nicaragua	Venezuela	Norway
Algeria	Gabon	Niger	Vietnam	Poland
Argentina	Ghana	Nigeria	Yemen	Portugal
Bahrain	Guatemala	Pakistan	Zambia	Romania
Bangladesh	GuineaBissau	Panama	**Developed economies**	Slovakia
Belize	Haiti	Paraguay	Australia	Slovenia
Benin	Honduras	Peru	Austria	Spain
Bolivia	India	Philippines	Belgium	Sweden
Botswana	Indonesia	Rwanda	Bulgaria	Switzerland
Brazil	Iran	Samoa	Canada	UnitedKingdom
BurkinaFaso	Jamaica	SaudiArabia	Cyprus	UnitedStates
Burundi	Kenya	Senegal	CzechRepublic	**Economies in transition**
Cambodia	Kuwait	Singapore	Denmark	Armenia
Cameroon	Lao	SouthAfrica	Estonia	Azerbaijan
CapeVerde	Lesotho	SriLanka	Finland	Georgia
CentralAfrican	Libyan	Sudan	France	Kazakhstan
Chad	Madagascar	Suriname	Germany	Kyrgyzstan
Chile	Malawi	Swaziland	Greece	Tajikistan
China	Malaysia	Syria	Hungary	Uzbekistan
Colombia	Mali	Tanzania	Iceland	Albania
Congo	Mauritania	Thailand	Ireland	Belarus
CongoDemocratic	Mauritius	Togo	Italy	Croatia
CostaRica	Mexico	TrinidadTobago	Japan	Moldova
DominicanRepublic	Mongolia	Tunisia	Latvia	Russia
Ecuador	Morocco	Turkey	Lithuania	Macedonia
Egypt	Mozambique	Uganda	Malta	Ukraine