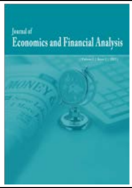
Journal of Economics and Financial Analysis
Type: Double Blind Peer Reviewed Scientific Journal
Printed ISSN: 2521-6627 | Online ISSN: 2521-6619
Publisher: Tripal Publishing House | DOI:10.1991/jefa.v2i1.a14
Journal homepage: www.ojs.tripaledu.com/jefa



A Study on Regime Type and Globalization in Simultaneous Equation Framework

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Abstract

In this study we build a simultaneous equation model in which the measures of different aspects of globalization (attributable to KOF) and different aspects of democracy (attributable to EIU) are related in seven structural equations. A bi-directional relationship between democracy and globalization is visualized. The model is estimated by the conventional 2-SLS as well as a modified 2-SLS in which Shapley value regression is used at the second stage of 2-SLS. On the basis of our analysis, we document several findings. First, we find that democracy and globalization promote each other and hence there is a bi-directional causality with positive relationships running both ways between democracy and globalization. At a national level, there may be various intermediary conditions that modify the relationship as well as set in motion a complex of positive and/or negative feedbacks to accelerate or retard the pace of globalization and democratization in a country-specific manner. However, when a large number of countries are studied, a clear relationship emerges out. Second, there is a need to estimate the structural coefficients of the model cautiously since the regression equations may be suffering from collinearity among the predictor variables. The Shapley value regression based 2-SLS has performed better than the conventional regression in estimating the structural parameters of the model. Third, the system methods of estimation of the model gives better results than what are obtained by the single equation methods of estimation of structural parameters of the model.

Keywords: *Simultaneous equations model; Two-Stage Least Squares; Instrumental Variables; Collinearity; Shapley Value Regression; Democracy Index; Globalization Index.*

JEL Classification: *C30, C36, C51, C57, C61, C71, F63*.

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I am thankful to Prof. David Simon Hall for his critical comments that improved the paper significantly. However, the remaining imperfections are solely attributable to me.

1. Introduction

The bearing of regime type (that has democracy and authoritarianism at two opposite poles) on globalization are debatable. On the one hand, there are research findings and arguments that suggest a positive influence of democratic attributes in governance on globalization, while, on the other hand, there are empirical studies as well as consorted line of reasoning that favours authoritarian elements in governance to promoting globalization. Reversing the arrow of causality, some scholars have given the logic along with empirical evidences that globalization promotes democracy while some others have reasons to contend that globalization hurts democracy. Since a political regime has more pervasive, direct and explicit effects, the issue of impacts of globalization on democracy has elicited more attention of the scholars.

Economists such as Schumpeter (1950), Lipset (1959), and Hayek (1960) argue that free trade and capital flows, by enhancing the efficiency of resource allocation lead to economic development which fosters demand for democracy. Schwartzman (1998) identifies class conflict as the social mechanism linking world-system processes to national political dynamics. In this framework, domestic political structures become part of the evolving transnational fabric of economic relations. Consequently, globalization promotes democracy at the national level which in turn facilitates further globalization in the interest of the dominant world economic system.

Li and Reuveny (2003) study 127 countries for 26 years (1970-1996) and finds that different constituents of globalization affect democracy in different manner not conformal to each other. In their own words: *"Trade openness and portfolio investment inflows negatively affect democracy. The effect of trade openness is constant over time while the negative effect of portfolio investment inflows strengthens. FDI inflows positively affect democracy, but the effect weakens over time. The spread of democratic ideas promotes democracy persistently over time."*

Sobhan (2003) argues that the process of globalization represents involuntary and often extraneous constraints on the government and the people of a country. Countries with weak democratic institutions and undiversified or externally dependent economies fall prey to the globalization forces. Globalization may favourably help the economies that can diversify and where political institutions are strong enough to protect the interests of the citizens of different sections.

Rudra (2005) covers 59 developing countries for the time period 1972-97 and finds that globalization does not directly and unconditionally promote democracy. Increasing exposure to international export and financial markets does lead to improvements in democracy only if safety nets are used simultaneously as a strategy for providing stability and building political support.

Eichengreen and Lebang (2006) analyses a long series of historical data (1870-2000) for a large number of countries and finds a bidirectional causality suggesting the existence of positive relationships running both ways between democracy and globalization.

For Acemoglu and Robinson (2006a) the relationship between development and political regime is not a direct one. The political regime type shapes and is also shaped by economic conflict between elites and citizens. Political elites are unlikely to block development when there is a high degree of political competition or when they are highly entrenched. Expected political replacement effect has a direct bearing on the involvement of the elite class in a country in facilitating or discouraging globalization. Acemoglu and Robinson (2006b) also observe that key democratizing forces associated with trade openness depend on country’s relative factor endowment.

Milner and Mukherjee (2009) studies 130 developing countries in the period 1975-2002 distributed over different continents. It finds that democracy fosters trade and capital account liberalization, while the effect of economic openness on democracy is positive but weak. Neither trade nor capital account liberalization has any statistically significant effect on democratization.

Turyahikayo (2014) examines the impact of globalization on domestic political structures and processes in established, transitional and non-democratic regimes. It reveals that globalization has been used as a tool by the established democracies with strong economies to exploit transitional governments and non-democracies through expanding the range of exploitative investment to bring poorer countries in the ambit of influence. Such an expansion feeds on cheap labour. The destination countries of such investment also work as dumping ground for the industrial waste.

Steiner (2015) studies macro-level dataset on legislative elections in 23 established democracies over the period 1965-2006 to test the hypothesis that higher levels of economic globalization result in lower turnout (for voting). The results of the study emphatically indicate that economic globalization has negative effects on electoral turnout in established democracies on account of reduced party polarization (low dispersion) with limited option with regard to economic policy that also induces citizens to think of contesting parties as having less influence on the economy. In view of this, globalization may have a negative effect on public participation in the political domain.

Nayyar (2015) observes that the relationship between democracy and globalization is dialectical rather than linear or unidirectional. The causation runs in both directions in different spheres whose interaction shapes the outcome.

Stein (2016) investigates into the question whether a sovereign state system, democratic governments, and an integrated global marketplace can coexist. It assesses analytic materialist arguments for their incompatibility and the key assumptions on which they rest. It *"describes the extant pressures operating to limit each of the three: how sovereignty and democracy work to constrain globalization, how globalization and sovereignty generate a democratic deficit, and how globalization and democracy lead to limitations upon, and even the transcendence of, sovereignty."*

Haffoudhi and Bellakhal (2016) finds that the impact of globalization on democracy is demographic-regime specific. Countries that overlooked Malthusian constraints fostered democracy, whereas countries with late demographic transitions, suffering yet of Malthusian constraints, famines and chronic under-nutrition or failed to invest in human capital and consequently have had inefficient resource allocation, also fail to promote democracy.

Kollias and Paleologou (2016) studies the relationship between KOF [1] globalization indices and Polity measures of democracy in 110 countries of different income levels (high, medium and low) for the period 1970-2011 and finds a positive impact of globalization on democracy, but this is not universally true across all income groups since any effect exerted by globalization on democracy may differ depending on a country's attributes.

This brief review of research suggests that the relationship between globalization and democracy (or the political regime of whatever type) may not be direct. It is mediated by the country-specific institutions, class interests, resource endowments, institutional structure, demographic characteristics, involvement and effectiveness of the national government in proper management of the economy and the polity and so on. Depending on mediating forces globalization and democratization may have mutually reinforcing or mutually conflicting relationship. However, irrespective of the country-specific scenarios, a canonical correlation analysis of the measures of democracy and the measures of globalization of a large number of countries indicates that democracy and globalization are conformal to each other.

[1] KOF [Konjunkturforschungsstelle or Economic Research Centre of ETH Zurich]. 2017 Index of globalization. http://globalization.kof.ethz.ch/media/filer_public/2017/04/19/rankings_2017.pdf

2. The Present Study

The investigation at hand acknowledges bi-directional causality between globalization and democracy (or the political regime that has full democracy at the one end and authoritarianism at the other). It holds that the regime type affects the extent of globalization and also that globalization affects the regime type tending to favour democratization.

To capture the bi-directional causality mentioned above, this study constructs a simultaneous equation model in which five measures (detailed out below) of different aspects of a regime, ranging between the two poles of full democracy and authoritarianism, aim at explaining six indicators of globalization (detailed out below). Additionally, some of the indicators of globalization influence the overall index of democracy. The globalization indicators as well as the overall index of democracy are, thus, the endogenous variables in the model while the indicators of political regime are predetermined (exogenous) variables.

The Economist Intelligence Unit (EIU), a British business within the Economist Group has published the Democracy Index for 2006, 2008 and 2011 and for every year afterwards up to 2016. The index is based on 60 indicators grouped in five different categories or dimensions of regime ranging from democracy to authoritarianism. These categories are: Electoral process and pluralism (*EPP*), Functioning of government (*FOG*), Political participation (*PPN*), Political culture (*PCL*) and Civil liberties (*CVL*), each one measured by an index.

The five measures of different aspects of democracy (*EPP*, *FOG*, *PPN*, *PCL* and *CVL*) mentioned above pertaining to any particular year may be suitably weighted and aggregated to yield an overall index (*DI*, or the Index of Democracy with the score value in the range of zero to ten). On the basis of the score value (*DI*) the political systems of different countries may be classified into Full democracies (score value in 8-10 range), Flawed democracies (score value in 6 to below-8 range), Hybrid regimes (score value in 4 to below-6 range) and authoritarian regimes (score value below 4).

The KOF[2] visualizes three aspects of globalization: economic, social and political. The economic aspect of globalization is measured by two indices, the social aspect of globalization is measured by three indices and the political aspect has only one measure. The indices of globalization are, thus, six in number. They are: (1) *E1* - actual economic flows such as trans-border trade, direct investment and portfolio investment, (2) *E2* - relaxation of restrictions on trans-border trade

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as well as capital movement by means of taxation, tariff, etc., (3) *S1* - trans-border personal contacts such as degree of tourism, telecom traffic, postal interactions, etc., (4) *S2* - flow of information, (5) *S3* - cultural proximity, and (6) *P* - the measure of trans-national political set up. All the six (*E1* through *P*), by a scheme of linear combination, are used to arrive at the overall composite index of globalization (say, *Γ*) as described in Dreher (2006) and Dreher et al. (2008). Mishra (2017) uses Almost Equi-Marginal Contribution (AEMC) principle for making a linear combination of globalization aspect indicators *E* through *P*. Unlike the KOF index of globalization (based on linear aggregation through the Principal Component Analysis), the AEMC index of globalization is based on the linear aggregation such that the expected mean marginal contributions (Shapley value shares) of all constituent variables to the synthetic index are as close to each other as possible. The composite index of globalization based on AEMC principle may be denoted by *G*.

Table 1. Summary for Data Abbrevation and Description

Abbrevation	Description
EPP	Electoral process and pluralism;
FOG	Functioning of government;
PPN	Political participation;
PCL	Political culture;
CVL	Civil liberties;
DI	Index of Democracy with score value range between 0-10;
E1	Actual economic flows such as trans-border trade, direct investment and portfolio investment;
E2	Relaxation of restrictions on trans-border trade as well as capital movement by means of taxation, tariff, etc.;
S1	Trans-border personal contacts such as degree of tourism, telecom traffic, postal interactions, etc.;
S2	Flow of information;
S3	Cultural proximity;
P	The measure of trans-national political set up.

3. A Simultaneous Equation Model of Globalization and Regime Type

Since our study visualizes a bi-directional causal relationship between democracy (political regime type) and globalization, the measures of different aspects (economic, social and political) of globalization are endogenous variables that directly or indirectly influence each other. The overall democracy index at a later date (DI_{16} for the year 2016) also is one of the endogenous variables influenced by the globalization indices of the earlier date (during 2006-2014). The measures of different aspects of democracy (for the year 2006) are the predetermined (exogenous) variables. Our simultaneous equation model is given in the schematic form as under. We have made a comparative study of two scenarios that we describe in the next section. In the model below, t is denoting pessimistic or optimistic vector pertaining to the two scenarios. All the relationships in the model characterize following linear equations (abbreviations in table 1).

$$E1_t = f(E2_t, S1_t, FOG_{06}, PCL_{06}, CVL_{06}) \qquad eq.(01)$$

$$E2_t = f(S2_t, S3_t, P_t, EPP_{06}, PPN_{06}) \qquad eq.(02)$$

$$S1_t = f(E1_t, S3_t, FOG_{06}, PCL_{06}, CVL_{06}) \qquad eq.(03)$$

$$S2_t = f(E2_t, FOG_{06}, PPN_{06}, PCL_{06}, CVL_{06}) \qquad eq.(04)$$

$$S3_t = f(P_t, EPP_{06}, FOG_{06}, PPN_{06}, PCL_{06}) \qquad eq.(05)$$

$$P_t = f(E1_t, E2_t, S1_t, S2_t, S3_t) \qquad eq.(06)$$

$$DI_{16} = f(E2_t, S1_t, S2_t, S3_t, P_t) \qquad eq.(07)$$

4. Data on the Measures of Democracy and Globalization

Under our study there are 116 countries distributed over the continents, viz. Africa, the Americas, Asia, Australia, Europe and Oceania. These countries together represent all types of political regime (full democracy to authoritarian) and all levels of globalization (very low, medium and high). The data used by us are presented in the appended tables: Table A1, Table A2 and Table A3.

In table A1 we present five measures for democracy (EPP_{i06}, FOG_{i06}, PPN_{i06}, PCL_{i06} and CVL_{i06}; $i=1$ through 116) for the year 2006 as well as the overall measure of democracy for 2016. The measures of democracy for 2006 make our exogenous variables while the overall measure of democracy for 2016 (DI_{i16} $i=1,2,..., 116$) is one of our endogenous variables.

As to the measures of different aspects of globalization, we have used the KOF indices[3] for the period 2006-2014. However, we have not used a time series data for any country under study for the entire period 2006-2014. From the available time series over the years (for all countries under study), we have formed two scenarios. For any particular i^{th} country (among 116 countries considered in the study at hand) we have G for 9 years, 2006-2014 that we denote by G_{ij}; *j=2006* through 2014 and *i=1* through 116.

For every G_{ij} we have the associated sub-indices [$E1_{ij}$, $E2_{ij}$, $S1_{ij}$, $S2_{ij}$, $S3_{ij}$ and P_{ij} ; *j=2006* through 2014 and *i=1* through 116]. We have constructed two vectors:

$$(1) \qquad \left[E1_i^{min}, E2_i^{min}, S1_i^{min}, S2_i^{min}, S3_i^{min}, P_i^{min}\right]$$

which is associated with

$$G_i^{min} = \min_j\left(G_{ij}\,;_{j\in[2006,2014]}\right) \text{ where } i = 1, 2, 3, \dots, 116$$

that gives us the set of values associated with the lowest extent of globalization experienced by any country during 2006-2014.

Similarly,

$$(2) \qquad [E1_i^{max}, E2_i^{max}, S1_i^{max}, S2_i^{max}, S3_i^{max}, P_i^{max}]$$

which is associated with

$$G_i^{max} = \max_j\left(G_{ij}\,;_{j\in[2006,2014]}\right) \text{ where } i = 1, 2, 3, \dots, 116$$

that gives us the set of values associated with the highest extent of globalization experienced by any country during 2006-2014. We may call them pessimistic (associated with $G^{\min}$) and optimistic (associated with $G^{\max}$) vectors of globalization. We have these two vectors as our endogenous variables for estimating the model for pessimistic effects of the indicators of the political regime and optimistic effects of the indicators of the political regime.

5. Estimation of the Model

There are several methods to estimate a simultaneous equation model that may be primarily classified into two groups: (1) single equation methods, and (2) system methods. The single equation methods are easy to apply and free from the undesirable effects of misspecification of other equations in the model, but they are susceptible to the detrimental effects of disturbances correlated across the

[3] KOF [Konjunkturforschungsstelle or Economic Research Centre of ETH Zurich]. 2017 Index of globalization. http://globalization.kof.ethz.ch/media/filer_public/2017/04/19/rankings_2017.pdf

equations. The system methods are cumbersome and susceptible to the problems of misspecification of equations in the model, but they perform well even if the disturbances across the equations are correlated. Between the single equation and the system methods of estimation, thus, there is a trade-off between deleterious effects of *'misspecification'* and *'correlated residuals across the equations'* in the model. Since little is known about correct specification of different equations in our model, we have favoured the single equation method of estimation for ease in computation as well as for avoiding the possible risk in proceeding to the system method of estimation under the circumstances of misspecification. We also do not have reasons to assume the disturbances in the equations to be normally distributed. Under these circumstances we have chosen the Two-Stage Least Squares (2-SLS) method of estimation since it handles instrumental variables in a very natural manner.

5.1. The Two-Stage Least Squares for structural Equations

If an econometric model is specified as $\mathrm{YA} + \mathrm{XB} + \mathrm{U} = 0$ (where *Y* are current endogenous and *X* are predetermined variables), the 2-SLS method first obtains the Ordinary Least Squares (OLS) based expected values of *Y* by the relationship $\hat{Y} = \mathrm{XC}$ (where *C* is the matrix of reduced form coefficients) and in order to proceed to the second stage substitute the estimated $\hat{y}$ for observed *y* in the equation wherever it is a regressor variable (and not the regressand variable). Thus, among the regressor variables $\hat{y}$ would be used as an instrumental variable (Reiersol, 1945) representing *y*, while *x* is its own instrument. This approach renders the use of OLS at the second stage free from the stochastic regressor problem.

5.2. Possible Collinearity among Regressors at the 2nd Stage and its Treatment

However, since at the second stage, the 2-SLS uses the estimated values of some endogenous variables together with some predetermined variables as regressors, collinearity among the regressor variables may arise. This is because the estimated values of endogenous variables are the linear functions of the predetermined variables in the model. Collinearity may affect standard errors of the estimated parameters. Signs of the estimated parameters also may be wrong (Smith and Brainard, 1976). In view of this, we have also used the Shapley value regression at the second stage of 2-SLS and compared the results of this choice with the conventional method that uses OLS at the second stage.

5.3. The Shapley Value Regression

Shapley value regression significantly ameliorates the deleterious effects of collinearity on the estimated parameters of a regression equation. The concept of Shapley value was introduced in (cooperative collusive) game theory where agents form collusion and cooperate with each other to raise the value of a game in their favour and later divide it among themselves. Distribution of the value of the game according to Shapley decomposition has been shown to have many desirable properties (Roth, 1988, pp.1-10) including linearity, unanimity, marginalism, etc. Following this theory of sharing of the value of a game, the Shapley value regression decomposes the R^2 of a conventional regression (which is considered as the value of the collusive cooperative game) such that the mean expected marginal contribution of every predictor variable (agents in collusion to explain the variation in *y*, the dependent variable) sums up to R^2.

The scheme of Shapley value regression is simple. Suppose *z* is the dependent variable and $x_1, x_2, \ldots, x_k \in X$ are the predictor variables, which may have strong collinearity. Let $Y_i \subset X$ in which $x_i \in X$ is not there or $x_i \notin Y_i$. Thus, Y_i will have only *k-1* variables. We draw *r* $(r=0, 1, 2, \ldots, k-1)$ variables from Y_i and let this collection of variables so drawn be called P_r such that $P_r \subseteq Y_i$. Also, $Y_i = Y_i \cup \emptyset$. Now, P_r can be drawn in $L=kCr$ ways. Also, let $Q_r = P_r \cup x_i$. Regress (least squares) z on Q_r to find R^2_q. Regress (least squares) *z* on P_r to obtain R^2_p. The difference between the two R-squares is $D_r = R^2_q - R^2_p$, which is the marginal contribution of x_i to *z*. This is done for all L combinations for a given *r* and arithmetic mean of D_r (over the sum of all *L* values of D_r) is computed. Once it is obtained for each *r*, its arithmetic mean is computed. Note that P_r is null for $r=0$, and thus Q_r contains a single variable, namely x_i. Further, when P_r is null, its R^2 is zero. The result is the arithmetic average of the mean (or expected) marginal contributions of x_i to *z*. This is done for all x_i; $i=1, k$ to obtain the Shapley value (S_i) of x_i; $i=1, k$. In the regression model $z=Xb+u$, the OLS gives a value of R^2. The sum of all S_i; $i=1,2, \ldots, k$ is equal to R^2. Thus, OLS R^2 has been decomposed. Once all Shapley value shares are known, one may retrieve the coefficients (with original scale and origin) by solving an optimization problem suggested by Lipovetsky (2006) using any appropriate optimization method. A simple algorithm and computer program is available in Mishra (2016).

6. Empirical Findings

As pointed out earlier, we have used two alternative vectors of globalization measures, the one related to G^{min} and the other related to G^{max}. Therefore, we have two parallel findings, the one for a pessimistic view and the other for an optimistic view of globalization.

The reduced form coefficients matrices C (based on OLS) are given in table 2 for pessimistic and optimistic views of globalization at Panel A and Panel B respectively. Their standard errors are not presented because the coefficients are used only to obtain the expected values of endogenous variables.

Table 2. Estimated Reduced Form Coefficients Matrix (Transposed C)

Equation Number	Regressand Variable	Reduced Form Coefficients of Predictor Variables (All Predetermined) Relating to Political Regime						R^2
		EPP	***FOG***	***PPN***	***PCL***	***CVL***	***CONST***	
Panel A: Pessimistic Scenario of Globalization								
1	E1	-0.09669	0.24146	0.24643	0.18092	0.08821	23.34796	0.3753
2	E2	0.09687	0.28829	-0.00578	0.20171	0.00678	23.07078	0.5184
3	S1	-0.14461	0.08996	0.21068	0.53211	0.30117	-12.02201	0.5231
4	S2	-0.04587	0.05542	0.20342	0.31348	0.22407	21.23889	0.5171
5	S3	-0.01793	0.42558	0.21272	0.55329	0.07899	-33.44582	0.4838
6	P	0.00492	0.00730	0.19940	0.15338	0.09913	46.08075	0.2507
7	DI	0.07114	0.20676	0.09848	0.23259	0.32429	3.07933	0.8982
Panel B: Optimistic Scenario of Globalization								
1	E1	0.12400	0.10555	0.07432	0.20298	-0.06958	42.89204	0.2417
2	E2	0.09679	0.23024	-0.02864	0.24574	0.05692	26.76866	0.5184
3	S1	-0.16699	0.12057	0.22784	0.48374	0.30252	-8.67294	0.5180
4	S2	-0.07373	0.08948	0.19270	0.30243	0.20114	25.23083	0.5035
5	S3	-0.06626	0.45089	0.36109	0.43824	0.11419	-30.03597	0.4843
6	P	0.06859	0.01120	0.17536	0.21128	-0.04321	52.97000	0.2898
7	DI	0.07114	0.20676	0.09848	0.23259	0.32429	3.07933	0.8982

Notes: Numbers in the table are coefficients of predictor variables estimated by OLS technique. Panel A pertains to globalization with pessimistic scenario, while panel B displays estimation with optimistic scenario. For descriptions of abbreviated variables see table 1. Equation numbers correspond to equations 1-7 explained in section 3.

At the second stage, we estimate the structural parameters (A and B) by OLS (i.e. conventional 2-SLS) and present them in table 3 where Panel A and Panel B correspond to pessimistic and optimistic views respectively. As the proposed alternative at the second stage, we also estimate the structural parameters by Shapley value regression and present them in table 4 (pessimistic and optimistic views at Panel A and B respectively). It may be noted that obtaining the coefficients of the Shapley value regression we have to use an efficient optimization method (Lipovetsky, 2006; Mishra, 2016). In the present study, this is done by the Host-Parasite Co-Evolutionary algorithm, which is a powerful biologically inspired population method of global optimization (Mishra, 2013). In table 3 and table 4, the current endogenous parameters matrix (A) has in the principal diagonal cells minus unity which pertains to the dependent endogenous variable in the equation concerned. A zero in an off-diagonal cell denotes that the endogenous variable is not included in the particular equation. Similarly, in B matrix, a zero in a cell denotes that the particular predetermined variable is not included in the equation concerned.

Moreover, we also report standard errors of estimate of the coefficients corresponding to the Shapley value based 2-SLS structural coefficients reported in table 4 using Jackknife resampling technique. For both (Panel A and B) the t-*value* for all endogenous (but none of the predetermined) predictors are statistically significant at 1% level.

Table 3. Estimated Structural Parameters Based on Conventional 2-SLS Estimation

Eqs. No.	Endogenous Variables (Transposed A Matrix)							Predetermined Variables (Transposed B Matrix)						R^2
	E1	*E2*	*S1*	*S2*	*S3*	*P*	*DI*	*EPP*	*FOG*	*PPN*	*PCL*	*CVL*	*CONST*	
Panel A: Pessimistic Scenario of Globalization														
1	-1	0.7800	1.1911	0	0	0	0	0	-0.0910	0	-0.6100	-0.2760	19.6726	0.3753
2	0	-1	0	1.4254	0.5535	-3.5950	0	0.1899	0	0.3030	0	0	176.946	0.5184
3	1.6709	0	-1	0	-0.9450	0	0	0	0.0888	0	0.7528	0.2284	-82.6508	0.5231
4	0	-0.4740	0	-1	0	0	0	0	0.1919	0.2010	0.4090	0.2273	32.1631	0.5171
5	0	0	0	0	-1	0.7969	0	-0.0220	0.4198	0.0540	0.4311	0	-70.1672	0.4838
6	-0.2110	-0.6580	-0.8960	1.5482	0.5704	-1	0	0	0	0	0	0	41.6162	0.2507
7	0	0.2382	-2.363	6.0177	0.096	-3.2440	-1	0	0	0	0	0	-5.9572	0.8982
Panel B: Optimistic Scenario of Globalization														
1	-1	2.3547	0.6222	0	0	0	0	0	-0.5116	0	-0.6766	-0.3918	-14.7428	0.2417
2	0	-1	0	0.0160	0.5052	0.0923	0	0.1251	0	-0.2303	0	0	36.6456	0.5184
3	-0.9095	0	-1	0	0.8182	0	0	0	-0.1523	0	0.3098	0.1458	54.9108	0.5180
4	0	-0.7618	0	-1	0	0	0	0	0.2649	0.1709	0.4896	0.2445	45.6232	0.5035
5	0	0	0	0	-1	-2.6429	0	0.1150	0.4805	0.8245	0.9966	0	109.9563	0.4843
6	1.2483	-0.6065	-0.0036	0.4164	-0.0394	-1	0	0	0	0	0	0	3.9434	0.2898
7	0	0.8967	-2.2264	4.6889	-0.3119	-0.9095	-1	0	0	0	0	0	-119.7295	0.8982

Notes: Numbers in the table are coefficients of predictor variables estimated by conventional 2-OLS technique. Panel A presents estimation of globalization with pessimistic scenario, while panel B displays estimation with optimistic scenario. For descriptions of abbreviated variables see table 1. Equation numbers corresponds to equations 1-7 explained in section 3.

Table 4. Estimated Structural Parameters Based on Shapley-Value Regression 2-SLS Estimation

Eqs.	Endogenous Variables: Transposed A Matrix							Predetermined Variables: Transposed B Matrix						R^2
	E1	*E2*	*S1*	*S2*	*S3*	*P*	*DI*	*EPP*	*FOG*	*PPN*	*PCL*	*CVL*	*CONST*	
Panel A: Pessimistic view														
1	-	0.2246*** (0.0346) [6.4913]	0.1801*** (0.0265) [6.7962]	-	-	-	-	-	0.1058 (0.2062) [0.5131]	-	0.1413 (0.1769) [0.7988]	0.0857 (0.1334) [0.6424]	-41.2332 (5.6861) [-7.2516]	0.3618
2	-	-	-	0.1921*** (0.0200) [9.605]	0.1235*** (0.0173) [7.1387]	0.2956*** (0.0316) [9.3544]	-	0.0669 (0.1249) [0.5356]	-	0.1025 (0.1418) [0.7228]	-	-	-47.4994 (4.8967) [-9.7003]	0.4803
3	0.3173*** (0.0245) [12.951]	-	-	-	0.1711*** (0.0141) [12.1348]	-	-	-	0.1374 (0.1407) [0.9765]	-	0.2075 (0.1916) [1.0830]	0.1146 (0.1970) [0.5817]	-52.7262 (4.9762) [-10.5957]	0.5040
4	-	0.2622*** (0.0265) [9.8943]	-	-	-	-	-	-	0.1158 (0.1414) [0.8190]	0.1397 (0.2119) [0.6593]	0.1682 (0.2010) [0.8368]	0.1077 (0.1581) [0.6812]	-45.3551 (3.7463) [-12.1066]	0.5058
5	-	-	-	-	-	0.6622*** (0.0872) [7.594]	-	0.1198 (0.2107) [0.5686]	0.2281 (0.3092) [0.7377]	0.2233 (0.3342) [0.6682]	0.2903 (0.3822) [0.7595]	-	-95.9363 (10.7596) [-8.9163]	0.4653
6	0.1334*** (0.0224) [5.9554]	0.1300*** (0.0245) [5.3061]	0.0993*** (0.0173) [5.7399]	0.1444*** (0.0316) [4.5696]	0.0706*** (0.0141) [5.0071]	-	-	-	-	-	-	-	-31.8045 (5.2208) [-6.0919]	0.2392
7	-	0.3241*** (0.0141) [22.9858]	0.2197*** (0.0100) [21.9700]	0.2931*** (0.0100) [29.3100]	0.1585*** (0.0058) [27.3276]	0.4340*** (0.0173) [25.0867]	-	-	-	-	-	-	-84.8041 (3.1439) [-26.9742]	0.8480
Panel B: Optimistic view														
1	-	0.1783*** (0.0363) [4.9118]	0.1106*** (0.0239) [4.6276]	-	-	-	-	-	0.0740 (0.1470) [0.5034]	-	0.0929 (0.1685) [0.5513]	0.0614 (0.1193) [0.5147]	-30.2465 (5.1579) [-5.8641]	0.2295
2	-	-	-	0.2071*** (0.0197) [10.5127]	0.1157*** (0.0126) [9.1825]	0.3142*** (0.0339) [9.2684]	-	0.0693 (0.1516) [0.4571]	-	0.1051 (0.1204) [0.8729]	-	-	-51.7940 (5.0830) [-10.1897]	0.4816
3	0.4186*** (0.0386) [10.8446]	-	-	-	0.1708*** (0.0141) [12.1135]	-	-	-	0.1327 (0.1497) [0.8864]	-	0.2071 (0.2334) [0.8873]	0.1117 (0.2075) [0.5383]	-62.6993 (6.1482) [-10.198]	0.4950
4	-	0.2502*** (0.0240) [10.425]	-	-	-	-	-	-	0.1087 (0.1337) [0.8130]	0.1289 (0.2028) [0.6356]	0.1635 (0.1855) [0.8814]	0.0969 (0.1367) [0.7089]	-44.1332 (3.7357) [-11.8139]	0.4922
5	-	-	-	-	-	0.7641*** (0.0753) [10.1474]	-	0.1297 (0.2202) [0.5890]	0.2512 (0.3311) [0.7587]	0.2468 (0.3410) [0.7238]	0.2919 (0.3301) [0.8843]	-	-109.4473 (10.224) [-10.7049]	0.4720
6	0.1968*** (0.0405) [4.8593]	0.1237*** (0.0178) [6.9494]	0.0862*** (0.0156) [5.5256]	0.1179*** (0.0210) [5.6143]	0.0599*** (0.0100) [5.9900]	-	-	-	-	-	-	-	-35.4534 (5.3336) [-6.6472]	0.2735
7	-	0.3319*** (0.0136) [24.4044]	0.2273*** (0.0115) [19.7652]	0.3195*** (0.0160) [19.9688]	0.1487*** (0.0058) [25.6379]	0.4421*** (0.0209) [21.1531]	-	-	-	-	-	-	-92.4873 (3.3760) [-27.3955]	0.8358

Notes: Numbers in the table are coefficients of predictor variabled estimated by Shapley Value Regression 2-SLS technique; their standard errors and t-statistics are presented in parentheses and brackets respectively. The standard errors are derived by Jackknife resampling technique. Panel A presents estimation of globalization with pessimistic scenario, while panel B displays estimation with optimistic scenario. For descriptions of abbreviated variables see table 1. Equation numbers corresponds to equations 1-7 explained in section 3.

In the last column of tables 2-4, the R^2 values are reported corresponding to each equation. We observe that conventional 2-SLS at the second stage gives the R^2 values that are identical to those obtained for the reduced form equations. However, the R^2 values for the proposed 2-SLS (in which OLS is replaced by the Shapley value regression) are a little smaller than those given by the conventional 2-SLS based on OLS. This cost has to be paid for treating the collinearity problem that has devastating effects on the coefficients of the structural equations.

7. Interpretation

In table 5 we present the Shapley value shares of the predictor variables (in R^2) in different equations of the model for pessimistic and optimistic scenarios, respectively. Their percentage shares in the respective R^2 also are reported. A zero value in a cell(i,j) indicates that the j^{th} predictor variable is absent in the i^{th} equation. The symbol (-) in the principal diagonal cells is the cell for the i^{th} dependent endogenous variable appearing in the i^{th} equation.

As to the significance of the Shapley share of a particular predictor in R^2, the statistical tests (reported in table 4, though) are not yet well established. Nevertheless, as a thumb rule (which could be very robust) we may state that if R^2 is statistically significant (at, say, 1 percent level and the appropriate degrees of freedom) and there are *k* predictors, then *100/k* is the most reasonable share (percentage) that could be attributed to any particular predictor when we have no knowledge of its factual contribution. This is based on the Principle of Insufficient Reason or the Principle of Indifference (Keynes, 1921, pp. 44-70), when no reason is known to distribute the shares differently. On this logic, whenever the share of a predictor variable (5 in number in each equation) is 20 percent or more, it is surely significant. It may be noted that R^2 for all equations are significant at 1 percent. We use this thumb rule and accordingly we have underlined (in table 5) the percentage contribution of those predictors that are not less than 20 percent.

A simple analysis is presented in table 6. Equation-wise, we present the list of predictor variables that have Shapley value shares 20% or more within square brackets [.], those having Shapley value shares not less than 19 percent but less than 20 percent in curly brackets {.} and those having Shapley value shares not less than 18 percent but less than 19 percent in round brackets (.). We do not consider below 18 percent contribution. The symbol *U* stands for the 'union' set operator. Accordingly, we may assign the importance of the predictor variable. The lists are not identical in the two scenarios. But in any case, the bi-directional causality between democracy and globalization is established. The globalization variables *E2* (relaxation of restrictions on trans-border trade as well as capital movement by means of taxation, tariff, etc.) and *S2* (flow of information) surely affect democratization (DI_{16}). Among the exogenous (predetermined) variables, *CVL* (Civil liberties) is a weak and *EPP* (Electoral process and pluralism) is a very weak predictor.

Table 5. Shapley-Value Shares of Predictors in R^2 and their Percentage

Eqs. No.	Endogenous Variables (Transposed A Matrix)							Predetermined Variables (Transposed B Matrix)					
	E1	*E2*	*S1*	*S2*	*S3*	*P*	*DI*	*EPP*	*FOG*	*PPN*	*PCL*	*CVL*	*CONST*
Panel A: Pessimistic Scenario of Globalization													
1	-	0.0836 (22.26%)	0.0949 (25.28%)	-	-	-	-	-	0.0768 (20.46%)	-	0.0663 (17.65%)	0.0538 (14.35%)	0.3753 (100%)
2	-	-	-	0.1135 (21.89%)	0.1317 (25.40%)	0.1081 (20.85%)	-	0.0849 (16.38%)	-	0.0802 (15.47%)	-	-	0.5184 (100%)
3	0.1233 (23.58%)	-	-	-	0.1253 (23.96%)	-	-	-	0.0894 (17.09%)	-	0.1113 (21.29%)	0.0737 (14.09%)	0.5231 (100%)
4	-	0.1190 (23.01%)	-	-	-	-	-	-	0.0955 (18.46%)	0.1076 (20.81%)	0.1017 (19.67%)	0.0933 (18.04%)	0.5171 (100%)
5	-	-	-	-	-	0.1180 (24.38%)	-	0.0590 (12.20%)	0.1174 (24.26%)	0.0860 (17.77%)	0.1035 (21.38%)	-	0.4838 (100%)
6	0.0486 (19.38%)	0.0458 (18.25%)	0.0493 (19.67%)	0.0595 (23.73%)	0.0476 (18.97%)	-	-	-	-	-	-	-	0.2508 (100%)
7	-	0.1952 (21.73%)	0.1661 (18.50%)	0.1880 (20.93%)	0.1697 (18.89%)	0.1792 (19.95%)	-	-	-	-	-	-	0.8982 (100%)
Panel B: Optimistic Scenario of Globalization													
1	-	0.0632 (26.14%)	0.0513 (21.21%)	-	-	-	-	-	0.0490 (20.25%)	-	0.0401 (16.58%)	0.0382 (15.82%)	0.2417 (100%)
2	-	-	-	0.1171 (22.59%)	0.1282 (24.74%)	0.1023 (19.73%)	-	0.0895 (17.27%)	-	0.0813 (15.68%)	-	-	0.5184 (100%)
3	0.1096 (21.16%)	-	-	-	0.1334 (25.76%)	-	-	-	0.0899 (17.35%)	-	0.1120 (21.63%)	0.073 (14.1%)	0.5180 (100%)
4	-	0.1187 (23.57%)	-	-	-	-	-	-	0.0946 (18.80%)	0.1012 (20.10%)	0.1060 (21.05%)	0.083 (16.48%)	0.5035 (100%)
5	-	-	-	-	-	0.1155 (23.86%)	-	0.0619 (12.79%)	0.1219 (25.18%)	0.0934 (19.28%)	0.0915 (18.89%)	-	0.4843 (100%)
6	0.0667 (23.00%)	0.0548 (18.92%)	0.0547 (18.86%)	0.0576 (19.89%)	0.0560 (19.32%)	-	-	-	-	-	-	-	0.2898 (100%)
7	-	0.2041 (22.72%)	0.1729 (19.25%)	0.1922 (21.40%)	0.1731 (19.27%)	0.1559 (17.36%)	-	-	-	-	-	-	0.8982 (100%)

Notes: The numbers in the table are shares of predictor variables (estimated by Shapley Value decomposition) in 2-SLS R^2, while their percentage weights are given in the parentheses. We have distinguished the ones whose percentage contribution in R^2 is more than 20% by underlining them. Panel A presents estimation of globalization with pessimistic scenario, while panel B displays estimation with optimistic scenario. For descriptions of abbreviated variables see table 1. Equation numbers corresponds to equations 1-7 explained in section 3.

Table 6. Equation-wise Strength of Predictor Variables According to the Shapley Value Shares

Equations	Pessimistic Scenario	Optimistic Scenario
1	E1=f([E2, S1, FOG] U {null} U (null))	E1=f([E2, S1, FOG] U {null} U (null))
2	E2=f([S2, S3, P] U {null} U (null))	E2=f([S2, S3] U {P} U (null))
3	S1=f([E1,S3,PCL] U{null} U (null))	S1=f([E1,S3,PCL] U{null} U (null))
4	S2=f([E2, PPN] U {PCL } U (FOG, CVL))	S2=f([E2, PPN, PCL] U {FOG} U (null))
5	S3=f([P, FOG, PCL] U {null} U (null))	S3=f([P, FOG] U {PPN} U (PCL))
6	P=f([S2] U {E1, S1} U (E2, S3))	P=f([E1] U {S2, S3} U (E2, S1))
7	DI_{16} =f([E2, S2] U {P} U (S1, S3))	DI_{16} =f([E2, S2] U {S1, S3} U (null))

Notes: [.] > 20%; 19% < {.} < 20%; 18% < (.) < 19%; we do not consider below 18% contribution. The symbol U stands for the "union" set operator. Equation numbers corresponds to equations 1-7 explained in section 3.

In table 7 we present the list of predictor variables (equation-wise) that have negatively signed structural coefficients estimated by the conventional 2-SLS. In the first equation (for *E1*) the democracy measures *FOG* (Functioning of Government), *PCL* (political Culture) and *CVL* (Civil Liberties) have negative sign. This is for both pessimistic and optimistic views of globalization. In the second equation *P* (political measure of globalization) or *PPN* (Political Participation) adversely affect *E2* (relaxation of constraints on trans-border flow of goods, services and finance). In equation #3 trans-border personal contacts (*S1*) are adversely affected by cultural proximity (*S3*), trans-border flow of goods, services and finance (*E1*) or the Functioning of the Government (*FOG*). In equation #4, follow of information (*S2*) is adversely affected by relaxation of restrictions on trans-border trade and flow of finance (*E2*). In equation #4, cultural proximity (*S3*) is adversely affected by electoral process and pluralism (*EPP*) or political set up for enhancing globalization (*P*). In equation #6, the political set up for enhancing globalization is adversely affected by trans-border flow of goods, services and finance (*E1*), relaxation for restrictions on trans-border trade etc. (*E2*), trans-border personal contacts and movement of people (*S1*) or trans-border cultural proximity (*S3*). It may be noted that most of these (negative) relationships are unexpected and misleading. They also indicate that different measures of globalization are not in concordance with each other. As to the final equation (#7 for DI_{16}), trans-border personal contacts and movement of people (*S1*), political set up for promoting globalization (*P*) and/or cultural proximity (*S3*) adversely affect democratization.

Table 7. Predictor Variables that obtain Negatively Signed Structural Coefficients Estimated by the Conventional 2-SLS

Equations	Endogenous (Dependent) Variable	Pessimistic Scenario of Globalization		Optimistic Scenario of Globalization	
		Predictor Variables		Predictor Variables	
		Endogenous	*Predetermined*	*Endogenous*	*Predetermined*
1	E1	-	FOG, PCl, CVL	-	FOG, PCl, CVL
2	E2	P	-	-	PPN
3	S1	S3	-	E1	FOG
4	S2	E2	-	E2	-
5	S3	-	EPP	P	-
6	P	E1, E2, S1	-	E2, S1, S3	-
7	DI_{16}	S1, P	-	S1, S3, P	-

Notes: Panel A presents estimation of globalization with pessimistic scenario, while panel B displays estimation with optimistic scenario. For descriptions of abbreviated variables see table 1. Equation numbers corresponds to equations 1-7 explained in section 3.

In contrast, a perusal of table 4 (the structural coefficient matrices A' and B' obtained by the proposed Shapley value regression at the second stage) suggests that the coefficients associated with endogenous as well as predetermined variables (except constant terms) are all positive. They suggest that globalization measures are concordant with each other and the democratic regimes promote globalization. We also find that DI_{16} is positively affected by all predictor variables included in equation #7, indicating that globalization promotes democratization.

The contrasting results obtained by the conventional 2-SLS and the proposed Shapley value based 2-SLS indicate that neither data nor the specification in our model were responsible for the unexpected results provided by the conventional 2-SLS, but the problem was created by collinearity at the second stage of the 2-SLS. A treatment of the problem of collinearity by using the Shapley value regression at the second stage of 2-SLS has rendered the results that are conformal to our expectation based on reasoned and realistic ground.

In table 8 we present the correlation matrices of disturbances across the equations. A larger magnitude of correlation in an off-diagonal cell indicates cross correlation of residuals that may affect the efficiency of an equation method of estimation and prompt to seek for an application of any system method of estimation such as 3-SLS or FIML. A perusal of the elements of correlation matrices reveals that while for DI_{16} the cross correlations are often very small (irrespective of the view of globalization - pessimistic or optimistic, and the method of estimation - conventional or Shapley value regression based), this is only partially (but dominantly) true of *P* (the political dimension of globalization). However, this is not so for the economic (*E1* and *E2*) and social (*S1*, *S2* and *S3*) indicators of globalization in which most of the correlation coefficients are significantly large in magnitude.

Table 8. Correlation Among Residuals at Stage-2 of Conventional and Shapley Value Based 2-SLS

Eqs. No.	End. Var.	Conventional 2-SLS							Shapley Value based 2-SLS						
		E1	*E2*	*S1*	*S2*	*S3*	*P*	*DI_{16}*	*E1*	*E2*	*S1*	*S2*	*S3*	*P*	*DI_{16}*
Panel A: Pessimistic Scenario of Globalization															
1	E1	1	0.387	0.575	0.560	0.280	-0.186	0.066	1	0.354	0.564	0.551	0.274	-0.180	0.008
2	E2	0.387	1	0.517	0.563	0.472	-0.021	0.072	0.354	1	0.458	0.509	0.479	-0.050	0.073
3	S1	0.575	0.517	1	0.660	0.466	-0.199	0.038	0.564	0.458	1	0.669	0.456	-0.189	-0.041
4	S2	0.560	0.563	0.660	1	0.543	0.098	-0.056	0.551	0.509	0.669	1	0.529	0.103	-0.087
5	S3	0.280	0.472	0.466	0.543	1	0.390	-0.047	0.274	0.479	0.456	0.529	1	0.359	-0.102
6	P	-0.186	-0.021	-0.199	0.098	0.390	1	0.078	-0.180	-0.050	-0.189	0.103	0.359	1	0.085
7	DI_{16}	0.066	0.072	0.038	-0.056	-0.047	0.078	1	0.008	0.073	-0.041	-0.087	-0.102	0.085	1
Panel B: Optimistic Scenario of Globalization															
1	E1	1	0.347	0.553	0.509	0.205	-0.224	0.139	1	0.315	0.526	0.494	0.187	-0.204	0.097
2	E2	0.347	1	0.528	0.599	0.479	-0.016	0.071	0.315	1	0.476	0.556	0.475	-0.048	0.093
3	S1	0.553	0.528	1	0.696	0.512	-0.141	0.004	0.526	0.476	1	0.704	0.509	-0.130	-0.081
4	S2	0.509	0.599	0.696	1	0.586	0.107	-0.005	0.494	0.556	0.704	1	0.582	0.111	-0.068
5	S3	0.205	0.479	0.512	0.586	1	0.319	-0.053	0.187	0.475	0.509	0.582	1	0.297	-0.077
6	P	-0.224	-0.016	-0.141	0.107	0.319	1	0.134	-0.204	-0.048	-0.130	0.111	0.297	1	0.066
7	DI_{16}	0.139	0.071	0.004	-0.005	-0.053	0.134	1	0.097	0.093	-0.081	-0.068	-0.077	0.066	1

Notes: Numbers in the table are correlation coefficients among residuals of conventional 2-SLS vis-á-vis Shapley Value 2-SLS. For descriptions of abbreviated variables see table 1. Equation numbers corresponds to equations 1-7 explained in section 3.

In table 9 we present the difference between the cross-equation correlation coefficients obtained by the conventional and the Shapley value based 2-SLS. This is for both views of globalization, pessimistic and optimistic. A positive value in the off-diagonal cell indicates that the cross-equation correlation of disturbances obtained by the conventional 2-SLS is stronger than the one obtained by the Shapley value regression based 2-SLS (while the negative value conveys the opposite). For the pessimistic view of globalization, in the upper diagonal cells of the difference matrix 21 (=7x(7-1)/2) elements are there. Out of them only 7 are negative. It conveys that in two-third of cases the Shapley value based 2-SLS may be more efficient than the conventional 2-SLS. For the optimistic view of globalization, there are only 5 negative values in the upper diagonal cells of the difference matrix. It conveys that in (a little over) three-fourth of cases, the Shapley value based 2-SLS may be more efficient than the conventional 2-SLS. This also is one of the reasons why we consider that the Shapley value based 2-SLS has given better results than the conventional 2-SLS.

Table 9. Difference between Correlation Among Residuals of Conventional versus Shapley Value Based 2-SLS

Eqs. No.	End. Var.	Pessimistic Scenario of Globalization							Optimistic Scenario of Globalization						
		E1	*E2*	*S1*	*S2*	*S3*	*P*	DI_{16}	*E1*	*E2*	*S1*	*S2*	*S3*	*P*	DI_{16}
Panel A: Pessimistic Scenario of Globalization															
1	E1	0	0.033	0.011	0.009	0.006	-0.006	0.058	0	0.032	0.027	0.015	0.018	-0.02	0.042
2	E2	0.033	0	0.059	0.054	-0.007	0.029	-0.001	0.032	0	0.052	0.043	0.004	0.032	-0.022
3	S1	0.011	0.059	0	-0.009	0.01	-0.01	0.079	0.027	0.052	0	-0.008	0.003	-0.011	0.085
4	S2	0.009	0.054	-0.009	0	0.014	-0.005	0.031	0.015	0.043	-0.008	0	0.004	-0.004	0.063
5	S3	0.006	-0.007	0.01	0.014	0	0.031	0.055	0.018	0.004	0.003	0.004	0	0.022	0.024
6	P	-0.006	0.029	-0.01	-0.005	0.031	0	-0.007	-0.02	0.032	-0.011	-0.004	0.022	0	0.068
7	DI_{16}	0.058	-0.001	0.079	0.031	0.055	-0.007	0	0.042	-0.022	0.085	0.063	0.024	0.068	0

Notes: Numbers in the table are difference of correlation coefficients among residuals of conventional and Shapley Value 2-SLS. For descriptions of abbreviated variables see table 1. Equation numbers corresponds to equations 1-7 explained in section 3.

8. Concluding Remarks

On the basis of our analysis that models the relationship between democracy and globalization in a simultaneous equations framework, we conclude the following counts. First, democracy and globalization promote each other and hence there is a bi-directional causality with positive relationships running both ways between democracy and globalization as envisaged by Eichengreen and Leblang (2006). At a national level, there may be various intermediary conditions (such as institutional and historical factors, relative factor abundance, demographic reasons, influence and the self-interests of the elite class, safety nets for stability and building political support by the national government, etc.) that modify the relationship as well as set in motion a complex of positive and/or negative feedbacks to accelerate or retard the pace of globalization and democratization in a country-specific manner. However, when a large number of countries are studied a clear relationship emerges out.

Second, there is a need to estimate the structural coefficients of the model cautiously since the regression equations may be suffering from collinearity among the predictor variables. The Shapley value regression based 2-SLS has performed better than the conventional regression in estimating the structural parameters of the model.

Third, it is expected that the system methods of estimation of the model would give better results than what are obtained by the single equation methods of estimation of structural parameters of the model.

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Appendix

Table A1. Scores Obtained by Countries on the Measures in Different Dimensions of Democracy

	Country	Dimensions of Democracy – 2006					Democracy Index 2016 (DI_{16})
		EPP	FOG	PPN	PCL	CVL	
1	Albania	7.33	5.07	4.44	5.63	7.06	5.91
2	Algeria	2.25	2.21	2.22	5.63	3.53	3.56
3	Argentina	8.75	5	5.56	5.63	8.24	6.96
4	Australia	10	8.93	7.78	8.75	10	9.01
5	Austria	9.58	8.21	7.78	8.75	9.12	8.41
6	Azerbaijan	3.08	0.79	3.33	3.75	5.59	2.65
7	Belgium	9.58	8.21	6.67	6.88	9.41	7.77
8	Benin	6.83	6.43	3.89	6.88	6.76	5.67
9	Bhutan	0.08	4.64	1.11	3.75	3.53	4.93
10	Bolivia	8.33	5.71	4.44	3.75	7.65	5.63
11	Botswana	9.17	7.86	5	6.88	9.12	7.87
12	Brazil	9.58	7.86	4.44	5.63	9.41	6.9
13	Bulgaria	9.58	5.71	6.67	5	8.53	7.01
14	Burkina Faso	4	1.79	2.78	5.63	4.41	4.7
15	Burundi	4.42	3.29	3.89	6.25	4.71	2.4
16	C.Africa Rep.	0.42	1.43	1.67	1.88	2.65	1.61
17	Cambodia	5.58	6.07	2.78	5	4.41	4.27
18	Cameroon	0.92	3.21	2.78	5.63	3.82	3.46
19	Canada	9.17	9.64	7.78	8.75	10	9.15
20	Chad	0	0	0	5	3.24	1.5
21	Chile	9.58	8.93	5	6.25	9.71	7.78
22	China	0	4.64	2.78	6.25	1.18	3.14
23	Colombia	9.17	4.36	5	4.38	9.12	6.67
24	Congo D. Rep.	4.58	0.36	2.78	3.75	2.35	1.93
25	Congo Rep.	4.58	0.36	2.78	3.75	2.35	2.91
26	Costa Rica	9.58	8.21	6.11	6.88	9.41	7.88
27	Cyprus	9.17	6.79	6.67	6.25	9.12	7.65
28	Denmark	10	9.64	8.89	9.38	9.71	9.2
29	Dominic Rep.	9.17	4.29	3.33	5.63	8.24	6.67
30	Ecuador	7.83	4.29	5	3.13	7.94	5.81
31	Egypt	2.67	3.64	2.78	6.88	3.53	3.31
32	El Salvador	9.17	5.43	3.89	4.38	8.24	6.64
33	Ethiopia	4	3.93	5	6.25	4.41	3.6
34	Fiji	6.5	5.21	3.33	5	8.24	5.64
35	Finland	10	10	7.78	8.75	9.71	9.03
36	France	9.58	7.5	6.67	7.5	9.12	7.92
37	Gabon	0.5	3.21	2.22	5.63	2.06	3.74
38	Gambia	4	4.64	4.44	5.63	3.24	2.91
39	Germany	9.58	8.57	7.78	8.75	9.41	8.63
40	Ghana	7.42	4.64	4.44	4.38	5.88	6.75
41	Greece	9.58	7.5	6.67	7.5	9.41	7.23
42	Guatemala	8.75	6.79	2.78	4.38	7.65	5.92
43	Guinea	1	0.79	2.22	3.75	2.35	3.14
44	Guyana	8.33	5.36	4.44	4.38	8.24	6.25

45	Haiti	5.58	3.64	2.78	2.5	6.47	4.02
46	Honduras	8.33	6.43	4.44	5	7.06	5.92
47	Hungary	9.58	6.79	5	6.88	9.41	6.72
48	Iceland	10	9.64	8.89	10	10	9.5
49	India	9.58	8.21	5.56	5.63	9.41	7.81
50	Indonesia	6.92	7.14	5	6.25	6.76	6.97
51	Ireland	9.58	8.93	7.78	8.75	10	9.15
52	Israel	9.17	6.64	7.78	7.5	5.29	7.85
53	Italy	9.17	6.43	6.11	8.13	8.82	7.98
54	Ivory Coast	1.25	2.86	3.33	5.63	3.82	3.81
55	Jamaica	9.17	7.14	5	6.25	9.12	7.39
56	Japan	9.17	7.86	5.56	8.75	9.41	7.99
57	Jordan	3.08	3.79	3.89	5	3.82	3.96
58	Kenya	4.33	4.29	5.56	6.25	5	5.33
59	Kuwait	1.33	4.14	1.11	5.63	3.24	3.85
60	Lebanon	7.92	2.36	6.11	6.25	6.47	4.86
61	Lesotho	7.92	6.43	4.44	6.25	7.35	6.59
62	Luxembourg	10	9.29	7.78	8.75	9.71	8.81
63	Madagascar	5.67	5.71	5.56	6.88	5.29	5.07
64	Malawi	6	5	3.89	4.38	5.59	5.55
65	Malaysia	6.08	5.71	4.44	7.5	6.18	6.54
66	Mali	8.25	5.71	3.89	5.63	6.47	5.7
67	Malta	9.17	8.21	6.11	8.75	9.71	8.39
68	Mauritania	1.83	4.29	2.22	3.13	4.12	3.96
69	Mauritius	9.17	8.21	5	8.13	9.71	8.28
70	Mexico	8.75	6.07	5	5	8.53	6.47
71	Moldova	9.17	4.29	6.11	5	7.94	6.01
72	Mongolia	9.17	6.07	3.89	5.63	8.24	6.62
73	Montenegro	9.17	5.71	5	5.63	7.35	5.72
74	Morocco	3.5	3.79	2.78	5.63	3.82	4.77
75	Myanmar	0	1.79	0.56	5.63	0.88	4.2
76	Nepal	0.08	3.57	2.22	5.63	5.59	4.86
77	Netherlands	9.58	9.29	9.44	10	10	8.8
78	New Zealand	10	8.57	8.33	8.13	10	9.26
79	Nicaragua	8.25	5.71	3.33	3.75	7.35	4.81
80	Niger	5.25	1.14	1.67	3.75	5.88	3.96
81	Nigeria	3.08	1.86	4.44	4.38	3.82	4.5
82	Norway	10	9.64	10	8.13	10	9.93
83	Pakistan	4.33	5.36	0.56	4.38	5	4.33
84	Panama	9.58	7.14	5.56	5.63	8.82	7.13
85	Paraguay	7.92	5	5	4.38	8.53	6.27
86	Peru	8.75	3.29	5.56	5	7.94	6.65
87	Philippines	9.17	5.36	5	3.75	9.12	6.94
88	Poland	9.58	6.07	6.11	5.63	9.12	6.83
89	Portugal	9.58	8.21	6.11	7.5	9.41	7.86
90	Romania	9.58	6.07	6.11	5	8.53	6.62
91	Rwanda	3	3.57	2.22	5	5.29	3.07
92	Saudi Arabia	0	2.36	1.11	4.38	1.76	1.93
93	Senegal	7	5	3.33	5.63	5.88	6.21
94	Sierra Leone	5.25	2.21	2.22	3.75	4.41	4.55
95	Singapore	4.33	7.5	2.78	7.5	7.35	6.38
96	South Africa	8.75	7.86	7.22	6.88	8.82	7.41

97	South Korea	9.58	7.14	7.22	7.5	7.94	7.92
98	Spain	9.58	7.86	6.11	8.75	9.41	8.3
99	Swaziland	1.75	2.86	2.22	3.13	4.71	3.03
100	Sweden	10	10	10	9.38	10	9.39
101	Switzerland	9.58	9.29	7.78	8.75	9.71	9.09
102	Syria	0	1.79	1.67	6.88	1.47	1.43
103	Tanzania	6	3.93	5.06	5.63	5.29	5.76
104	Thailand	4.83	6.43	5	5.63	6.47	4.92
105	Togo	0	0.79	0.56	5.63	1.76	3.32
106	Trinid &Tobago	9.17	6.79	6.11	5.63	8.24	7.1
107	Tunisia	0	2.36	2.22	6.88	3.82	6.4
108	Turkey	7.92	6.79	4.44	3.75	5.59	5.04
109	Uganda	4.33	3.93	4.44	6.25	6.76	5.26
110	United Kingdom	9.58	8.57	5	8.13	9.12	8.36
111	United States	8.75	7.86	7.22	8.75	8.53	7.98
112	Uruguay	10	8.21	5	6.88	9.71	8.17
113	Venezuela	7	3.64	5.56	5	5.88	4.68
114	Vietnam	0.83	4.29	2.78	4.38	1.47	3.38
115	Yemen	2.67	2.71	2.78	4.38	2.35	2.07
116	Zambia	5.25	4.64	3.33	6.25	6.76	5.99

Table A2. Economic, Social and Political Dimensions and Overall Indices of Globalization in Different Countries

	Country	Year-H	E1	E2	S1	S2	S3	P	KOF	AEMC
1	Albania	2009	56.57	73	52.55	73.9	2.42	80.69	61.6	61.61
2	Algeria	2006	55.36	52.55	32.39	64.92	1.93	80.65	54	53.32
3	Argentina	2008	45.92	39.11	43.3	71.5	41.47	92.07	59.95	59.19
4	Australia	2007	74.79	81.24	73.4	87.55	94.03	89.71	83.8	84.03
5	Austria	2007	89.34	86.56	87.06	92.06	95.54	96.86	91.87	93.95
6	Azerbaijan	2007	67.38	63.7	37.92	77.61	34.96	54.01	57.02	54.69
7	Belgium	2007	96.71	82.81	81.94	96.39	91.22	97.67	92.41	93.75
8	Benin	2014	53.79	42.92	28.55	39.46	2.48	75.17	46.67	48.99
9	Bhutan	2014	60.64	56.77	46.83	45.54	6.87	38.85	43.58	47.07
10	Bolivia	2006	62.03	59.79	39.52	51.01	3.78	75.69	54.42	56.38
11	Botswana	2008	77.58	59.64	59.54	57.17	5.88	59.28	55.5	60.64
12	Brazil	2014	51.77	52.82	24.46	70.5	39.58	94.3	61.4	58.16
13	Bulgaria	2013	80.04	72.93	51.55	77.71	85.3	84.96	76.98	76.34
14	Burkina Faso	2014	59.67	46.84	19.43	44.62	2.17	76.88	48.69	49.12
15	Burundi	2014	23.53	33.37	21.02	37.22	3.1	62.17	35.04	34.79
16	C. Africa Rep.	2014	49.56	28.29	13.44	40.71	2.24	58.39	36.34	37.27
17	Cambodia	2014	85.86	50.76	29.52	48.48	1.31	62.36	50.69	54.22
18	Cameroon	2014	44.96	38.31	16.91	52.02	2.24	73.16	44.2	42.75
19	Canada	2007	76.2	82.03	80.78	94.74	96.09	92.91	87.15	87.51
20	Chad	2006	55.49	27.21	23.94	32.35	2.91	60.04	38.37	41.7
21	Chile	2007	82.68	87.08	41.25	77.69	41.18	87.67	74.31	72.77
22	China	2014	43.49	62.19	18.71	65.65	78.37	84.26	62.02	56.85

23	Colombia	2013	58.32	57.38	33.46	69.69	38.12	79.65	60.15	58.23
24	Congo D. Rep.	2013	69.13	37.26	6.23	43.38	1	62.03	41.67	42.31
25	Congo Rep.	2014	96.24	41.58	35.45	43.93	1.25	63.67	51.83	57.31
26	Costa Rica	2007	64.79	73.3	60.37	78.75	45.65	58.63	63.66	63.45
27	Cyprus	2008	93.5	84.06	88.1	95.69	93.84	78.36	87.32	89.36
28	Denmark	2007	87.8	89.09	83.64	89.59	93.06	93.75	90.01	91.9
29	Dominic Rep.	2014	64.15	59.56	53.7	64.97	79.14	73.31	66.45	67.2
30	Ecuador	2006	55.97	46	36.82	65.37	38.22	79.01	57.39	56.77
31	Egypt	2013	42.96	48.68	27.64	66.78	77.77	93.01	63.1	59.62
32	El Salvador	2007	61.06	72.79	49.35	64.68	40.8	75.4	63.79	64.02
33	Ethiopia	2014	24.93	28.39	19.32	33.17	2.85	82.51	39.33	39.87
34	Fiji	2014	74.43	25.7	56.98	57.2	43.56	69.68	57.56	61.3
35	Finland	2007	85.16	87.39	72.07	90.6	91.67	91.64	87.22	87.36
36	France	2007	76.99	87.19	80.56	88.36	91.79	97.96	88.23	89.36
37	Gabon	2014	75.55	42.75	52.22	63.44	2.36	72.3	55.96	59.46
38	Gambia	2006	70.76	49.68	45.63	57.79	6.31	61.86	51.78	54.92
39	Germany	2007	81.36	84.49	76.35	87.52	92.57	92.43	86.48	87.44
40	Ghana	2014	62.3	54.48	27.85	45.77	3.96	85.72	54.17	55.67
41	Greece	2007	68.15	83.53	76.51	83.41	85.44	92.38	82.59	83.44
42	Guatemala	2014	48	74.96	26.23	57.23	42.95	83.01	60.42	57.71
43	Guinea	2014	57.21	31.29	21.72	41.38	2.73	76.19	44.4	46.82
44	Guyana	2006	80.52	62.07	56.43	55.51	44.1	43.34	56.44	59.99
45	Haiti	2010	34.21	62.93	28.71	50.84	1	45.88	39.36	38.47
46	Honduras	2014	74.61	71.19	28.45	58.46	39.51	71.84	61.42	60.57
47	Hungary	2009	92.14	85.86	65.93	89.31	89.62	91.47	86.99	87.02
48	Iceland	2008	89.32	64.89	81.47	80.36	91.88	70.11	77.86	81.39
49	India	2014	43.78	44.93	14.1	45.12	32.98	91.23	52.38	50.87
50	Indonesia	2014	56.25	71.79	20.4	49.92	33.89	86.83	59.65	57.96
51	Ireland	2014	99.52	89.78	89.37	91.72	91.88	90.47	92.15	95.2
52	Israel	2010	71.59	83.51	75.06	67.25	90.37	80.29	78.15	80.79
53	Italy	2007	68.17	83.24	70.46	78.72	86.52	97.92	82.85	83.57
54	Ivory Coast	2007	63.35	40.17	41.85	52.15	2.85	70.72	49.83	53.08
55	Jamaica	2007	80.64	70	63.13	69.52	7.11	68.56	62.72	66.57
56	Japan	2014	50.41	76.54	43.39	75.59	87.91	88.1	72.26	68.81
57	Jordan	2006	79.36	59.47	67.97	71.54	41.11	84.27	70.31	73.94
58	Kenya	2007	27.19	46.79	29.61	46.02	3.72	82.92	46.46	45.8
59	Kuwait	2008	61.31	75.01	78.96	76.28	90.41	59.54	70.76	72.18
60	Lebanon	2006	86.92	62.3	70.38	81.04	43.26	74.55	70.5	74.2
61	Lesotho	2014	80.48	41.22	25.58	48.74	6.87	54.09	45.94	48.77
62	Luxembourg	2007	100	88.46	96.09	97.51	48.25	80.06	85.62	89.59
63	Madagascar	2014	62.47	36.71	11.21	48.02	2.73	65.1	42.9	42.98
64	Malawi	2013	49.9	52.47	26.25	41.95	6.99	64.35	45.4	46.09
65	Malaysia	2010	89.03	69.62	64.71	75.92	87.52	83.17	79.12	81.07
66	Mali	2014	50.97	41.67	22.46	44.1	1.12	75.98	46.07	46.72
67	Malta	2009	99.76	87.06	83.18	96.04	49.74	52.58	76.16	78.24

68	Mauritania	2014	79.3	58.16	19.77	51.82	1.37	66.99	51.45	52.55
69	Mauritius	2014	91.12	84.89	58.78	82.06	42.61	45.32	66.61	66.81
70	Mexico	2014	63.45	68.45	44.3	68.92	40.12	71.72	62.29	61.61
71	Moldova	2007	67.96	69.67	44.9	84.17	39.27	67.22	64.04	61.7
72	Mongolia	2014	84.88	65.73	16.76	59.4	1.43	71.89	56.91	55.63
73	Montenegro	2010	81.65	79.55	72.69	94.41	5.08	56.33	65.48	66.92
74	Morocco	2014	60.71	53.68	45.87	83.86	37.71	89.5	65.95	64.33
75	Myanmar	2014	56.93	56.33	11.89	42.07	1	44.74	39.03	38.4
76	Nepal	2013	13.26	39.95	24.97	44.85	2.79	70.69	38.18	36.7
77	Netherlands	2014	97.64	88.48	85.98	93.26	92.75	95.41	92.84	95.24
78	New Zealand	2008	76.62	90.04	79.32	91.46	50.44	80.05	79.17	80.12
79	Nicaragua	2012	61.15	61.69	34.97	56.57	40.24	57.38	53.99	53.56
80	Niger	2014	54.67	50.44	32.41	35.3	1.74	74.33	47.92	50.86
81	Nigeria	2009	65.1	47.51	12.39	52.93	3.47	89.37	54.36	52.53
82	Norway	2013	80.32	72.93	81.74	85.52	91.68	92.27	84.48	86.83
83	Pakistan	2007	40.85	43.25	23.4	44.12	32.38	87.55	51.83	51.16
84	Panama	2009	89.59	71.32	50.84	81.17	47.74	60.74	67.7	67.56
85	Paraguay	2012	62.44	56.59	36.33	65.09	39.86	77.61	60.13	59.39
86	Peru	2011	69.02	82.53	32.33	58.27	36.87	84.74	66.14	65.24
87	Philippines	2006	65.22	52.73	30.26	49.7	39.96	81.96	58.39	59.19
88	Poland	2014	77.73	76.38	57.4	92.23	89.22	88.82	81.32	79.32
89	Portugal	2007	82.71	87.1	76.48	91.1	88.73	93.85	87.61	88.21
90	Romania	2014	60.67	83.22	48.07	82.02	82.39	89.82	76.51	73.36
91	Rwanda	2014	34.81	63.91	17.27	39.87	7.05	71.53	45.56	43.83
92	Saudi Arabia	2009	62.95	76.19	69	71.18	83.25	60.43	68.43	69.75
93	Senegal	2012	57.58	47.32	29.33	58.91	3.53	87.9	54.64	54.59
94	Sierra Leone	2011	69.7	46.89	19.84	38.92	3.16	65.1	45.9	48.29
95	Singapore	2009	99.01	95.35	92.18	88.25	96.12	71.77	88.27	91.52
96	South Africa	2014	72.64	65.18	41.53	61.39	41.93	88.04	66.72	67.54
97	South Korea	2014	62.52	63.76	43.81	73.55	42.42	89.58	67.03	66.05
98	Spain	2007	78.33	81.36	74.93	87.72	90.22	95.93	85.92	86.71
99	Swaziland	2014	77.83	43.61	59.31	60.2	6.37	36.55	47.48	51.92
100	Sweden	2007	88.33	86.26	80.84	84.38	94.73	96.03	89.41	91.73
101	Switzerland	2014	95.02	70.51	91.77	87.57	94.47	93.4	88.79	93.18
102	Syria	2011	53.48	55.43	51.94	65.49	1	52.73	48.93	50.02
103	Tanzania	2007	35.61	53.2	16.78	31.93	3.04	55.74	37.71	37.42
104	Thailand	2012	83.87	59.54	42.9	72.93	80.93	81.22	72.06	71.71
105	Togo	2014	78.62	46.54	25.04	57.99	3.72	73.38	53.7	54.25
106	Trinid &Tobago	2012	86.13	68.86	58.65	67.24	41.73	53.54	63.09	65.62
107	Tunisia	2008	70.83	48.71	41.68	76.78	2.67	86.29	60.45	60.63
108	Turkey	2014	51.09	66.13	50.76	72.49	81.59	91.88	71.33	69.88
109	Uganda	2013	44.01	58.02	21.59	37.01	4.52	70.23	45.48	45.69
110	United Kingdom	2006	81.91	89.75	79.57	90.54	93.3	94.9	89.06	89.91
111	United States	2007	65.17	85.34	67.13	82.45	91.9	92.1	81.8	81.15
112	Uruguay	2008	65.66	68.87	51.35	65.92	42.1	85.45	67.23	68.14

113	Venezuela	2006	62.32	47.83	38.48	68.43	41.65	65.68	56.17	55.45
114	Vietnam	2014	80.26	49.28	16.43	63.78	31.92	71.13	56.69	54.98
115	Yemen	2008	53.37	63.83	23.57	41.91	1.68	62.24	46.51	46.66
116	Zambia	2007	64.24	63.96	27.92	45.69	4.09	73.93	52.96	54.04
E1, E2, S1, S2, S3, P and KOF are for the **Year-H** when the overall index AEMC attained **maximum** (Gmax) during 2006-2014. AEMC Indices are computed by the author.										

Table A3. Economic, Social and Political Dimensions and Overall Indices of Globalization in Different Countries

	Country	Year-L	E1	E2	S1	S2	S3	P	KOF	AEMC
1	Albania	2006	35.89	58.68	52.56	69.39	2.24	67.63	51.18	50.86
2	Algeria	2007	49.62	47.76	33.94	64.81	2.05	48.49	43.47	42.36
3	Argentina	2012	41.13	30.68	43.54	72.69	40.54	92.83	57.89	57.09
4	Australia	2013	68.41	78.01	73.79	85.8	92.9	90.42	81.97	82.24
5	Austria	2013	85.52	76.5	86.51	91.31	95.46	96.36	89.09	91.36
6	Azerbaijan	2009	59.96	57.99	38.9	78.95	34.51	55.51	55.35	52.78
7	Belgium	2013	95.51	73.19	84.04	96.99	91.01	96.51	90.7	92.32
8	Benin	2006	28.32	40.26	28.88	35.4	2.54	71.83	40.22	41.61
9	Bhutan	2007	34.97	56.4	46.37	41.28	5.32	21.18	33.12	35.44
10	Bolivia	2011	56.44	50.56	37.79	58.44	2.91	76.81	52.76	53.62
11	Botswana	2012	60.07	53.5	56.45	55.16	4.95	39.77	45.21	49.05
12	Brazil	2008	48.27	53.34	20.26	68.5	38.23	92.27	59.38	55.59
13	Bulgaria	2010	71.76	74.41	50.21	82.83	40.81	83.13	70.59	69.36
14	Burkina Faso	2006	16.39	50.78	32.95	36.9	3.9	71.57	40.68	41.27
15	Burundi	2006	24.06	35.17	16.96	35.39	4.15	36.97	27.89	26.92
16	C. Africa Rep.	2007	40.14	22.02	15.27	32.43	2.24	57.98	32.8	34.45
17	Cambodia	2011	70.4	50.86	26.14	44.44	2.17	59.93	46.83	49.02
18	Cameroon	2010	35.79	41.44	16.83	51.95	2.73	70.25	42.67	40.16
19	Canada	2013	74.03	77.68	81.23	92.24	94.97	92.94	85.6	86.39
20	Chad	2011	50.22	28.12	19.94	36.74	2.91	58.55	37.11	39.14
21	Chile	2013	77.71	75.92	38.21	76.16	40.69	88.74	71.11	69.54
22	China	2012	41.21	56.27	16.75	65.54	78.02	84.8	60.42	55.12
23	Colombia	2008	54.98	42.87	30.73	70.8	38.22	78.48	56.48	54.44
24	Congo D. Rep.	2006	19.87	28.69	8.76	34.02	1	44.96	26.11	24.95
25	Congo Rep.	2008	91.35	37.23	31.94	40.9	1.74	39.88	42.91	47.78
26	Costa Rica	2013	62.9	66.25	55.31	81.31	45.89	59.43	62.05	61.03
27	Cyprus	2006	91.53	84.62	86.55	95.34	47.57	59.05	76.11	78.44
28	Denmark	2013	84.52	80.7	81.47	88.35	93.53	91.65	86.99	88.85
29	Dominic Rep.	2009	54.07	57.06	53.37	67.39	36.62	56.88	55	55.44
30	Ecuador	2014	40.55	36.53	34.14	62.25	38.21	80.97	52.78	51.64
31	Egypt	2012	41.62	46.07	22.45	66.66	35.94	93.45	56.99	53.67
32	El Salvador	2011	57.17	63.11	35.53	66.64	41.19	78.63	60.89	59.25
33	Ethiopia	2011	28.98	21.94	10.54	29.29	2.17	81.88	36.82	37.47

34	Fiji	2009	64.73	25.64	56.01	50.18	43.87	66.56	53.75	57.81
35	Finland	2009	77.81	86.19	72.26	88.86	91.36	90.25	85.08	85.04
36	France	2013	73.58	78.12	81.13	89.14	92.48	97.29	86.09	87.32
37	Gabon	2011	75.77	31.78	51.97	61.25	2.36	51.11	47.92	51.79
38	Gambia	2009	50.86	50.47	45.99	61.95	5.38	64.8	50.18	51.12
39	Germany	2013	75.94	73.34	79.32	85.4	92.01	91.93	83.41	85.16
40	Ghana	2008	36.37	51.83	35.82	43.8	4.52	83.98	49.19	50.64
41	Greece	2012	61.28	77.37	75.14	84.24	84.42	91.33	79.82	80.21
42	Guatemala	2010	46.46	68.4	27.08	56.03	43.98	82.47	58.89	56.59
43	Guinea	2010	35.7	31.29	21.36	39.92	4.15	71.9	39.38	40.45
44	Guyana	2013	61.74	58.98	48.79	58.06	5.76	44.66	47.6	49.78
45	Haiti	2014	35.21	68.47	6.41	51.82	1	48.28	38.81	34.53
46	Honduras	2010	63.36	65.1	30.16	60.23	39.72	70.29	58.38	57.05
47	Hungary	2011	91.22	81.45	66.67	89.18	90.33	90.93	86.05	86.3
48	Iceland	2013	89.48	59.8	80.56	78.37	50.11	54.09	67.32	71.77
49	India	2006	35.28	43.76	13.64	46.46	32.53	89.37	50.22	47.98
50	Indonesia	2008	49.64	69.02	17.85	47.95	33.79	84.05	56.64	54.53
51	Ireland	2008	97.8	88.49	91.12	92.11	48.1	87.41	85.93	89.89
52	Israel	2011	69.88	76.98	75.38	66.87	90.37	65.01	72.46	75.13
53	Italy	2013	64.98	75.44	70.42	78.44	88.21	97.52	80.94	81.77
54	Ivory Coast	2013	56.86	36.44	29.24	53.69	2.61	74.19	47.92	48.82
55	Jamaica	2014	73.94	51.72	57	67.13	6.93	72.58	58.43	62.05
56	Japan	2011	43.92	65.57	42.19	76.22	87.85	88.66	69.25	65.61
57	Jordan	2013	72.22	61.91	52.07	69.51	42.37	86.09	67.93	69.18
58	Kenya	2012	25.69	44.87	19.21	48.47	3.59	82.94	45.16	42.55
59	Kuwait	2013	53.45	65.47	70.68	73.63	89.69	60.31	66.44	67.03
60	Lebanon	2011	77.07	56.8	70.26	90.02	45.95	60.76	65.7	67.36
61	Lesotho	2006	59.43	37.57	24.7	45.45	6.68	33.39	35.69	36.96
62	Luxembourg	2006	99.72	87.43	96.37	96.87	48.06	60.97	80.05	83.89
63	Madagascar	2011	56.71	28.24	8.15	49.42	2.67	63.64	39.71	39.25
64	Malawi	2009	32.32	44.3	27.07	39.17	6.74	61.73	39.76	40.16
65	Malaysia	2014	88.91	66.95	57.96	77.28	87.65	83.69	78.14	79.14
66	Mali	2007	44.08	41.64	20.96	36.32	2.17	73.6	43.06	44.06
67	Malta	2006	97.19	87.13	83.62	96.07	50.17	47.77	74.5	76.39
68	Mauritania	2006	72.75	40.6	25.64	43.51	1.37	45.02	40.79	43.65
69	Mauritius	2006	57.62	70.87	59.49	85.06	40.57	57.79	61.85	60.47
70	Mexico	2008	55.23	60.32	42.67	70.3	41.09	70.95	59.27	57.99
71	Moldova	2014	60.52	63.4	40.67	84.06	37.77	69	61.39	58.36
72	Mongolia	2006	54.54	60.02	19.54	57.15	2.05	65.31	48.72	46.41
73	Montenegro	2006	52.52	76.75	73.23	94.86	6.25	46.57	57.31	56.97
74	Morocco	2006	49.22	40.66	35.46	67.4	37.2	87.73	57.63	56.51
75	Myanmar	2009	47.2	49.84	9.82	27.94	1	36	31.86	32.04
76	Nepal	2008	11.4	31.69	25.16	37.96	3.35	68.1	34.85	34.44
77	Netherlands	2009	95.28	88.51	84.91	90.53	92.9	93.23	91.35	93.78
78	New Zealand	2013	72.83	85.72	78.84	89.57	50.42	80.03	77.41	78.48

79	Nicaragua	2008	53.72	63.14	35.68	56.5	39.11	55.74	52.42	51.57
80	Niger	2007	24.17	37.19	32.59	30.52	1.68	71.94	38.88	41.05
81	Nigeria	2014	46.48	52.49	9.46	46.64	1.43	90.79	50.24	48.17
82	Norway	2006	81.16	70.67	79.65	83.91	91.99	88.88	82.87	85.24
83	Pakistan	2014	33.87	45.27	19.22	48.01	32.32	87.3	51.02	48.64
84	Panama	2006	91.07	65.78	50.23	73.96	47.74	56.13	64.69	65.63
85	Paraguay	2008	53.18	57.92	36.26	60.83	37.09	75.13	57.14	56.32
86	Peru	2006	66.78	67.15	32.7	54.46	37.01	84.09	62.39	62.5
87	Philippines	2014	58.47	49.32	24.22	54.23	41.28	82.83	56.84	55.98
88	Poland	2011	72.22	68.03	56.29	91.86	87.36	89.58	78.67	76.61
89	Portugal	2013	79.89	82.09	68.63	91.19	89.7	88.98	84.05	83.54
90	Romania	2006	60.44	60.73	44.18	78.72	38.69	89.91	66.5	64.99
91	Rwanda	2006	19.54	34.11	23.81	38.03	4.27	60.31	34.49	34.22
92	Saudi Arabia	2006	52.82	76.19	70.24	69.12	82.06	57.24	65.22	66.57
93	Senegal	2006	40.99	38.14	40.6	58.22	4.09	86.13	50.65	51.75
94	Sierra Leone	2009	30.15	41.28	19.63	33.56	3.22	61.16	36.2	36.81
95	Singapore	2014	99.01	96.53	93.2	85.75	96.53	54.77	83.64	87.04
96	South Africa	2011	67.26	63.98	39.51	61.09	40.86	86.2	64.64	64.93
97	South Korea	2006	54.55	65.58	39.06	76.1	41.38	83.59	63.92	61.36
98	Spain	2013	75.24	74.68	73.88	86.21	89.6	95.51	83.68	84.6
99	Swaziland	2007	63.2	36.36	61.97	54.71	6.37	33.68	42.4	47.23
100	Sweden	2013	85.48	75.35	81.3	81.02	93.46	94.65	86.05	89.13
101	Switzerland	2011	94.7	60.22	91.35	89.06	94.96	92.44	86.84	91.37
102	Syria	2007	49.06	38.95	43.38	63.66	1	54.93	44.26	45.17
103	Tanzania	2006	27.06	50.59	17.16	33.54	2.61	55.17	35.78	34.91
104	Thailand	2008	74.06	55.41	39.67	68.67	37.94	78.48	62.87	62.95
105	Togo	2008	53.5	37.49	28.74	54.91	3.53	71.19	46.93	47.25
106	Trinid &Tobago	2007	79.71	71.95	61.64	66.92	5.76	47.01	56.82	59.84
107	Tunisia	2011	68.94	42.49	40.06	78.34	2.48	83.92	58.35	58.22
108	Turkey	2006	46.77	69.54	40.93	72.69	78.12	89.96	69.07	65.92
109	Uganda	2006	35.99	52.16	24.19	35.24	3.53	67.77	42.31	42.8
110	United Kingdom	2014	80.71	85.27	76.35	87.66	93.64	94.67	87.26	88.15
111	United States	2009	59.05	78.48	66.91	81.46	91.77	91.43	79.14	78.47
112	Uruguay	2012	60.28	67.75	52.98	69.97	42.11	84.09	66.43	66.74
113	Venezuela	2010	40.82	37.04	38.46	70.34	40.3	66.51	50.75	48.92
114	Vietnam	2006	70.58	39.35	17.13	59.33	3.04	50.33	43.21	42.59
115	Yemen	2014	35.99	54.18	26.38	44.1	1.12	65.01	42.99	42.64
116	Zambia	2012	50.36	55.83	16.51	43.66	3.78	73.04	47.36	46.41

E1, E2, S1, S2, S3, P and KOF are for the **Year-L** when the overall index AEMC attained **minimum** (Gmin) during 2006-2014. AEMC Indices are computed by the author.