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# Globalization and Economic Growth: A Political Economy Analysis for OECD Countries

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**ABSTRACT** *Globalization is commonly defined as a strict economic path by most previous works, but it is really a fuzzy concept with unrestrained dimensions. While the ideological location of an incumbent political party is a powerful predictor of its policy position, the role of a political party in the globalization-growth nexus has never been fully empirically investigated. By applying Pedroni's panel cointegration technique instead of a time-series or traditional panel data approach, this paper aims to empirically re-examine the co-movement and the causal relationship among economic growth, the overall globalization index, and its three main dimensions—economic, social, as well as political integrations—by using panel data for 23 Organization for Economic Cooperation and Development (OECD) countries for 1970 to 2006. Certainly, the political party variable is taken into account as the advanced test is promoted, and we finally discover that all variables move together in the long run. Based on the results of the panel causality test, though the evidence of short-run causality is very weak, it does show long-run unidirectional causality running from the overall index of globalization, economic globalization, and social globalization to growth. Finally, the critical role of the political party is deeply discussed in relation with our results.*

**KEY WORDS:** Globalization, economic growth, panel cointegration, causality, political party, OECD

**JEL CLASSIFICATION:** F59, F02, O57, C33

## Introduction

The link between national development and globalization figures high on the agenda of public policy-makers and scholars alike, yet it is really a matter of personality and no country can escape such a trend. Recent literature studies recognize that the state of economic growth is strictly determined by globalization, and plenty of evidence has been provided and policy recommendations offered. Globalization is first commonly defined as a strict economic path by most previous works, but it is really a fuzzy concept with unrestrained dimensions (Rodrik, 2000; Vamvakidis, 2002; Aramberri, 2009).<sup>1</sup> Second, Marks *et al.* (2002) indicate the ideological location of an

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incumbent political party is a powerful predictor of its policy position, but the role of a political party has never been investigated with a globalization-growth nexus. More importantly, most past studies have either utilized the ordinary least squares (OLS) method or the traditional panel technique (Alesina *et al.*, 2000) in investigating the causal relationship between the two series, but these analysis procedures do not distinguish between the long-run equilibrium, as well as the long-run and short-run causalities between the variables.<sup>2</sup> We thus believe that if one jointly analyzes the globalization-growth hypothesis with these argument linkages, then traditional studies regarding the relationship between growth and globalization require a revision.

Applying panel cointegration techniques allows us to take into consideration the presence of heterogeneity in the estimated parameters and dynamics across countries and lets us increase the information available coming from the cross-sections. Using Pedroni's (1999, 2004) panel cointegration tests instead of a time-series or traditional panel data approach,<sup>3</sup> this paper aims to empirically re-examine the long-run comovement and the causal relationship between economic growth and globalization in a cointegrated model with real gross domestic product (RGDP) per capita and the overall index of globalization as well as its three main dimensions—economic integration, political integration, and social integration—by using panel data for 23 Organization for Economic Cooperation and Development (OECD) countries in 1970 to 2006.<sup>4</sup> Once we establish that the variables are structurally related, we are able to estimate the long-run equations employing the fully modified OLS (FMOLS) estimation technique for heterogeneous cointegrated panels (Pedroni, 2000) and discover the path of equilibrium regardless of whether the divergence or convergence relies on the vector error correction model (VECM). We thus not only investigate it as a multi-aspect for the study's core, but also actually discuss how the roles of a political party under globalization are reflected in economic growth for this transnational growth.

In recent years the field of economic development has made good theoretical reasoning for the importance of institutional quality on per capita incomes (see Easterly & Levine, 2002; Frankel & Romer, 1999). Dollar and Kraay (2003) thus conclude that countries with better institutions and countries that trade more grow faster and then trade even more. Another interesting development during the twentieth century has been the part played by multinationals in international integration. However, previous works usually omit the key role of institution-government as well as the ideology of an incumbent party, when governmental policy is determined not only for domestic economic practice, but also for international political behavior. Others have shown that historical, partisan cleavages among political parties can predict their positions on new issues, such as European integration (Marks *et al.*, 2002). In addition, since globalization may have significant effects on growth, politicians are likely to be concerned about global policy in their efforts to draw support from people in order to win elections. In general cases, studies of a partisan position on openness policy have shown that party differentiation does occur (Quinn & Inclán, 1997). For example, several inferences mainly argue that right-wing parties (which represent the owners of capital) tend to draw support from owners and managers of businesses, and should prefer free trade.<sup>5</sup> Researchers thus discover that right-wing parties are more favorable to free trade and to integrate into

the world, while left-wing parties are more favorable to protectionism (Milner & Judkins, 2004).

This paper therefore inspects the role of political party in the process reaching the level of globalization, as we attempt to re-visit the global phenomenon by a panel cointegration framework, review the implications of the literature on globalization, and discuss appropriate empirical indicators of the process, by outlining some relevant strands of normative and empirical globalization phenomenon and their essential implications. We also need to mention that a few earlier studies address the role of political parties on the globalization policy preference in a dynamic panel cointegrated framework. What should be stressed is how a political party affects international trade and whether or not government ideology has a significant impact on trade policy preferences where the effects of globalization are strongest.<sup>6</sup> Moreover, the time-series data cover periods of roughly 30 to 40 years for each individual country, and the estimated results may give rise to the problem of small sample bias, thus leading to a reduction in estimated efficiency. The use of panel data allows us to control for country-specific effects and to incorporate information from individual countries over time. This paper empirically addresses the stylized facts of this major debate cross-nationally.

The next section gives an overview of the research linking the relationship between economic growth and globalization. The third section shows the empirical model and provides a brief discussion of the panel cointegration procedure. The fourth section outlines the data, variables, and hypotheses to be tested. Among all circumstances of empirical results, there is good evidence about the effects of globalization on economic growth and actual attitudes of a political party, and therefore they also need to be included as controls in any such analysis. The fifth section summarizes the findings. Our results are that three main kinds of a globalization index all contribute to economic growth, but these contributions show differences.

### **The Influence of Globalization on Economic Growth**

The notions of globalization and growth are widely discussed in the previous literature, as many observe that the essence of globalization is the participation of many individual countries in world economic growth. However, Saich (2000) indicates that while globalization has become a hot topic, the overwhelming majority of this field habitually concentrates on “economic shaper”, with less attention paid to the other dimensions like culture, politics, or society. In particular, the recent rapid usage of the “Internet” has spread new technology, combining people’s interaction with the flow of information—the higher the intensity of negotiations, the greater the flow of information (Boockmann & Dreher, 2003). In other words, greater economic integration in turn implies more trade and financial openness, but also induces rising information flows and cultural convergence across countries (Li & Reuveny, 2003). This is not surprising, as presently most nations need to face rising multi-dimensions with globalization that are complex and diverse, coinciding with growing pressure on social exclusion, which in turn affects social integration (Dreher, 2006). Generally agreeing, globalization implies that countries are becoming more integrated into the multinational economy, increasing people’s interaction, information exchanges,

125 technology transformations, and convergence in cultural activity (Li & Reuveny, 2003; Dreher, 2006; and others).

Economic globalization is often said to promote policy convergence between political parties in a government within democratic states (Vowles, 2008). Under this economic framework, some people describe globalization as a movement in the  
130 direction of increasing world economic integration through the reduction of barriers to exchange and increased international flows of capital and labor force. Globalization thus enables to progressively make people and countries become interdependent. However, if globalization is only from the economic aspect, then ambiguous debates often exist in earlier empirical evidence, like Vamvakidis (2002) who finds that the positive correlation between openness and growth is only a recent phenomenon using cross-country growth regressions estimated for the period 1920–1990. One can also see some papers that point to strong positive effects of trade openness on growth, while others point out the minor effects.<sup>7</sup> Thus, rather than a single process, globalization is a complex process in cultural, economic, political, social, and technological effects with different dimensions (Held *et al.*, 2000), like Wade (2009) who deeply discusses that the political economy of policy reforms play an important role in global imbalances and re-organizations. That is why Harrison (1996) and Rodríguez and Rodrik (2001) cast doubt on the statement that growth only benefits from openness.<sup>8</sup>

145 Simmons and Elkins (2004) identify that international policy diffusion enables a country to liberalize its trade policy, and they also focus on explaining changes within foreign economic policy diffusion. The authors argue that these choices are influenced by the choices of exogenously given domestic institutions or preferences. In this way, governments use available information in a rational fashion to maximize the chances of their own policy success. Simmons and Elkins believe that policy-makers may learn from policy success, via communication networks and from cultural linkages. For the former, direct contacts at the intergovernmental level may reflect well-established channels of communication (Axelrod, 1997) and communicative links that could contribute to learning with respect to policy integration no matter under monetary or financial interaction. For the latter, since Granato *et al.* (1996) show that cultural values are important to economic development. The policies of culturally similar countries are thus perceived to contain highly relevant information on the appropriateness of a particular policy through some specific contexts of shared values. Hence, globalization has to be based on culturally channeled interaction, and cultural propinquity is an obvious highly plausible explanation for policy integration.

160 Kacowicz (1999) claims that globalization means many different things for different people with an intensification of economic, political, social, and cultural relations across borders. Park (2003) notices that on the basis of multi-layer perspectives of globalization, a large body of research identifies that globalization is constructed out of complex interactions among social, political, and economic processes together with materiality. This multi-scalar viewpoint shows that globalization is not only a process of economy, but is also constituted by the activities of society and politics. Aramberri (2009) emphasizes that openness in both trade and finance is the principal common characteristic of globalization, while in some other  
170 ways it is the scale of international migration and investment, the role of government

and its policies, and the presence of international organizations and international cooperation and coordination in economic policies.<sup>9</sup> Indeed, past efforts at global integration have often focused on removing barriers to free trade in the world, while also adopting cohesive stances on policy issues, such as the environment, climate change, and migration.

Prempeh (2004) holds that globalization refers to the widening and deepening international convergence of trade, capital, technology, and information (Petras & Veltmeyer, 2001) and should be viewed as a process that not only reconstitutes international economies, but narrows national borders and integrates the world economy into a single system, or involves learning through communication mutually and having direct contacts at the intergovernmental level for basic well-established channels of communication. Simmons and Elkins (2004) indicate that one can readily identify the kinds of network and communicative links that contribute to learning from the successful experience of an administrative policy no matter for monetary, financial, or economic development. From this perspective, globalization raises key questions and draws attention to issues of economic and technological change, cultural and societal aspects of life, and politics—that is to say, the trade behavior of economic globalization is based on political and social integration. Thus, with respect to actually measuring the whole globalization phenomenon, Dreher (2006) develops an overall index of globalization covering its three main dimensions: economic integration, social integration, and political integrations.<sup>10</sup>

### Panel Cointegration Tests and FMOLS Estimations

To investigate the panel cointegrated relationships between globalization and economic growth in our sample countries, we first implement the following equations (basic model):<sup>11</sup>

$$\text{RGDP}_{it} = \alpha_i + \delta_i t + \beta_i X_{it} + v_{it}, \quad (1)$$

where  $\text{RGDP}_{it}$  is RGDP per capita,<sup>12</sup>  $X_{it}$  is the level of our observed global variable (including the overall index of globalization, and its three main sub-dimensions of economic, social, and political globalization indices) with dimensions  $(N^*T) = 1$  and  $(N^*T) \times M$ ,  $N$  refers to the number of individual countries in the panel,  $T$  refers to the number of observations over time,  $M$  refers to the number of regression variables, and  $v_{it}$  is the estimated residual. The parameters  $\alpha_i$  and  $\delta_i$  allow for the possibility of country-specific fixed effects and deterministic trends, respectively.

A deterministic trend effect intends to capture disturbances that are simultaneous across different countries of the panel, such as global shocks and international business cycles. The estimated coefficient  $\beta_i$  is also permitted to vary by individual, such that the cointegrating vectors may be heterogeneous across members of the panel. Pedroni (2004) develops the asymptotic and finite-sample properties of the testing statistics to examine the null hypothesis of non-cointegration in a panel. The tests allow for heterogeneity among individual members of the panel, including heterogeneity in both the long-run cointegrating vectors and in the dynamics.<sup>13</sup>

Pedroni (1999, 2004) proposes two types of tests. The first is based on the within-dimension approach, which includes four statistics: the panel  $v$ -statistic, panel  $\rho$ -statistic, panel Phillips–Perron (PP)-statistic, and the panel augmented Dickey–Fuller

(ADF)-statistic. These statistics pool the autoregressive coefficients across different members for the unit root tests on the estimated residuals. The second test is based on the between-dimension approach and includes three statistics: the group  $\rho$ -statistic, the group PP-statistic, and the group ADF-statistic. These statistics are based on estimators that simply average the individually-estimated coefficients for each member. Asymptotically, all seven tests are distributed as standard normal based on the moments of the underlying Brownian motion function. The panel  $v$ -statistic is a one-sided test where large positive values flatly reject the null of no cointegration. The remaining statistics diverge to negative infinitely, which means that large negative values reject the null. The critical values are also tabulated in Pedroni (1999).

## Estimation Results

### *The Basis Discovery*

Since globalization is not just an economic phenomenon, we thus use a multivariate approach to measure globalization, which is a recent index calculated by the KOF database of the Swiss Economic Institute (“Konjunkturforschungsstelle”). Except for an overall index of globalization (GLOB) that is calculated, the index also measures three main dimensions of globalization, including economic (ECO), social (SOC), and political (POL), as detailed in Dreher *et al.* (2008). One can also see details in the Appendix in Table A1. Higher values denote greater globalization. Annual data for RGDP (constant 2000 prices) are obtained from World Development Indicators (WDI, 2008). Since the time series data may yield unreliable and inconsistent results with short time spans of typical datasets, we employ new heterogeneous panel cointegration and panel-based vector error correction model (VECM) techniques to re-investigate the relationship between economic growth and trend of globalization across the 23 OECD industrial countries listed in Table 1.<sup>14</sup> Table 1 also reports the rating statistics for all the variables, from which it can be seen that the means of GLOB, ECO, POL, SOC, and RGDP are highest in the Netherlands, Luxembourg, France, Luxembourg, and the United States, respectively.

In the empirical process we first test whether the data show stationarity or not. Table 2 presents the results from the panel unit root tests at the 5% significance level using Levin *et al.* (2002); LLC) and Hadri (2000).<sup>15</sup> LLC and Hadri statistics provide strong evidence that the five series—RGDP, GLOB, ECO, POL, and SOC—have a unit root, showing that all of the variables are of the  $I(1)$  process.<sup>16</sup> Because the cointegration test is able to correct the standard OLS for the bias induced by the endogeneity and serial correlation of the regressors (Pedroni, 1999), as well as the ability to estimate the long-run relationships linking the variables to the cointegration tests and estimates using the panel unit-root results, we next proceed to investigate RGDP, GLOB, and its three main sub-indices for cointegration in order to determine if there is a long-run relationship to control for in the econometric specifications.

In Model 1 of Table 3 (basic model; two-variable model), we first test the cointegrated relations between RGDP and the overall index of globalization (GLOB). We then go on to discover the cointegrated evidence of Model 2, while we jointly consider ECO, POL, and SOC as the independent variables together in the

**Table 1.** RGDP per capita and globalization index for OECD countries (1970–2006)

Country	Ratings (average) of variables									
	GLOB	Rank	ECO	Rank	POL	Rank	SOC	Rank	RGDP	Rank
NLD	83.07	1	84.64	4	93.31	4	75.44	7	26.32	10
LUX	82.91	2	94.82	1	63.83	22	82.42	1	23.15	22
BEL	82.67	3	87.36	2	94.54	3	70.97	11	25.89	13
IRL	81.64	4	86.08	3	79.53	15	78.50	4	24.60	20
CAN	80.75	5	73.78	6	91.80	8	81.11	3	26.94	7
CHE	80.40	6	78.10	5	82.55	13	81.41	2	26.04	11
SWE	78.09	7	68.82	10	95.27	2	77.08	6	25.96	12
DNK	76.97	8	71.62	8	93.12	6	72.71	9	25.51	15
AUT	75.92	9	66.44	12	92.70	7	75.37	8	25.67	14
NOR	75.13	10	72.90	7	90.29	10	68.36	14	25.44	17
NZL	72.33	11	66.75	11	73.27	19	77.32	5	24.44	21
AUS	71.34	12	62.62	16	85.82	12	71.41	10	26.32	9
FRA	70.97	13	61.31	17	96.13	1	65.63	16	27.63	5
GBR	70.84	14	70.42	9	71.78	20	70.70	12	27.70	4
FIN	69.93	15	65.97	13	89.56	11	62.20	18	25.20	18
USA	67.74	16	59.23	20	90.93	9	62.41	17	29.51	1
ESP	65.57	17	63.20	15	82.18	14	58.08	19	26.73	8
DEU	65.15	18	60.02	19	67.92	21	68.61	13	28.00	3
PRT	63.05	19	64.38	14	75.60	16	54.28	20	25.04	19
ITA	62.91	20	56.19	22	93.26	5	51.56	21	27.45	6
ISL	60.96	21	56.38	21	56.62	23	68.07	15	22.52	23
GRC	58.38	22	60.58	18	75.40	17	46.09	22	25.46	16
JPN	51.07	23	42.83	23	74.71	18	45.21	23	28.86	2

Note: RGDP is measured in per capita terms at constant 2000 prices and transformed in natural logarithms and the unit is expressed in US dollars. All globalization indices range between 0 (not globalized) and 100 (globalized). Countries are ranked by their overall globalization score in the year 2008.

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cointegrated structure (see the testing statistics of the EPS). In addition, it is obvious that economic, cultural, and political dimensions of globalization potentially reinforce each other (Brown *et al.*, 2000). Following an important suggestion from Dreher (2006), one specified problem is raised from the potential correlation between the three sub-indices, which probably induce lower *t*-statistics when getting potential collinear bias. Thus, in an effort to provide more detailed information, we replicate the analysis with the sub-indices instead of the overall index of globalization. The three dimensions of globalization are analyzed individually as Models 3–5 in Table 3.

The estimates from the panel cointegration tests—in which the dependent variable is RGDP; first, for the model with RGDP and GLOB (Model 1)—show up in Table 3. Except for the group  $\rho$  statistics, the other statistics which are significant at the 5% level reject the null of no cointegration, but there is slightly weaker evidence in Model 2 where the independent variables are jointly together ECO, POL, and SOC (see variable EPS), or separate estimation from Models 3–5. The four statistics (panel PP-statistic, panel ADF, group PP-statistic, and the group ADF-statistic) reject the null of no cointegration relationships significantly at the 5% level in Model 2.<sup>17</sup> Roughly half of the statistics reject the null while the independent variables are ECO (Model 3) or POL (Model 4). Subsequently, six out of seven statistics significantly accept the cointegration relationships between RGDP and SOC.

**Table 2.** Panel data stationarity test for OECD countries

Variables	LLC (2002)	Hadri (2000)
RGDP	-0.63	16.49**
GLOB	-2.07	15.5**
ECO	-0.78	15.38**
POL	-2.13	12.34**
SOC	-0.82	15.6**
$\Delta$ RGDP	-11.52**	1.79
$\Delta$ GLOB	-8.94**	0.13
$\Delta$ ECO	-9.91**	0.46
$\Delta$ POL	-12.58**	-1.55
$\Delta$ SOC	-13.35**	0.68

Note: LLC (2002) and Hadri (2000) statistic tests are under the null of without (with) unit root, respectively.  $\Delta$  denotes first differences. All variables are in natural logarithms.

\*\*Indicates statistical significance at the 5% level.

It is concluded that it is a fact that a cointegrated relationship does exist for the whole panel test. In this way, long-run cointegration implies that there is an error correction mechanism capturing the long-run linkage among variables (Basu *et al.*, 2003), relating to the tendency for economic growth and the levels of the globalization variables to move together. Such factors may well have a short-lived impact on economic growth, but growth does tend to return to an equilibrium level set by the underlying global shocks.

It can thus be seen that, with any combination, all series move together in the long run. The next step is to estimate such a relationship. Table 4 provides the results of the country-by-country and the panel FMOLS method while the regressor only considers GLOB, ECO, POL, or SOC, respectively.<sup>18</sup> As shown at the bottom of Table 4, the panel parameters are 0.039, 0.041, 0.027, and 0.030 for GLOB, ECO, POL, and SOC, respectively. As the coefficients are statistically significant at the 5%

**Table 3.** Panel cointegration tests for OECD countries (basic model: dependent variable is RGDP)

	Model 1	Model 2	Model 3	Model 4	Model 5
	GLOB	EPS	ECO	POL	SOC
Panel variance	3.200**	0.638	2.255**	0.831	2.493**
Panel $\rho$	-2.644**	-0.992	-2.661**	-1.547*	-2.232**
Panel PP	-2.717**	-3.193**	-1.999**	-2.202**	-2.556**
Panel ADF	-3.212**	-1.403*	-0.941	-1.451*	-1.655**
Group $\rho$	-0.485	-1.058	-0.651	-1.137	-0.491
Group PP	-1.726**	-4.891**	-2.012**	-3.063**	-2.099**
Group ADF	-2.211**	-2.491**	-0.647	-2.296**	-1.453*

Note: The null hypothesis is that the variables are not cointegrated. Under the null hypothesis, all the statistics are distributed as standard normal distributions. The finite sample distribution for the seven statistics has been tabulated in Pedroni (2004). EPS represents that we consider ECO, POL, and SOC as the independent variables together in the cointegrated structure. Models 3-5 measure the relationship between single dimensions and economic growth, respectively.

\*\* and \* denote the rejection of the null of no cointegration at the 5% and 10% levels, respectively.

**Table 4.** FMOLS estimates tests of cointegration for OECD countries (dependent variable is RGDP)

Country	Model 1	Model 2	Model 3	Model 4
	GLOB	ECO	POL	SOC
AUS	0.048** (14.363)	0.034** (15.272)	0.074** (4.750)	0.052** (8.996)
AUT	0.024** (31.511)	0.018** (18.190)	0.048** (2.793)	0.019** (12.805)
BEL	0.029** (15.305)	0.038** (11.400)	0.053* (1.867)	0.016** (16.122)
CAN	0.062** (9.480)	0.048** (7.596)	0.088** (3.347)	0.056** (11.256)
DNK	0.029** (15.607)	0.019** (11.566)	-0.041** (-2.163)	0.023** (19.621)
FIN	0.025** (9.121)	0.017** (8.996)	-0.005 (-0.223)	0.021** (9.758)
FRA	0.026** (20.438)	0.021** (17.986)	0.103** (3.331)	0.021** (18.301)
DEU	0.022** (12.232)	0.025** (10.423)	0.013** (7.903)	0.027** (12.934)
GRC	0.019** (8.109)	0.034** (9.694)	0.018** (5.916)	0.013** (7.590)
ISL	0.027** (8.200)	0.021** (9.301)	0.015 (1.457)	0.024** (8.548)
IRL	0.075** (12.412)	0.088** (9.929)	0.086** (5.255)	0.056** (14.076)
ITA	0.021** (7.734)	0.018** (7.981)	0.072** (2.757)	0.016** (8.121)
JPN	0.036** (8.632)	0.038** (17.831)	0.025** (4.955)	0.035** (5.480)
LUX	0.150** (10.925)	0.270** (7.919)	-0.043** (-3.369)	0.050** (14.390)
NLD	0.044** (11.230)	0.038** (10.868)	-0.016 (-0.566)	0.031** (11.077)
NZL	0.026** (9.930)	0.017** (8.292)	0.035** (3.674)	0.039** (7.299)
NOR	0.054** (19.951)	0.043** (9.693)	-0.050** (-2.250)	0.033** (17.516)
PRT	0.023** (11.657)	0.022** (20.438)	0.024** (6.550)	0.021** (8.433)
ESP	0.022** (15.407)	0.020** (16.032)	0.028** (7.752)	0.020** (14.384)
SWE	0.023** (11.697)	0.011** (9.894)	0.006 (0.203)	0.041** (10.984)
CHE	0.016** (10.037)	0.016** (6.895)	0.014** (7.135)	0.016** (7.940)
GBR	0.035** (13.527)	0.025** (6.984)	-0.019 (-0.418)	0.026** (19.690)
USA	0.064** (21.016)	0.060** (15.197)	0.106** (6.366)	0.050** (14.557)
Panel	0.039** (64.331)	0.041** (55.961)	0.027** (13.975)	0.030** (58.359)

Note: *t*-statistics in parentheses. Asymptotic distribution of *t* statistic is standard normal as *T* and *N* go to infinity. Models 2–4 measure the single dimensions that affect economic growth, respectively.

\*\* and \* indicate statistical significance at the 5% and 10% levels, respectively.

level, the effect is positive. This implies that a 1% increase in globalization increases RGDP per capita around 0.03–0.04%. On a per country basis, GLOB surprisingly has a significantly positive impact on GDP in all cases. For each sub-dimension, when the sub-dimension global variables are ECO and SOC, as shown in Model 2 and Model 4 of Table 4, like the GLOB, all countries' null—that ECO (SOC) has no effect on RGDP—must be rejected. Furthermore, in 14 of the 23 countries—with the exceptions of Belgium, Denmark, Finland, Iceland, Luxembourg, the Netherlands, Norway, Sweden, and the United Kingdom—global variable POL has a significantly positive effect on RGDP at the 5% level. Therefore, strictly based on our examination earlier, it is unambiguous that there is a stable cointegrated relationship between RGDP, GLOB, and its sub-dimensions in our sample countries.

It is noteworthy that the significant adverse effects of political globalization on RGDP show up in Denmark, Luxembourg, and Norway, though they are ranked 6th, 10th, and 22nd with respect to political integration, while Denmark has a higher rank than the rest of the world, followed by France, Sweden, Belgium, the Netherlands, and Italy. The reason, Alesina *et al.* (2000) argues, is that economic

integration like trade openness and political separatism goes hand-in-hand, due to the history of country formation and separation usually being influenced by the pattern of trade openness and economic integration and vice versa. Thus, economic integration may usually lead to political disintegration.<sup>19</sup> In addition, the common trend of these three countries is that the index of political integration gradually rises in the 1970s and arrives at the top in the mid-1980s, followed by a downward turning point. We check again the incumbent of the three countries and find that after the turning point, all governments for these countries are mostly controlled by the left-wing party.<sup>20</sup> Unfortunately, left-wing parties are usually more favorable to protectionism. In clear terms, we present an analysis that exposes the limits of political globalization. We next adopt the joint test model in which we consider ECO, POL, and SOC as the explanatory variables together in our model in Table 5 (RGDP is the dependent variable: four-variable cointegrated model). Comparing with the previous results, the evidence is weaker than Table 4 on a per country basis and the magnitudes of the coefficients are similar, though also statistically significant, at the 5% level respectively, and the effect is positive.

We therefore support the hypothesis that globalization can positively affect the RGDP regardless of the dimension of economy, politics, or society in the OECD countries. Summing up, our paper is related to the recent literature concerning the effects of globalization on economic growth, no matter whether the overall index of

**Table 5.** FMOLS estimates tests of cointegration for OECD countries when ECO, POL, and SOC are the independent variables together (four-variable cointegrated model)

Country	ECO	POL	SOC
AUT	0.010** (7.023)	0.002 (0.778)	0.009** (6.733)
BEL	0.002 (0.201)	-0.001 (-0.115)	0.015** (3.137)
CAN	0.013* (1.737)	-0.016 (-1.339)	0.052** (5.580)
DNK	0.003 (1.079)	0.001 (0.222)	0.020** (5.951)
FIN	0.008 (0.983)	0.001 (0.183)	0.012 (1.222)
FRA	0.012** (2.368)	0.006 (0.697)	0.009* (1.734)
DEU	0.007 (1.131)	0.002 (0.859)	0.014** (2.000)
GRC	0.026** (2.989)	-0.001 (-0.196)	0.004 (0.721)
ISL	0.013** (2.101)	-0.002 (-0.547)	0.010 (1.380)
IRL	0.005 (0.269)	0.001 (0.045)	0.053** (4.146)
ITA	0.009 (0.678)	-0.014 (-0.926)	0.010 (0.878)
JPN	0.038** (12.076)	0.009** (3.128)	-0.011** (-1.990)
LUX	0.034 (1.098)	0.008* (1.914)	0.048** (7.997)
NLD	0.025** (2.161)	0.003 (0.447)	0.009 (0.967)
NZL	0.010** (3.153)	0.005 (0.801)	0.011* (1.859)
NOR	0.009** (2.129)	0.016** (4.185)	0.031** (9.701)
PRT	0.022** (6.869)	0.003 (0.825)	-0.004 (-0.722)
ESP	0.017 (1.550)	0.001 (0.143)	0.003 (0.359)
SWE	0.005** (1.997)	-0.006 (-0.762)	0.024** (2.858)
CHE	0.007* (1.653)	0.005** (2.131)	0.004 (0.910)
GBR	-0.002 (-0.695)	-0.012 (-1.572)	0.028** (8.710)
USA	0.020** (2.333)	0.018* (1.927)	0.026** (3.784)
Panel	0.014** (12.450)	0.002** (3.022)	0.016** (14.160)

Note: Same as Table 4.

globalization or its several dimensions confirm to have any influence on economic growth. Dreher (2006) emphasizes several reasons for economic integration which should promote growth: trade makes a country exploit comparative advantages and specialization; developing countries can close “idea gaps” and gain management education via foreign direct investment from developed countries. Globalization also pushes a country to participate in international organizations, encouraging people’s contact and information flows. The means of information and communication may also prove important channels to collect information about economic success in other countries (Drake, 1998). Thus, the earlier paragraph examines the robustness of these findings, in that high integration could lead to reforms in political or economic processes and thus promote growth.

### Panel Causality Results

Since the evidence has confirmed the variables of RGDP and four globalization indices adjusting towards the long-run equilibrium, it is possible to further investigate the panel VECM. The VECM states that for every combination of values on the globalization index, there is economic growth that will in equilibrium be dominated by the error correction mechanism (Johnston, 1999). The VECM tells us that if those values should appear and if none of the globalization variables are moving, then the dependent variable RGDP will not shift any further, at least not because of the shocks from GLOB, ECO, POL, and SOC. Therefore, based on the means of the cointegration relationships among the empirical models, if a transitory global shock displaces the economic growth rate, then the RGDP should return to its long-run equilibrium level.

Once RGDP and the main globalization indicators move together in the long run, the corresponding dynamic error correction model terms are as follows:<sup>21</sup>

$$\Delta \text{RGDP}_{it} = \alpha_{1i} + \lambda_1 \text{ECT}_{it-1} + \sum_k \theta_{11k} \Delta \text{RGDP}_{it-k} + \sum_k \theta_{12k} \Delta X_{it-k} + u_{1it} \quad (2)$$

$$\Delta X_{it} = \alpha_{2i} + \lambda_2 \text{ECT}_{it-1} + \sum_k \theta_{21k} \Delta \text{RGDP}_{it-k} + \sum_k \theta_{22k} \Delta X_{it-k} + u_{2it}, \quad (3)$$

where  $\Delta$  denotes first differences,  $\Delta \text{RGDP}$  is the economic growth rate,  $X$  is the level of our observed global variable,  $k$  ( $k = 1, \dots, m$ ) is the optimal lag length determined by the Schwarz Information Criterion, and  $\alpha$  represents the fixed country effects.

The error correction model represents the equilibrium error  $\lambda_j$  ( $j = 1, 2$ ), implying the effect of innovations on the explanatory variables and on the dependent variables and representing the long-run estimation of the speed of adjustment. Here,  $\text{ECT}_{it-1}$  is the lagged error correction term derived from the long-run cointegrating relationship of equation (1), in which  $\text{ECT}_{it} = \text{RGDP}_{it} - \hat{\alpha}_i - \hat{\delta}_i t - \hat{\beta}_i X_{it}$ . The term  $u_j$  ( $j = 1, 2$ ) is the disturbance term assumed to be uncorrelated with mean zero. In addition, the parameters  $\theta$  represent short-run Granger causality from one variable to each of the others. A VECM is a restricted VAR (vector auto-regression) designed for use with a non-stationary series that is known to be cointegrated.

A widely used estimator for the system in equations (2) and (3) is the dynamic panel generalized method of moments (GMM) estimator proposed by Arellano and Bond (1991). This method is more efficient compared with other procedures. We take the first-differences of equations (2) and (3) to eliminate the country-specific effects.

However, differencing introduces a simultaneity problem, because lagged endogenous variables on the right-hand side are correlated with the new differenced error term. In addition, heteroscedasticity in the genuine errors across countries is expected to be presented. To deal with these problems, an instrumental variable estimator must be used to deal with the correlation between the error terms and the lagged dependent variables (Christopoulos & Tsionas, 2004; Lee, 2005). A lag length  $m = 2$  seems necessary to avoid serial correlation in the genuine error terms  $u_{1it}$  and  $u_{2it}$ , and in light of this we use variables lagged three and four periods as instruments for the lagged dependent variables. To address this issue, we consider the Sargan (1958, 1988) test of over-identifying restrictions, which examines the overall validity of the instruments by analyzing the sample analog of the moment conditions used in the estimation process. If the null hypothesis of the Sargan test for validly over-identifying restrictions cannot be rejected, then the instrumental variables are valid.<sup>22</sup>

For short-run causality, we can test  $H_0: \theta_{12k} = 0$  for all  $k$  in equation (2). Next, the long-run causality can be tested by looking at the significance of the speed of adjustment  $\lambda$ , which is the coefficient of the ECT. As Table 6 shows, for the  $F$ -test results of the panel causality tests, in the short run, none of these global variables has a significant influence on economic growth, whereas the significance of  $\lambda$  indicates a long-run relationship for the cointegrated process. For long-run causality, we use the joint test (the terms of ECT/ $\Delta X$ , where  $X$  indicates GLOB, ECO, POL, and SOC, respectively) to check for a strong causality test, and so movements along this path can be considered permanent. Except for the independent variable being ECT/ $\Delta X$  or joining three dimensions together, there is significant causality running from GLOB, ECO, and SOC to RGDP, and the globalization index keeps a long-run positive effect. The estimator shows that an increase in the globalization raises RGDP growth in our sample countries. We thus support the arguments that globalization is one of the most powerful weapons for stimulating economic growth, in particular, in OECD economies (Saich, 2000; Dreher, 2006; Mishkin, 2009).

### *The Role of Political Party in Globalization*

Hibbs (1987) indicates that right- and left-wing parties in the mid-1980s tended to differ on the policies they adopted. Quinn and Inclán (1997) as well as Milner and Judkins (2004) find that right-wing parties consistently take up a more free trade stance than do left-wing parties. Dutt and Mitra (2005) also empirically investigate how the ideology of the government in power affects trade policy, by creating a large cross-country database and using a variety of trade policy measures as well as several panel techniques (panel fixed effects and two-stage least squares regression) to examine the relationship for how trade policy depends on political ideology. Marks *et al.* (2002) demonstrate the strength of these ideological commitments as predictors of party positions on the emerging issue of European integration. Due to the prediction of partisanship, one expects that right-wing parties should be more acceptable to the trend of globalization and free trade, while left-wing parties should be more favorable to protectionism.

When the effects are clear, partisanship likely does matter. To examine whether a country's globalization is affected by a political party's ideology which then influences economic growth, we enroll the political party variable RIGHT,<sup>23</sup> which

**Table 6.** Result of panel causality tests for OECD countries

Dependent variable	Source of causations (independent variable)								
	Short run				Long run				
	$\Delta$ GLOB	$\Delta$ ECO	$\Delta$ POL	$\Delta$ SOC	ECT	ECT/ $\Delta$ GLOB	ECT/ $\Delta$ ECO	ECT/ $\Delta$ POL	ECT/ $\Delta$ SOC
$\Delta$ RGDP	0.211 [0.809]	—	—	—	—0.026** (-2.954)	3.072** [0.027]	—	—	—
	—	0.287 [0.750]	—	—	—0.026** (-2.898)	—	3.044** [0.028]	—	—
	—	—	0.204 [0.814]	—	—0.021** (-2.305)	—	—	1.883 [0.130]	—
	—	—	—	0.065 [0.936]	—0.026** (-2.962)	—	—	—	2.984** [0.030]
	—	0.299 [0.741]	0.155 [0.856]	0.107 [0.898]	—0.021** (-2.105)	—	1.729 [0.159]	1.561 [0.197]	1.562 [0.197]

*Note:* The values in parentheses indicate *t*-statistics and the values in square brackets *p*-values.

\*\* and \* show statistical significance at the 5% and 10% levels, respectively.

is calculated by using the right-wing parties in percentage of total cabinet posts divided by the percentage of government cabinet seats held by the left-wing party. Data are obtained from INSTITUTIONS: Arthur Banks Cross-National Time-Series Database.

The hypotheses of a political party play an important role in the process of whether a country moves toward globalization or not. We thus take the party variable to assess its partisan position for approving globalization or not. We next conduct the panel cointegration tests with the three variables using the following model (extended model):

$$\text{RGDP}_{it} = \alpha_i + \delta_i t + \beta_i X_{it} + \gamma_i \text{RIGHT}_{it} + v_{it}. \quad (4)$$

Table 7 shows that most statistics significantly reject the null of no cointegration of the extended model, and it can be predicted that RGDP, each global variable, and RIGHT all move together in the long run. The next step is an estimation of such a relationship using the panel FMOLS technique for heterogeneity. From the results of Table 8 (separately for the globalization index; the three-variable cointegrated model) and Table 9 (jointly for the globalization index; the five-variable cointegrated model), we find that increasing globalization has a positive influence on RGDP. Comparing with Table 4, when we neglect the partisan variable RIGHT in Table 8, the panel coefficients for GLOB, ECO, POL, and SOC are 0.039, 0.040, 0.024, and 0.030 and are positively significant at the 5% level, respectively. Interestingly, first we find that the estimated results for panel coefficients are almost the same as with Table 4. Second, all panel estimators of RIGHT are positive and significant on RGDP. This result contradicts the traditional arguments from those of Hibbs (1987), Alesina (1987), and others, who typically presume that left-wing parties pay more attention to promoting expansionary policies for growth. By contrast, right-wing parties are more concerned with keeping a policy of retrenchment. However, these findings also support researchers who discover that right-wing parties are more favorable to free trade, while left-wing parties are more favorable to protectionism (Milner & Judkins, 2004).<sup>24</sup>

**Table 7.** Panel cointegration tests for OECD countries when political party variable RIGHT is joined in the model (extended model)

	Model 1	Model 2	Model 3	Model 4	Model 5
	GLOB	EPS	ECO	POL	SOC
Panel variance	1.833**	-0.387	1.082	4.053**	-1.556
Panel $\rho$	-0.933	0.281	-1.213	-3.092**	0.806
Panel PP	-1.832**	-2.643**	-1.613*	-2.807**	-1.277
Panel ADF	-2.487**	-1.605*	-1.967**	-3.104**	-0.323
Group $\rho$	0.498	0.278	0.513	-4.512**	0.205
Group PP	-1.264	-4.409**	-1.859**	-4.096**	-3.808**
Group ADF	-1.671**	-2.831**	-1.968**	-4.332**	-1.737**

*Note:* The null hypothesis is that the variables are not cointegrated. Under the null hypothesis, all the statistics are distributed as standard normal distributions. The finite sample distribution for the seven statistics has been tabulated in Pedroni (2004). EPS represents that we consider ECO, POL, and SOC as the independent variables together in the cointegrated structure.

\*\* and \* reject the null of no cointegration at the 5% and 10% levels, respectively.

**Table 8.** FMOLS estimates tests of cointegration for OECD countries when political party variable RIGHT is in the model (three-variable cointegrated model)

	Model 1		Model 2		Model 3		Model 4	
	GLOB	RIGHT	ECO	RIGHT	POL	RIGHT	SOC	RIGHT
Panel	0.039** (71.382)	0.009** (3.110)	0.040** (62.602)	0.016** (2.311)	0.024** (14.707)	0.008** (2.560)	0.030** (61.070)	0.007** (2.348)

*Note:* *t*-statistics in parentheses. Asymptotic distribution of *t*-statistic is standard normal as *T* and *N* go to infinity.

\*\*Indicates statistical significance at the 5% level.

**Table 9.** FMOLS estimates tests of cointegration for OECD countries when political party variable RIGHT is in the model (ECO, POL, and SOC are the independent variables together: five-variable cointegrated model)

	ECO	POL	SOC	RIGHT
Panel	0.013** (14.552)	0.003** (4.400)	0.016** (14.283)	0.015** (2.968)

Note: *t*-statistics in parentheses. Asymptotic distribution of *t*-statistic is standard normal as *T* and *N* go to infinity.  
\*\*Indicates statistical significance at the 5% level.

Table 10 demonstrates the *F*-test results of our panel causality test whereby the political party variable RIGHT is accounted in the model for both the long run and the short run. By looking at the significance of the coefficient ECT, if a shock disturbs this moving equilibrium by forcing the series farther apart (or closer together), then for the “equilibrium level-path of moving to the long run”, this equilibrium error is corrected over the long term in the cointegrated process with the equilibrium state (Durr, 1993). The evidence of short-run (considered to be transitory causality) causality is very similar to that for Table 6 when the party variable is excluded in our model. It also appears that the short-run dynamic unidirectional causality running from the globalization variables to RGDP is weak. Thus, institutions are an important determinant of economic development, but not the only determinant (see Hall & Jones, 1999; Glaeser *et al.*, 2004).

On the question of homology, as shown in Table 10 the long-run causal relation among the variables is very explicit. As can be seen, according to coefficients they are positive and significant at the 5% level, showing an increase in the overall index of globalization, and the effects of the single components for economic globalization as well as social globalization expand RGDP in our results. However, once we join the three dimensions together, it is interesting to report that economic, political, or social integration do seem to have an influence on economic growth. This finding is consistent with Dreher (2006), who argues that one potential problem for such specified results are from the correlation between the three sub-indices, resulting in lower *t*-statistics. Therefore, Dreher suggests that the three dimensions of globalization should be analyzed individually as well.

In recent years, the impact of political and institutional variables on economic growth has been highlighted, but the aspect of political party has never been studied in the context of globalization. In the last column of Table 10 and similar with Table 6, the variable RIGHT accounts for this partisan difference, and all RIGHT variables are completely significant, at least at the 10% level, which obviously show that right-wing parties promote growth. This finding goes against the position of right-wing parties, which usually neglect economic growth. Surprisingly, it first suggests that left- and right-wing parties do not distinguish themselves on their attitudes toward the openness of globalization. Second, in accordance with previous partisan literature, Milner and Judkins (2004) speculate that globalization erodes differences in countries' and their parties' positions on trade. Other interesting cases are from Boix (2000) and Iversen (1999) who believe that partisan differences over trade policies decline as globalization rises, because globalization is often said to promote policy convergence between political parties in the government of

**Table 10.** Results of panel causality tests with political party variable RIGHT for OECD countries

Dependent variable	Source of causations (independent variable)										
	Short run					Long run					
	$\Delta$ GLOB	$\Delta$ ECO	$\Delta$ POL	$\Delta$ SOC	$\Delta$ RIGHT	ECT	ECT/ $\Delta$ GLOB	ECT/ $\Delta$ ECO	ECT/ $\Delta$ POL	ECT/ $\Delta$ SOC	ECT/ $\Delta$ RIGHT
$\Delta$ RGDP	0.303 [0.738]	—	—	—	1.648 [0.193]	—0.024** (-2.709)	2.677** [0.046]	—	—	—	3.596** [0.013]
	—	0.389 [0.678]	—	—	1.633 [0.196]	—0.025** (-2.674)	—	2.709** [0.044]	—	—	3.546** [0.014]
	—	—	0.202 [0.816]	—	1.678 [0.187]	—0.018** (-1.964)	—	—	1.386 [0.245]	—	2.350* [0.071]
	—	—	—	0.115 [0.890]	1.599 [0.202]	—0.024** (-2.727)	—	—	—	2.580* [0.052]	3.602** [0.013]
	—	0.331 [0.717]	0.109 [0.896]	0.089 [0.913]	1.689 [0.185]	—0.018* (-1.791)	—	1.341 [0.259]	1.119 [0.340]	1.138 [0.332]	2.173* [0.089]

Note: Same as Table 6.

democratic states (Vowles, 2008). This suggests that party differences over trade, if any exist, will be attenuated over time.

Our findings overall support numerous previous literature that preaches up the contribution of globalization to economic growth. For example, Dreher (2006) comments that economic globalization, which involves both trade liberalization and export orientation, can be a key driver of economic growth for reasons in addition to those already mentioned. We also mention that one should not forget that political integration also influences growth rates and pervasive political integration could promote governments as a counterweight to integration into globalized markets. However, both economic and political integrations should be based on social integration, such as effective global communication networks that put up lower cross-border transaction costs. Marketing information can thus be accessed by customers worldwide and will decline in the importance of geographic proximity. Finally, how can countries overcome the problem in these times of quick integration? How can they change the role of a political party to forge the political will to promote institutional reform? Our findings suggest that a key part of the answer is globalization.

### **Concluding Remarks**

The term “globalization” has been used in social sciences since World War II and others regard it as a phenomenon with a long history, particularly under the increasing international economic integration over the last half century, whereby it has been associated with spectacular economic performances (Kali & Reyes, 2007). Through this, the global trading network has become much more integrated. Jinjarak (2009) believes that integration of international trade only as an integral part of the globalization process also needs political integration and social integration. In particular, whether the positive impact of global integration on growth depends on the incumbent’s ideology for each government or not is a critical issue of concern. In linking with this historic consensus, we attempt to present a causal story with the long-run relationships among these variables. We interpret these trends in terms of each country having the desire to participate in international society. We believe it can contribute to mutual understanding and dissolving misunderstandings between countries.

After taking a global viewpoint based on the panel data approach, we examine the long-run co-movements and the causal relationships among economic growth and offer three indices measuring these dimensions, an overall index of globalization, and political parties in a multivariate model so as to jointly analyze the global integration and growth nexus. This paper overcomes some of the shortcomings in earlier studies by applying recent developments in a panel analysis and by using a small time frame to estimate panel cointegration and panel VECM tests with an annual dataset of 23 countries for 1970 to 2006. It is concluded that a cointegrated relationship does exist for the whole panel test. Thus, it can be seen that, with any combination, all series move together in the long run, and such factors may even have a short-lived impact on economic growth. In the panel VECM, though the evidence of short-run causality is much weaker, except for the independent variable being POL, there is significant

causality running from GLOB, ECO, and SOC to RGDP, and the globalization index keeps its positive effect.

For the purpose of examining whether a country's globalization is affected by a political party's ideology which then influences economic growth, we enroll the political party variable RIGHT. We get a very similar finding as earlier, in that globalization can positively affect RGDP in OECD countries and right-wing parties should promote growth. We believe this policy convergence between political parties in a government is raised by globalization. We thus try to give specific policy advice: keep on promoting policy towards globalization, because on the one hand it contributes to economic growth continually, while on the other hand it converges policy differences and political conflicts between parties in OECD countries.

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### Notes

- <sup>1</sup> Global integration is a process to combine those factors like institutional effect and socio-political issues, yet it has become a political economy subject ranging from economy, society, and politics (Aramberri, 2009).
- <sup>2</sup> For the methodology, the time series data may yield different results for different countries, as well as for different time periods within the same country. In the panel approach, however, there are strong reasons for believing the considerable heterogeneity in a cross-country series or the fixed/random-effects estimator (Sarantis & Stewart, 2001; Lee & Chang, 2008).
- <sup>3</sup> Harris and Tzavalis (1999) find out that these panel tests allow for both parameter and dynamic heterogeneity across groups, and they are considerably more powerful than the conventional tests. We hence use cointegration tests for a panel of countries instead of a time-series or traditional panel data approach.
- <sup>4</sup> We single out OECD member cases as samples, because these countries have been regarded as having a big power with an important role to play in the international economy and international politics in the recent centuries, and they have developed more rapidly as integrated economies in the world.
- <sup>5</sup> The political partisanship literature suggests that left- and right-wing governments in advanced industrial countries differ on the political economic outcomes they cause (Alt, 1985; Alvarez *et al.*, 1991; Hibbs, 1987) and on the policies they adopt.
- <sup>6</sup> Marks *et al.* (2002) test competing explanations for party positioning on the issue of European integration over the period 1984 to 1996 and find that the ideological location of a political party has a stronger influence on a party's policy determined in trade openness.
- <sup>7</sup> Garrett (2001) suggests that capital account openness only promotes growth in more developed countries.
- <sup>8</sup> Chortareas and Pelagidis (2004) indicate that the degree of openness converges faster within regional blocs rather than at the global level.
- <sup>9</sup> Most obviously, in recent decades multinationals have become more important in technology transfer (Nelson & Wright, 1992) and in the proliferation of outsourcing (Lawrence, 1996).
- <sup>10</sup> The sub-indices are in turn aggregated into one single index of globalization.
- <sup>11</sup> We know that the linear regression model requires no assumptions regarding the measurement of the independent variables (which can be dichotomous, nominal, ordinal, or continuous). In contrast, the dependent variable is required to be continuous (DeLong, 1997a, 1997b), owing to the categories of globalization being measured by those "index" variables. However, this is not appropriate, though such limited outcomes are continuous variables, they are characterized by the fact that their observed values do not cover their entire range.

- <sup>12</sup> We use per capita numbers in this article for two reasons. First, per capita numbers are less sensitive to territorial changes. Second, per capita numbers provide variables in the same units for large and small countries and they control the scale of the economy.
- <sup>13</sup> There is no reason to believe that all parameters are the same across countries (Lee & Chang, 2009).
- <sup>14</sup> Australia (AUS), Austria (AUT), Belgium (BEL), Canada (CAN), Denmark (DNK), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), Iceland (ISL), Ireland (IRL), Italy (ITA), Japan (JPN), Luxembourg (LUX), the Netherlands (NLD), New Zealand (NZL), Norway (NOR), Portugal (PRT), Spain (EPS), Sweden (SWE), Switzerland (CHE), United Kingdom (GBR), and the United States (USA).
- <sup>15</sup> Hadri's (2000) test statistic assumes that the variable in question follows an  $I(0)$  process under the null, whereas the other statistics assume an  $I(1)$  process under the null.
- <sup>16</sup> LLC (2002) conduct Monte Carlo simulation experiments on panel-based unit root tests which are more powerful than individual unit root tests.
- <sup>17</sup> Pedroni (1999) shows that the panel-ADF and group-ADF tests have better small-sample properties than the other tests, and hence they are more reliable.
- <sup>18</sup> Pedroni (2000) provides two types of the FMOLS panel cointegration estimator. One is the within-group FMOLS and the other is the between-group FMOLS. However, he finds that the between-group FMOLS suffers much less from small sample size distortion than the within-group estimators.
- <sup>19</sup> Another good example is that which took place in the European area before the Industrial Revolution. Jones (1981) discovers low political integration potential resulted in competition between governments and strongly promoted economic ties induced political disintegration and economic integration.
- <sup>20</sup> For example, the Labour Party in Norway; the collegial government organized by the Democratic Party and the Christian Social People's Party in Luxembourg; as well as the Social Democrats in Denmark.
- <sup>21</sup> Here, we focus on the main topic of the global impact on economic growth. We do not discuss the VECM, while the four globalization variables are the dependent variable.
- <sup>22</sup> A very constructive comment from the referee is that he/she worries we may not have enough "instruments" in the instrumental variable estimation. Thus, for the robust experiment, holding optimal lag as length 2, we use variables lagged from four to eight periods as instruments for the lagged dependent variables, and it yields qualitatively similar results to our original panel causality results.
- <sup>23</sup> We also confirm "RIGHT" is a  $I(1)$  series by using various panel unit-root testing methods.
- <sup>24</sup> We achieve a consistent finding when comparing Table 5 and Table 9.

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## Appendix

**Table A1.** Components of 2009 KOF index of globalization

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A.	<p><i>Economic Globalization</i></p> <p>(i) Data on Actual Flows</p> <ul style="list-style-type: none"> <li>Trade (percent of GDP)</li> <li>Foreign Direct Investment, flows (percent of GDP)</li> <li>Foreign Direct Investment, stocks (percent of GDP)</li> <li>Portfolio Investment (percent of GDP)</li> <li>Income Payments to Foreign Nationals (percent of GDP)</li> </ul> <p>(ii) Data on Restrictions</p> <ul style="list-style-type: none"> <li>Hidden Import Barriers</li> <li>Mean Tariff Rate</li> <li>Taxes on International Trade (percent of current revenue)</li> <li>Capital Account Restrictions</li> </ul>
B.	<p><i>Social Globalization</i></p> <p>(i) Data on Personal Contact</p> <ul style="list-style-type: none"> <li>Telephone Traffic</li> <li>Transfers (percent of GDP)</li> <li>International Tourism</li> <li>Foreign Population (percent of total population)</li> <li>International letters (per capita)</li> </ul> <p>(ii) Data on Information Flows</p> <ul style="list-style-type: none"> <li>Internet users (per 1000 people)</li> <li>Television (per 1000 people)</li> <li>Trade in newspapers (percent of GDP)</li> </ul> <p>(iii) Data on Cultural Proximity</p> <ul style="list-style-type: none"> <li>Number of McDonald's restaurants (per capita)</li> <li>Number of Ikea (per capita)</li> <li>Trade in books (percent of GDP)</li> </ul>
C.	<p><i>Political Globalization</i></p> <ul style="list-style-type: none"> <li>Embassies in country</li> <li>Membership in international organizations</li> <li>Participation in UN Security Council Missions</li> <li>International treaties</li> </ul>

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