Public Governance Performance in the 21st Century: Evidence from the G7 Countries

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Abstract

This paper provides an assessment of governance performance and economic growth in the Group of Seven countries (Canada, France, Germany, Italy, Japan, United Kingdom, and the United States) in the 21st century to find out which country has the most functionally effective governance performance in the 21st century. Using the World Bank's governance data, we observe that Canada consistently ranked at the top over the past two decades of the 21st century followed by the United Kingdom, Germany, the United State, France, Japan, and Italy. The country-specific correlation matrix showed the relationships between governance performance and economic growth while the multiple regression results showed that these governance indicators are either positive or negative, but statistically insignificant in explaining economic growth. This paper therefore recommends that the governments in the G7 countries should improve on these governance indicators because functionally effective governance is fundamental to economic growth in the 21st century.

1. Introduction

The importance of better governance performance in sustainable economic growth and better development outcomes gained momentum over the past three decades. In a series of studies by Kaufmann, Kray, Mastruzzi, and Zoido-Lobatón in the late 1990s and early 2000s, they defined governance broadly as the traditions and institutions by which authority in a country is exercised. This includes the process through which governments are selected, monitored and replaced; the capacity of the government to effectively formulate and implement sensible policies; and the respect that citizens and the state have for the institutions that govern economic and social interactions among them. The broad definition of governance and the six clusters of governance indicators provided three interrelated dimensions of governance: political or public governance, economic governance, and social governance. According to Kaufman, Kray, and Zoido-Lobatón (1999), public or political governance is the process by which those in authority are selected and replaced, and that this could be captured by "Voice and Accountability" and "Political Stability and Absence of Violence." The "Government Effectiveness" and "Regulatory Quality" are two ways to measure economic governance, which deals with capacity of the state to implement prudent policies. Social governance addresses the respect that citizens and the state have for the rules that govern their interactions, which can be measured using the scores on the "Rule of Law" and the "Control of Corruption."

The surge of interest about the consequences of functionally effective governance and dysfunctional governance on sustainable economic growth and better development outcomes led to the proliferation of studies with respect to the causal relationship between governance and growth in less developed countries. This study contributes to the literature related to governance and economic growth because it is the first attempt that provides comprehensive country-specific analysis of the possible relationship between governance and economic growth in each of the G7 countries. Second, our study focusses exclusively on the G7 countries where governance issues relating to the rule of law, civil liberties, freedom of the press, gender equality, and government transparency already exist; therefore, research scholars have taken these issues for granted.

We are unaware of studies that have examined each country among the G7 countries. This study is particularly important because governance performance is a global issue as manifested by the policies implemented to manage the global COVID-19 pandemic shock, which leaders from the developed countries (DCs)and less developed countries

(LDCs) handled from different dimensions and perspectives; therefore, the issue of governance is a global phenomenon, which is no longer confined to the LDCs. In essence, the COVID-19 pandemic showed government effectiveness or government ineffectiveness varied across the DCs and LDCs.

Based on the World Bank's data for the six governance indicators, Canada ranked first as the country with the most effective governance performance among the G7 countries, the United Kingdom ranked second, Germany ranked third, the United States ranked fourth, France ranked fifth, Japan ranked sixth, and Italy ranked seventh. In addition, the correlation matrix showed that correlation between economic growth and the six governance indicators varies across the G7 countries. The growth regressions showed no statistically significant positive or negative relationships between the six governance indicators and economic growth in the G7 countries.

The paper is organized as follows. Section 2provides a literature review of relevant studies on the importance of good governance in economic growth. Section 3 provides the trends in the six governance indicators in the G7 countries covering the past two decades of the 21stcentury. Section 4 provides the methodology of this study as well as the data sets utilized in the estimation of the model and the empirical results. Section 5 summarizes and concludes the paper with important issues on policy implications.

2. Literature Review

The United Nations Department of Economic and Social Affairs (UNDESA, 2007) emphasized the strong correlation between good governance and economic growth and better development outcomes in their detailed review of the literature about public governance indicators. UNDESA's study provided different definitions of governance: what constitutes "good" governance, why it is necessary to evaluate governance, and how to conduct the evaluation of governance. According to UNDESA (2007), there exist many definitions of governance in the literature due to the inherent diversity in national traditions and public culture, and that this could be distilled into just three main types of governance. This is in consonant with Nzongola-Ntalaja's (2003) study that laid out political or public governance as fundamental to governing political institutions, economic governance needed for governing economic institutions, and social governance necessary for governing social institutions.

According to UNDESA, for political or public governance, the authority is the State, government or public sector, which relates to the process by which a society organizes its affairs and manages itself. For economic governance, its authority is enhanced by the private sector, which relates to the policies, the processes or organizational mechanisms that are necessary to produce and distribute goods and services. According to Dixit (2009), "economic governance is important because markets, and economic activity and transactions more generally, cannot function well in its absence. Good governance is needed to secure three essential prerequisites of market economies," especially with respect to the security of property rights, the enforcement of contracts, and collective action. For social governance, its authority is the civil society, including citizens and non-for-profit organizations, which relates to a system of values and beliefs that are necessary for social behaviors to happen and for public decisions to be taken."

Based on UNDESA's definition of political or public governance, its effectiveness can be evaluated using two governance indicators: voice and accountability and political stability and absence of violence/terrorism while the effectiveness of economic governance can be evaluated with two other governance indicators, namely government effectiveness and regulatory quality. The rule of law and the control of corruption are the last two governance indicators with which one can evaluate the effectiveness of social governance. According to UNDESA (2007), governance is "good" when it allocates and manages resources in response to collective problems. In other words, good public governance as the necessary foundation for good corporate governance when viewed from the perspective of a locative and management efficiencies, which would ultimately ensure stable and successful economies. In addition, UNDESA (2007) pointed out that the evaluations and the instruments used to conduct the evaluations of good governance are crucial not only for the strong positive association with better development outcomes but also good governance can convey good signal to domestic investors, international agencies, and external donors.

Another important aspect of the UNDESA's (2007) study is the focus on information and communications technology (ICT) in this information age. The use of ICT can improve the ability of government, using e-governance, to address the needs of society through "improved dissemination of information to citizens, better coordination of the strategic planning process, and facilitating the attainment of development goals." In addressing the impact of globalization on public governance, DESA (2007) pointed out that "globalization has made public policies more global [Mimicopoulos 2006] and transformed the supply of services in developed, with more and more private services replacing state-supplied services [Cheema 2005]."

Aside from linking governance with economic growth, other studies have sought to explain the role good governance has played in public health outcomes in the last century. For example, Besley and Kudamatsu (2006) examined democracy to analyze the link between governance and health in a cross section of countries. They found that health policy interventions are superior in democracies and that in countries that have been democratic from 1956 onward, life expectancy is about five years higher than in countries that have been autocratic in the same period. The results also showed that democratic countries also have approximately 17 fewer infants dying before the age of one per 1000 births, compared with countries that have been continuously autocratic since 1956. The authors ascribe this to democracies having greater representation and accountability, so that health issues are promoted, and to the ability of voters in democratic countries to elect competent leaders.

Nabin *et al*. (2021), by focusing on a panel of 185 countries found that countries with better governance are more capable of adopting and implementing appropriate policies in controlling a pandemic like COVID-19 and that such governments are considered more trustworthy by their people. They concluded that the existence of a persistently significant inverse relationship between all measures of good governance and COVID-19 positive rates and COVID-19 growth rates confirms that the quality of governance is a key factor in a country's success in pandemic management. In contrast, Toshkov *et al*. (2020) found that European countries with more centralized forms of government that scored relatively poorly on measures of government effectiveness, trust, and freedom tended to respond more quickly and decisively in controlling the spread of the pandemic than decentralized countries with better scores on those measures.

Tartar *et al*. (2021) investigated the role of governance and government effectiveness indicators in the acquisition and administration of COVID-19 vaccines in a panel of 172 countries. The results showed that countries with the highest COVID-19 vaccination rates also have higher effective governance indicators. Regulatory quality was the most important indicator in predicting COVID-19 vaccination status in a country, followed by voice and accountability, and government effectiveness. In an earlier study, Menon-Johansson (2005) investigated the role of good governance in controlling the spread of human immunodeficiency virus (HIV). The author found that HIV prevalence falls as governance improves and, the three most influential dimensions of governance are government effectiveness, the rule of law and corruption. Morens and Fauci (2007) opined that gaining control over future pandemics would depend on resource availability and deployment, and the government's response to the public health crisis, more than on increased medical knowledge about treatment and prevention.

The study by Liang *et al*. (2020) explored factors responsible for the pronounced variability in COVID-19 pandemic mortality in a cross-section of 169 countries. COVID-19 mortality rate was calculated as number of deaths per 100 COVID-19 cases and WGI government effectiveness scores measured government effectiveness, which reflects the capacity of government to effectively formulate and implement sound policies. They found that higher COVID-19 mortality is associated with lower test number, lower government effectiveness, aging population, fewer beds, and better transport infrastructure. The authors concluded that increasing COVID-19 test number and improving government effectiveness have the potential to reduce COVID-19 related mortality. Similarly, Brauner *et al*. (2021) used data from 41 countries to investigate the effectiveness of governments in controlling the COVID-19 pandemic by implementing no pharmaceutical interventions (NPI). They found that limiting gatherings to fewer than 10 people, closing high-exposure businesses, and closing schools and universities were each more effective than stay-at-home orders, which were of modest effect in slowing transmission.

The basic findings from the empirical studies can be summarized as follows: the majority of the studies have found a positive relationship between good governance and economic growth and between government effectiveness and public health outcomes. While considerable body of literature has been devoted to investigating the governance-economic growth nexus, there is a lack of research on how crises affect this relationship, particularly in developing countries. Another issue is the consideration of the relationship between governance and economic growth while overlooking the possibility of a feedback effect, thereby creating simultaneity and endogeneity problems. According to Resnick and Birner (2006), "econometric studies typically suffer from bias created by omitted variables and the ubiquitous problem of endogeneity."

## 3. Trends in Governance Performance in the G7 Countries in the 21st Century

As we pointed out earlier, the first two of the six governance indicators (voice and accountability and political stability and absence of violence)are two ways to measure political/public governance; and Figures 1A and 1B provide the trends in political/public governance scores. Similarly, next two governance indicators (government effectiveness and regulatory quality) provide a good measure of economic governance; and Figures 2A and 2B provide the trends in economic governance scores. Finally, the last two governance indicators: rule of law and control of corruption measure

social governance; and Figures 3A and 3B provide the trends in social governance scores. The scores for these measures of governance cover the first two decades of the 21st century.

With respect to the trends in voice and accountability(VA) in the past two decades, Figure 1A shows that the G7 countries had the best scores in 2004 with Canada, the United Kingdom, Germany, and France as the top four. The VA scores declined in each country in the G7after 2004; and in 2020, no country recovered to the 2004 standard. As for political stability and absence of violence (PV), Figure 1B shows that all the G7 countries had the best scores in 2000 – the beginning of the 21st century –and their scores quickly declined with negative scores recorded for the United States in 2004 and 2020 and France in 2016. Between 2010 and 2020, Canada and Japan appeared to distance themselves from the rest of the G7 countries.

Government effectiveness (GE) depicted in Figure 2A seemed to show convergence in the scores among five countries (France, Germany, Japan, the United Kingdom, and the United States) within the G7 in 2009. While Canada remained steadily above the five countries that appeared to converge in 2009,however, between 2014 and 2020, other countries caught-up with Canada such that the differences in scores are not noticeable. With respect to GE, Italy can be considered as the country, in the group, that statisticians and econometricians would consider as the outlier country because it remained far below the other G7 countries since 2000.

Figure 1: Trends in Public/Political Governance Performance, 2000-2020


Figure 1A: Voice and Accountability
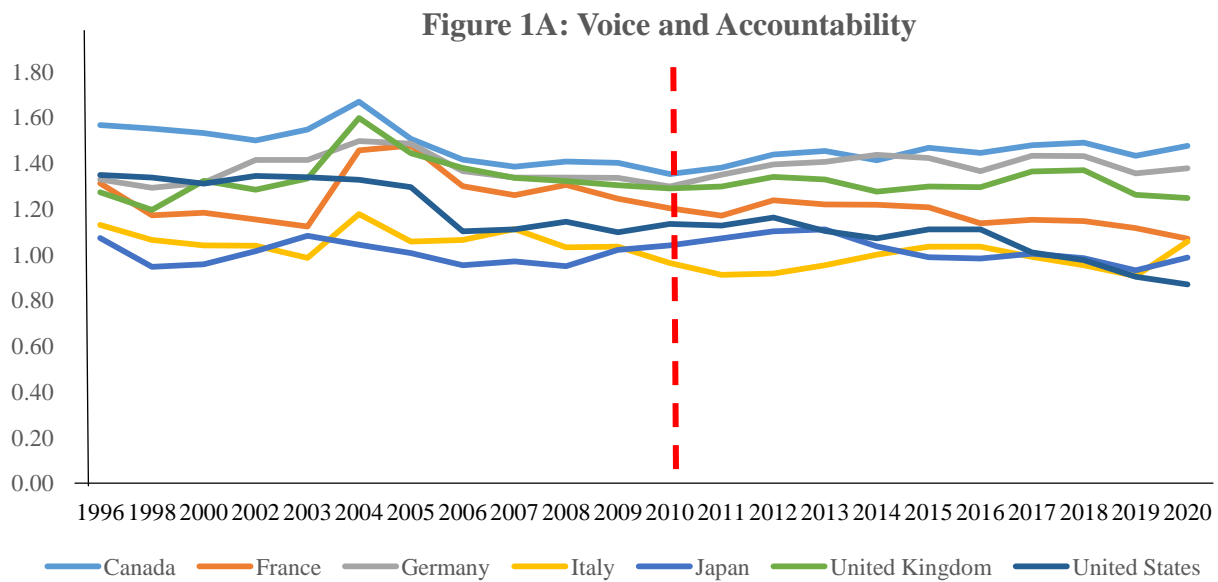
Figure 1B: Political Stability and Absence of Violence
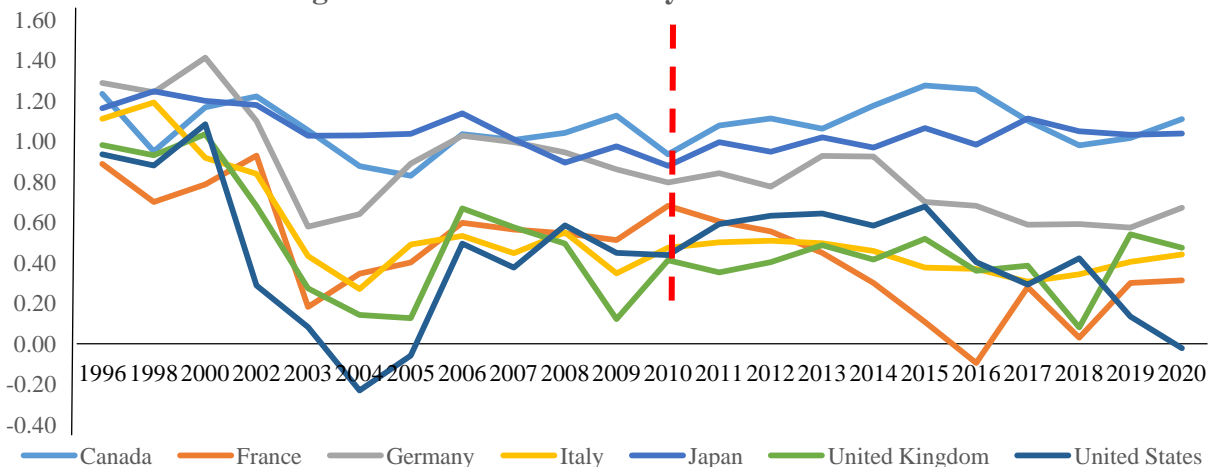
The trends in regulatory quality (RQ) depicted in Figure 2B shows the United Kingdom to have the highest score up to 2008, and since then, the scores appeared to be closed to or tied with those of Canada and Germany. Italy also showed the lowest scores in RQ between 2010 and 2020 among the G7 countries.

The trends in the rule of law (RL) illustrated in Figure 3A show Canada, France, Germany, Japan, the United Kingdom, and the United States with scores ranging roughly between 1.20 and 2.00 over the first two decades of the 21st century. Furthermore, the visible variations in the RL scores prior to 2016 appeared less noticeable since then in France, Germany, Japan, the United Kingdom, and the United States. For the RL scores in the G7 countries, it is obvious that Italy appeared to be the only country among the G7 countries whose scores ranged

Figure 2:   Trends in Economic Governance Performance, 2000-2020

Figure 2A: Government Effectiveness

Figure 2B: Regulatory Quality
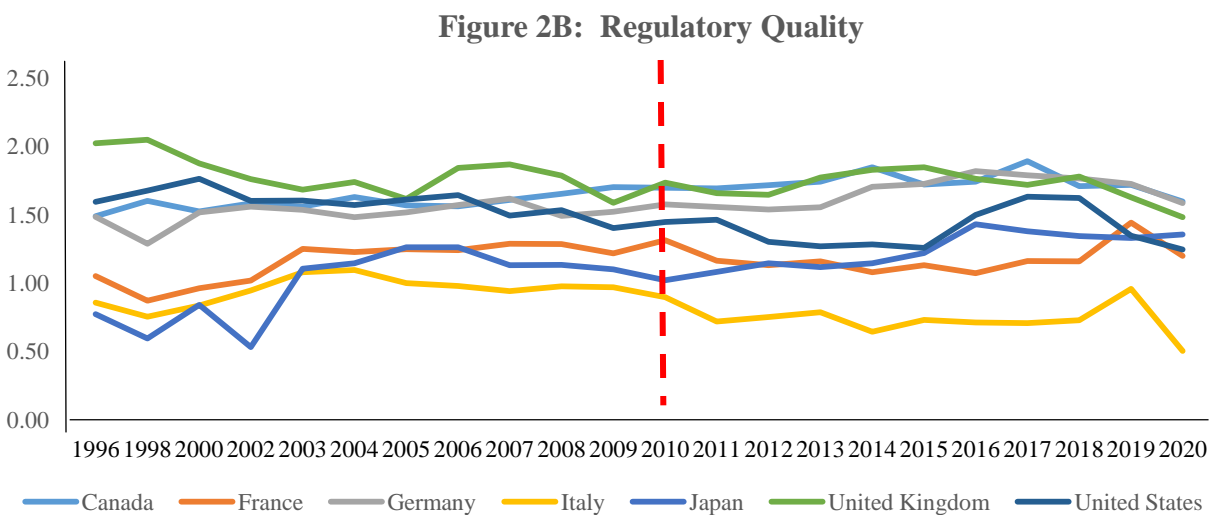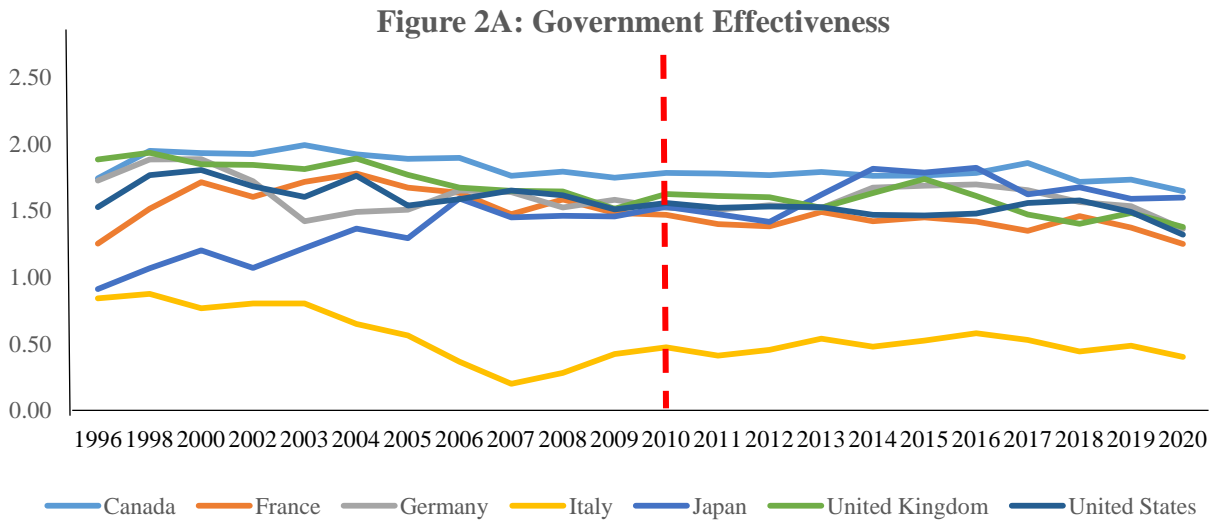
between0.50 and 1.00 during the 2000-2005 period, and then, the scores remained steady between 0 and 0.50 since 2010.Finally, with respect to the control of corruption (CC), Figure 3B shows the variations in the CC scores among the G7 countries to be more discernable prior to 2010. Since then, there appeared to be two forms of convergence: the CC scores for France and the United States appeared to be slightly above 1.00 while the CC scores for Canada and the United Kingdom appeared to hover around 1.60. Again, Italy also displayed a pattern similar to the RL in Figure 3A in which the scores remained steady between 0 and 0.50 since 2010. From these graphical illustrations, Italy is the only country among the G7 countries that showed the lowest scores in economic governance performance as measured by the GE and RQ scores and social governance performance as measured by the RL and CC scores over the past two decades of the 21stcentury.

Figure 3:   Trends in Social Governance Performance, 2000-2020

Figure 3A: Rule of Law

Figure 3B: Control of Corruption
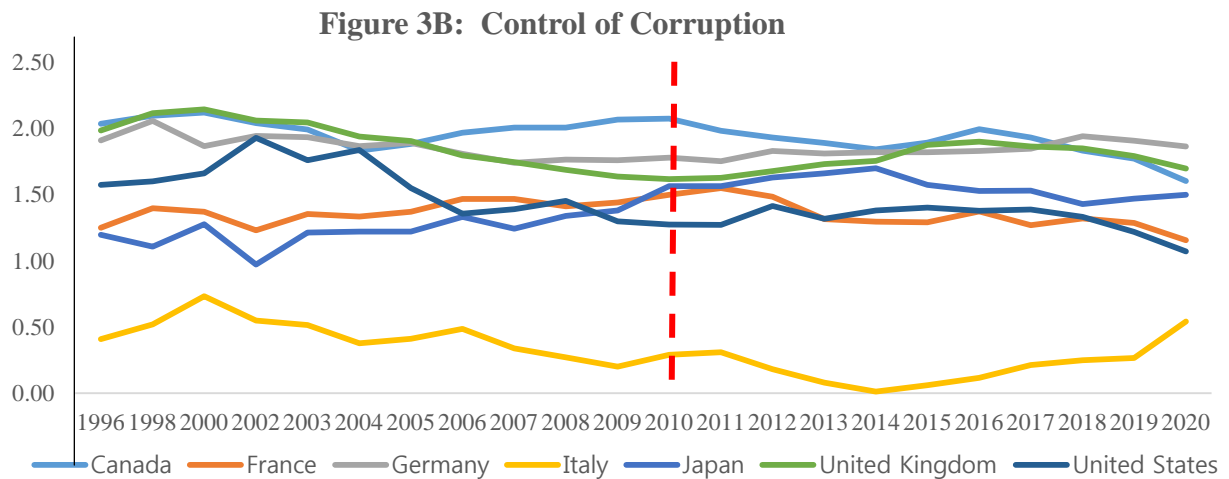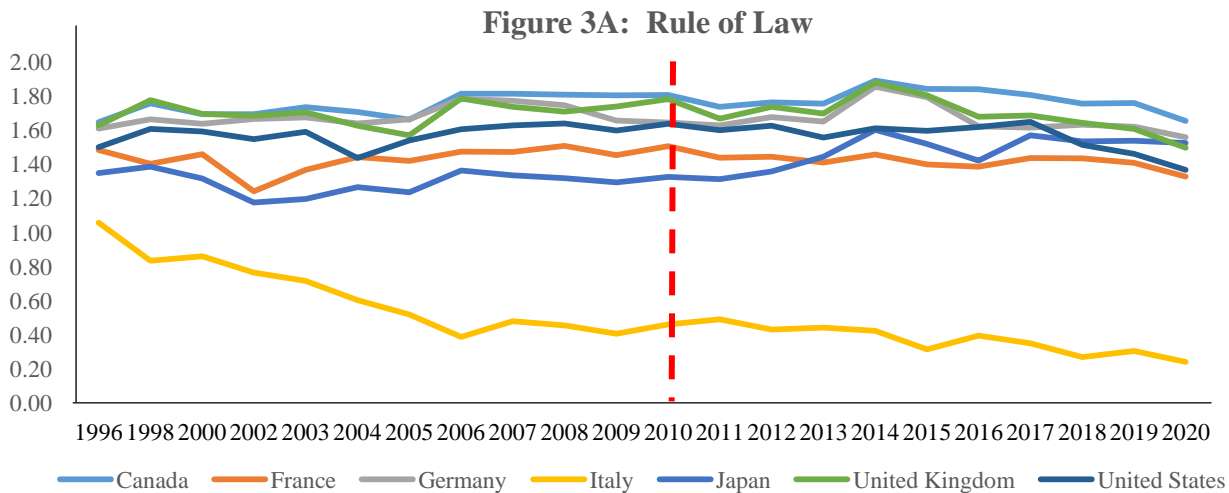
Given the variations and the apparent convergence in the some of the scores of the six governance indicators, it is difficult to make any meaningful determination about which country stands out in terms of governance performance among the G7 countries over the first two decades of the 21st century. Based on these graphical illustrations shown in Figures 1A for VA and 1B for PV; Figures 2A for GE and 2B for RQ; and Figures 3A for RL and 3B for CC; there are pertinent research questions, which this study plans to provide statistical answer. Which country among the G7 countries has the most functionally effective governance performance in the 21st century or which country is at the forefront of effective governance? Is governance performance in the first decade different from the second decade of the 21st century? Did the G7 countries experience positive improvements, negative changes (worsened), or stationary (unchanged) governance performance in the second decade in comparison to the first decade of the 21st century?

4. Methodology and Estimated Results

In this section, we utilize the difference-in-means (DIM) estimator method to provide statistical/econometric answer to the first empirical question posed as to whether the G7 countries experienced positive improvements, negative changes, or stationary governance performance in the second decade of the 21st century. The DIM or difference-in-differences[1] (DID) estimator method is commonly used in economics and the other social sciences as the summary statistics in

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[1]To read more aboutdifference-in-differences or the difference-in-means method, see Athey and Imbens (2006, 2017),Stock and Watson (2019), Wooldridge (2016), Lechner (2011), and Bertrand *et al*. (2004).

meta-analysis when measuring outcomes made on the same scale of variables, before and after.

With the WGI data covering 10 years of the first decade and 10 years of the second decade, the DIM estimate or assessment of thepublic/political governance performance, economic governance performance, and social governance performance in each of the G7 countries can be written as:

$$DIM = \overline{WGI}_{d2} - \overline{WGI}_{d1} \gtrless 0 \text{ or } DIM = \overline{WGI}_{d2} - \overline{WGI}_{d1} \gtrless 0$$

(1)

$$= \Delta\overline{WGI} \gtrless 0 \text{ or } \Delta\overline{WGI} \gtrless 0$$

where $\overline{WGI}$ and $\Delta\overline{WGI}$ representthe annual average and the change inannual average of each oneof the six world governance indicators (*VA*, *PV*, *GE*, *RQ*, *RL*, and *CC*) in the second and first decades of the 21stcentury. To ascertain the statistical/econometric changes or lack thereof with respect to each indicator, we express the *DIM* in equation (1) in sixseparate sets of null hypotheses (H_0) and alternative hypotheses (H_A) for each of the
G7 countries in our sample as:

$$H_0: \overline{VA}_{d2} > \overline{VA}_{d1} \text{ versus } H_A: \overline{VA}_{d2} \leq \overline{VA}_{d1} \text{ (2)},$$

$$H_0: \overline{PV}_{d2} > \overline{PV}_{d1} \text{ versus } H_A: \overline{PV}_{d2} \leq \overline{PV}_{d1} \text{ (3)},$$

$$H_0: \overline{GE}_{d2} > \overline{GE}_{d1} \text{ versus } H_A: \overline{GE}_{d2} \leq \overline{GE}_{d1} \text{ (4)},$$

$$H_0: \overline{RQ}_{d2} > \overline{RQ}_{d1} \text{ versus } H_A: \overline{RQ}_{d2} \leq \overline{RQ}_{d1} \text{ (5)},$$

$$H_0: \overline{RL}_{d2} > \overline{RL}_{d1} \text{ versus } H_A: \overline{RL}_{d2} \leq \overline{RL}_{d1} \text{ (6)},$$

and

$$H_0: \overline{CC}_{d2} > \overline{CC}_{d1} \text{ versus } H_A: \overline{CC}_{d2} \leq \overline{CC}_{d1} \text{ (7)}.$$

To find the mean with which to test the changes both first and second decades, we let WGI_{d1} and WGI_{d2}represent each of the six governance indicators as expressed in hypotheses (2) – (7), ΣWGI_{d1} and $\Sigma WGI_{d2}$are the sums of each governance indicator for the first decade (subscript $d1$) and second decade (subscript $d2$). Furthermore, the difference is $D = WGI_{d2} - WGI_{d1}$while D^2 and ΣD^2 are the square difference and the sum of the square difference, respectively.

To make meaningful comparison between the second decade and first decade of the 21st century, we estimate or calculate the standard deviation($S_D = \sqrt{\frac{1}{N}\Sigma D^2 - (\Delta\overline{WGI})^2}$), the standard error ($S_{\overline{D}} = \frac{S_D}{\sqrt{N-1}}$), and the *t*-value ($t = \frac{\Delta\overline{WGI}}{S_{\overline{D}}}$)

for each G7 country in the sample given the degree of freedom as *df=N* − 1. For comprehension,$\overline{WGI}_{d2} - \overline{WGI}_{d1}$ (or $\Delta\overline{WGI}$) represents the mean difference between the second and first decades for each governance indicator. That is the estimated *t*-value with which to confirm or reject the H_0 if the estimated values of the *t*-statistics are less than or greater than the table values, *df* is the degree of freedom while *N* stands for the 10 years covering each of the first two decades of the 21st century.

The estimated results for the H_O and H_A hypotheses reported in Tables 1A and 1Bprovide the estimated results for political/public governance performance, Tables 2A and 2B provide the estimated results for economic governance performance while Tables 3A and 3Bprovide the estimated results for social governance. What is common among the G7 countries is that the average scores of the six governance indicators for both decades remained between 0 and 2.0(close to 2.5), which the World Bank (2021) considered as data evidence of strong governance performance. The G7 countries have outstanding governance performance when compared to other countries that consistently scored between 0 and −2.5normally considered as evidence of weak governance performance. For the *VA* results reported in Table 1A, we reject the *H₀* in favor of the *H_A* in France, Italy, and the United States since the*VA* scores in the second decade were lower than the first decade (that is, $\overline{VA}_{d2} < \overline{VA}_{d1}$), which means that *VA* actually worsened rather than improved in these three countries within the G7. Based on the estimated results reported in Table 1B, we also reject the H_O in favor H_A in France and Germany because $\overline{PV}_{d2} < \overline{PV}_{d1}$, that is, *PV* worsened in both countries in the second decade while it remained unchanged in Canada, Italy, Japan, the United Kingdom, and the United States.

Table 1A.   Voice and Accountability (*VA*) in G7 Countries in the 21st Century

	Countries	$\overline{VA}_{d2}$	S^2_{d2}	$\overline{VA}_{d1}$	S^2_{d1}	$\Delta \overline{VA}$	*t-value*
1.	Canada	1.45	0.00	1.47	0.01	-0.02	-0.64
2.	France	1.17	0.00	1.27	0.01	-0.10	-2.64*
3.	Germany	1.39	0.00	1.38	0.00	0.01	0.93
4.	Italy	0.96	0.00	1.05	0.00	0.09	-2.98*
5.	Japan	1.02	0.00	1.00	0.00	0.02	0.82
6.	United Kingdom	1.31	0.00	1.36	0.01	-0.05	-1.50
7.	United States	1.04	0.01	1.22	0.01	-0.18	-6.93*

Table 1B. Political Stability and Absence of Violence (*PV*) in G7 Countries in the 21st Century

	Countries	$\overline{PV}_{d2}$	S^2_{d2}	$\overline{PV}_{d1}$	S^2_{d1}	$\Delta \overline{PV}$	*t-value*
1.	Canada	1.12	0.01	1.03	0.02	0.09	1.42
2.	France	0.28	0.05	0.55	0.05	-0.27	-3.29*
3.	Germany	0.72	0.02	0.92	0.06	-0.20	-2.70*
4.	Italy	0.42	0.01	0.53	0.04	-0.09	-1.88
5.	Japan	1.02	0.00	1.04	0.01	-0.02	-0.35
6.	United Kingdom	0.40	0.02	0.45	0.09	-0.05	-0.43
7.	United States	0.44	0.06	0.35	0.13	0.09	0.55

Note: * indicates statistically significant *t*-values at the marginal significance level of 5 percent.

With respect to the estimated results reported in Table 2A for *GE*, we fail to reject H_O in Japan beca use $\overline{GE}_{2ndD} > \overline{GE}_{d1}$, and this is an indication that *GE* improved in Japan in the second decade. In con trast, we reject the H_O in favor of H_A in Canada, France, the United Kingdom, and the United States because $\overline{GE}_{2ndD} < \overline{GE}_{d1}$. In essence, *GE* worsened in these four countries among the G7 in the second decade of the 21st century while it remained unchanged in Germany and Italy. Regarding the results for *RQ* in Table 2B, we confirm the H_O in Canada, Germany, and Japan because $\overline{RQ}_{d2} > \overline{RQ}_{d1}$, wh ich means improvements in *RQ* occurred in the second decade in Canada, Germany, and Japan. Conve rsely, we reject the H_O in favor of H_A in Italy and the United States where $\overline{RQ}_{d2} < \overline{RQ}_{d1}$, that is, *RQ* actually worsened in both countries in the second decade. For France and the United Kingdom, *RQ* remained unchanged in both periods.

Table 2A.   Governance Effectiveness (*GE*) in G7 Countries in the 21st Century

	Countries	$\overline{VA}_{d1}$	S^2_{d2}	$\overline{GE}_{d1}$	S^2_{d1}	$\Delta \overline{GE}$	*t-value*
1.	Canada	1.76	0.00	1.86	0.01	-0.10	-3.80*
2.	France	1.40	0.00	1.61	0.01	-0.21	-8.37*
3.	Germany	1.57	0.01	1.59	0.02	-0.02	-0.36
4.	Italy	0.48	0.00	0.53	0.05	-0.05	-0.64
5.	Japan	1.64	0.02	1.36	0.03	0.28	6.26*
6.	United Kingdom	1.54	0.01	1.73	0.02	-0.19	-5.65*
7.	United States	1.49	0.01	1.63	0.01	-0.14	-4.34*

Table 2B: Regulatory Quality (*RQ*) in G7 Countries in the 21st Century

	Countries	$\overline{RQ}_{d2}$	S^2_{d2}	$\overline{RQ}_{d1}$	S^2_{d1}	$\Delta\overline{RQ}$	*t-value*
1.	Canada	1.74	0.01	1.61	0.00	0.13	3.68*
2.	France	1.17	0.01	1.20	0.01	-0.03	-0.74
3.	Germany	1.67	0.01	1.54	0.00	0.13	3.86*
4.	Italy	0.72	0.01	0.97	0.01	-0.25	-6.27*
5.	Japan	1.25	0.02	1.05	0.05	0.20	3.33*
6.	United Kingdom	1.71	0.01	1.75	0.01	-0.04	-0.76
7.	United States	1.39	0.02	1.57	0.01	-0.18	-3.11*

Note: * indicates statistically significant *t*-values at the marginal significance level of 5 percent.

As for the estimated results of *RL* reported in Table 3A, we confirm the H_O in Japan because $\overline{RL}_{d2}$ is statistically greater than $\overline{RL}_{d1}$. We reject the H_O in favor of H_A in Italy because $\overline{RL}_{d2} < \overline{RL}_{d1}$, which is indicative that the rule law worsened in Italy in second decade of the 21st century, but remained unchanged in Canada, France, Germany, the United Kingdom, and the United States. Finally, from the estimated results for the CC reported in Table 3B, we confirm the H_0 in Japan because $\overline{CC}_{d2} > \overline{CC}_{d1}$, which means Japan improved on its control of corruption in the second decade of the 21st century. In contrast, we reject the H_O in favor of H_A in Canada, Italy, and the United States where $\overline{CC}_{d2} < \overline{CC}_{d1}$ Interpretatively, *CC* worsened in Canada, Italy, and the United States, but remained unchanged in France, Germany, and the United Kingdom during both decades.

Table 3A: Rule of Law (*RL*) in G7 Countries in the 21st Century

	Countries	$\overline{RL}_{d2}$	S^2_{d2}	$\overline{RL}_{d1}$	S^2_{d1}	$\Delta\overline{RL}$	*t-value*
1.	Canada	1.78	0.00	1.75	0.00	0.03	0.83
2.	France	1.41	0.00	1.43	0.00	-0.02	-0.65
3.	Germany	1.66	0.01	1.69	0.00	-0.03	-0.61
4.	Italy	0.37	0.01	0.56	0.03	-0.19	-5.68*
5.	Japan	1.48	0.01	1.28	0.00	0.20	6.20*
6.	United Kingdom	1.69	0.01	1.70	0.00	-0.01	-0.26
7.	United States	1.56	0.01	1.58	0.00	-0.02	-0.53

Table 3B: Control of Corruption (*CC*) in G7 Countries in the 21st Century

	Countries	$\overline{CC}_{d2}$	S^2_{d2}	$\overline{CC}_{d1}$	S^2_{d1}	$\Delta\overline{CC}$	*t-value*
1.	Canada	1.86	0.01	1.99	0.01	-0.13	-2.70*
2.	France	1.33	0.01	1.39	0.01	-0.06	-1.12
3.	Germany	1.84	0.00	1.83	0.01	0.01	0.21
4.	Italy	0.20	0.02	0.42	0.02	-0.22	-2.81*
5.	Japan	1.55	0.01	1.27	0.02	0.28	4.16
6.	United Kingdom	1.77	0.01	1.85	0.04	-0.08	-1.02
7.	United States	1.31	0.01	1.55	0.05	-0.24	-3.70*

Note: * indicates statistically significant *t*-values at the marginal significance level of 5 percent.

To answer the second empirical question as to which country among the G7 countries one can identify as being the forefront of effective governance performance in the first two decades of the 21st century, we utilize the computed decade-by-decade averages for *VA* and *PV* reported in Table 1A and 1B, respectively; the averages for *GE* and *RQ* reported in Tables 2B and 2B, respectively; and the averages for *RL* and *CC* reported in Tables 3A and 3B, respectively to provide decade-by-decade ranking of the G7 countries. As shown in Table 4, Canada consistently ranked first in five out of the six governance indicators (*VA*, *PV*, *GE*, *RL*, and *CC*) over the 2000-2020 period, but ranked second in regulatory quality (*RQ*) in first decade and then ranked first in the second decade . Essentially, the rankings reported in Table 4 can lead one to consider Canada as the global leader with respect to political/public governance performance (as measured by *VA* and *PV*) and social governance performance (as measured by *RL* and *CC*). Regarding *RQ*, which is one of the two measures of economic governance performance, one can presume Canada and the

Table 4:   Rankings in Governance Performance in the G7 Countries, 2000-2020

Countries	*VA*		*PV*		*GE*		*RQ*		*RL*		*CC*	
	d2	*d1*	*d2*	*d1*	*d2*	*d1*	*d2*	*d1*	*d2*	*d1*	*d2*	*d1*
Canada	1st	1st	1st	1st	1st	1st	1st	2nd	1st	1st	1st	1st
France	4th	4th	7th	4th	6th	4th	6th	5th	6th	5th	5th	5th
Germany	2nd	2nd	3rd	3rd	3rd	5th	3rd	4th	3rd	3rd	2nd	3rd
Italy	7th	6th	5th	5th	7th	7th	7th	7th	7th	7th	7th	7th
Japan	6th	7th	2nd	2nd	2nd	6th	6th	6th	5th	6th	4th	6th
United Kingdom	3rd	3rd	5th	6th	4th	2nd	2nd	1st	2nd	2nd	3rd	2nd
United States	5th	5th	4th	7th	5th	3rd	4th	3rd	4th	4th	6th	4th

Source: Compiled by the authors based on the calculated decade-by-decade averages of the six WGIs used in testing the H_O and H_A specified in (2)-(7). **Note**: *d2*= second decade and *d1*= first decade of the 21st century

United Kingdom to be co-leaders with respect to *RQ*. In the first decade, the United Kingdom ranked first while Canada ranked second. In the second decade, the ranking reversed as Canada now ranked first and the United Kingdom ranked second in *RQ*.

Next, we provide the correlation matrix for each country in the G7 to show the correlation between the governance indicators and economic growth. As we can see, the six governance

Table 5:   Country-Specific Correlation Matric for G7 Countries

Canada

	Real GDP	*VA*	*PV*	*GE*	*RQ*	*RL*	*CC*
Real GDP	1						
VA	0.15	1					
PV	-0.35	-0.13	1				
GE	0.59	0.50	-0.25	1			
RQ	-0.20	-0.42	0.14	-0.35	1		
RL	0.03	-0.59	0.20	-0.16	0.67	1	
CC	0.42	-0.08	0.13	0.49	-0.26	0.13	1

France

	Real GDP	*VA*	*PV*	*GE*	*RQ*	*RL*	*CC*
Real GDP	1						
VA	0.28	1					
PV	0.18	0.21	1				
GE	0.43	0.46	0.10	1			
RQ	-0.18	0.16	-0.27	0.01	1		
RL	0.33	0.44	0.11	-0.01	0.26	1	
CC	0.37	0.24	0.21	0.23	0.17	0.56	1

Germany

	Real GDP	VA	PV	GE	RQ	RL	CC
Real GDP	1						
VA	-0.12	1					
PV	0.19	-0.50	1				
GE	0.38	-0.36	0.70	1			
RQ	0.15	0.31	-0.59	-0.11	1		
RL	0.30	0.10	0.16	0.22	0.07	1	
CC	-0.10	0.12	0.12	0.31	-0.26	-0.31	1

Italy

	Real GDP	VA	PV	GE	RQ	RL	CC
Real GDP	1						
VA	0.12	1					
PV	0.26	0.26	1				
GE	0.32	0.22	0.63	1			
RQ	0.32	0.29	-0.02	0.12	1		
RL	0.41	0.42	0.82	0.78	0.32	1	
CC	0.13	0.36	0.55	0.44	0.28	0.58	1

Japan

	Real GDP	VA	PV	GE	RQ	RL	CC
Real GDP	1						
VA	0.24	1					
PV	0.18	-0.28	1				
GE	-0.29	-0.14	-0.53	1			
RQ	-0.22	-0.11	-0.52	0.80	1		
RL	-0.30	-0.24	-0.05	0.69	0.51	1	
CC	-0.16	0.27	-0.58	0.80	0.61	0.67	1

United Kingdom

	Real GDP	VA	PV	GE	RQ	RL	CC
Real GDP	1						
VA	0.29	1					
PV	0.36	-0.51	1				
GE	0.54	0.15	0.46	1			
RQ	0.62	-0.18	0.67	0.60	1		
RL	0.32	-0.22	0.17	0.20	0.48	1	
CC	0.47	0.05	0.46	0.71	0.51	-0.08	1

United States

	Real GDP	VA	PV	GE	RQ	RL	CC
Real GDP	1						
VA	0.52	1					
PV	0.16	0.20	1				
GE	0.59	0.68	0.20	1			
RQ	0.55	0.57	0.11	0.74	1		
RL	0.16	0.17	0.49	0.22	0.17	1	
CC	0.53	0.88	-0.04	0.74	0.60	0.03	1

Pooled G7 Countries

	Real GDP	VA	PV	GE	RQ	RL	CC
Real GDP	1						
VA	0.24	1					
PV	0.04	0.15	1				
GE	0.19	0.61	0.28	1			
RQ	0.20	0.10	0.07	0.76	1		
RL	0.15	0.14	0.26	0.93	0.81	1	
CC	0.17	0.72	0.29	0.92	0.83	0.94	1

Note: Computed results for all the G7 countries combined.

performance indicators are positively correlated with real gross domestic product (real GDP) in Italy, the United Kingdom, and the United States at varying degrees. Among these three countries where real GDP and the six governance indicators are positively correlated, we observe that the correlation coefficients for *VA*, *GE*, *RQ*, and *CC* are equal to or greater than 0.52; and for the United Kingdom, the correlation coefficients for *GE* and *RQ* are greater than 0.54. For France, the positive correlation coefficients are less than 0.40, and only *RQ* is negatively correlated with real GDP. For Germany, the positive correlation coefficients are less than 0.30 with only *VA* and *CC* being the two governance indicators that are negatively correlated to real GDP. For Japan, the positive correlation coefficients are less than 0.25 while *GE*, *RQ*, *RL*, and *CC* are negatively correlated to real GDP at varying degrees. For all the G7 countries combined, the correlation matrix above shows all the correlation coefficients to be positive contrary to the country-specific positive and/or negative coefficients reported for each country in the group.

On a cautionary note, correlation does not imply causation; therefore, we use an augmented growth model to provide the empirical investigation of the relationship between economic growth and the six governance indicators for each country in the G7. Finally, our approach follows the empirical specification by Kaufmann, Kray, and Zoido-Lobatón (1999b) in which they expressed the logarithm of real GDP per capita, y_{it}, as a linear function of governance, g_{it}, and an error term, e_{it}. As we discussed earlier, the six governance indicators (*VA*, *PV*, *GE*, *RQ*, *RL*, and *CC*) provide the tools with which to measure governance performance; therefore, thegrowth model takes the form:

$$Y_{it} = \beta_0 + \beta_1 VA_{it} + \beta_2 PV_{it} + \beta_3 GE_{it} + \beta_4 RQ_{it} + \beta_5 RL_{it} + \beta_6 CC_{it} + e_{it} \qquad (8)$$

where y_{it} is the growth rates of real GDP per capita, adjusted for purchasing power parity, and taken as the relevant dependent variable for country i in period t. The pertinent independent variables are VA_{it}, PV_{it}, GE_{it}, RO_{it}, RL_{it}, and CC_{it} as defined earlier; and e_{it} is the error term for country i in period t with $E(e_{it}) = 0$ and $E(e_{it}^2) = \sigma_{e_t}^2$.

The issue is whether the coefficients (β_1, β_2, β_3, β_4, β_5, and β_6) are positive or negative and statistically significant at the standard marginal significance level. From the estimated results reported in Table 6, we found no statistically

Table 6: Estimated Results of the Regressions - Equation (8)

	VA		PV		GE		RQ		RL		CC		
Countries	β_1	SE_1	β_2	SE_2	β_3	SE_3	β_4	SE_4	β_5	SE_5	β_6	SE_6	R^2
Canada	-10.9	11.97	-7.24	4.63	21.9	10.87	0.83	7.58	7.54	13.48	-0.55	6.66	0.71
France	-1.69	6.52	0.05	2.02	7.30	4.21	-5.69	4.25	14.90	11.77	3.27	6.61	0.63
Germany	-1.43	12.4	-0.06	5.14	7.73	8.49	2.46	7.51	5.75	9.11	-4.05	10.10	0.49
Italy	-2.93	10.3	0.51	5.58	1.17	5.76	4.97	5.52	4.66	8.66	-2.83	4.39	0.49
Japan	8.94	16.1	7.69	9.86	-0.68	5.88	1.03	3.98	-4.91	9.44	3.68	8.13	0.33
United Kingdom	10.20	8.63	-1.33	3.33	0.77	5.07	8.44	6.59	12.80	7.83	5.62	4.82	0.78
United States	1.93	6.47	1.02	1.54	3.53	6.54	1.81	3.81	1.08	6.21	1.65	5.03	0.64
G7 Countries	4.06	1.98	0.24	0.73	2.95	1.70	1.21	1.33	-1.42	1.90	-1.89	1.60	0.28

Note: SE_j = estimated standard error for each of the six governance indicators ($j = 1, 2\ldots.6$); therefore, the estimated t-statistics = $\frac{\beta_j}{SE_j}$, and R^2 is the coefficient of determination or variations.

significant positive or negative relationship between the six governance performance indicators and real GDP growth rates in any of the G7 countries.

The estimated results for all the G7 countries reported in the last row also showed no statistically significant positive or negative relationship between any of the six governance indicators and economic growth as measured by the growth rates of real GDP per capita.One can easily construe these results reported in Table 6 to mean that governance performance is not an important binding constraint on economic growth and better development outcomes in each countryandin the G7 countries in general. These findings may not be surprising, which could imply that they have functionally effective good governance performance since no G7 countries exhibited bad governance scores. Therefore, one could construe these country-specific results as suggesting that these are seven countries among the richest countries in the world who already have well-established good governance.

5. Conclusions and Policy Implications/Recommendations

This paper complements all the studies that have examined the importance of good governance in economic growth and better development outcomes in less developed countries (LDCs) around the world. Our paper provides another dimension to explain the impact of good governance on economic growth and development by focusing on the G7 countries because the issue of good governance is now a global phenomenon; and the global COVID-19 pandemic shock showed the essence of good governance in implementing solid pandemic mitigating policies.

In our assessment of governance performance in each country, we compare the first decade to the second decade of the 21st century; and based on the World Bank's data for the six governance indicators, we found that Canada consistently ranked first over the past two decades of the 21st century among the G7 countries, thus Canada is the country, among the G7 countries, with the most effective governance performance. While the United Kingdom ranked second, Germany ranked third, the United States ranked fourth, France ranked fifth, Japan ranked sixth, and Italy ranked seventh. In addition, the correlation matrix for each country in the sample showed variations with respect to positive or negative correlations between governance performance and the growth rates of real GDP per capita. In addition, some of the G7 countries experienced improvements in the governance performance indicators while some experienced cases in which the governance indicators worsened or remained unchanged over the past two decades.

Furthermore, our multiple regression results show that these governance indicators are either positive or negative, but they are statistically insignificant in explaining and/or predicting economic growth in any of the G7 countries. Surprisingly, the estimated pooled-growth regression showed no statistically significant positive or negative relationship between the six governance indicators and real GDP per capita in all the G7 countries combined. These regressions results do not provide sufficient evidence with which to conclude that while governance matters in some countries worldwide, especially in LDCs, it may not matter in the G7 countries. Above all, the country-specific results covering the first two decades of the 21st century show the extent of variations in the governance performance indicators across the G7 countries; therefore, we can conclude that governance performance varies across the most developed countries.

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