

Sociocultural Responses to COVID-19 and the Theory of Hegemonic Stability

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Abstract

This study examines the international political impact of COVID-19 and looks into the relationship between hegemonic stability theory and pandemics. Focusing on the sociocultural response to COVID-19, a factor decomposition was carried out on the coronavirus disease 2019-20 infection rates and mortality rates in 44 countries. An international comparison excluding vaccination periods reveals sociocultural tendencies in infection rate and mortality mapping that can be called regimes in health care policy. Several Latin American and Middle Eastern middle-income countries record similarly high rates of mortality. In contrast, Western countries tend to show low mortality but high infection rates. With the notable examples of the United States and Belgium, most Western countries are mapped in this cluster. Several Asian countries are mapped in the cluster of low infection and low mortality rates. While the establishment of the World Health Organization (WHO) is considered an international public good, regulating people's behavior is difficult and supplying vaccines in developing countries is likely to encounter difficulties. Vaccination is a supply of public goods, but the supply needs to be carried out by private companies for the construction of a vaccination supply chain. Though they are supporting

WHO and encouraging vaccinations, the hegemonic powers are still likely to experience economic stagnation as an outcome of the pandemic.

Keywords: deglobalization, COVID-19, sociocultural responses, hegemonic stability, factor decomposition

JEL codes: F55, F68, H44, I18, N40

1. Introduction

The coronavirus disease 2019 (COVID-19) pandemic has lasted for more than two years. Pandemics result in deglobalization in its ultimate form, and the ongoing pandemic has resulted in deglobalization at an unprecedented magnitude. Research on deglobalization is gaining importance due to the current turmoil in the global economy. In 2020, the spread of COVID-19 was added to the global political agenda along with the importance of economic negotiations. This global pandemic thus mimics global issues faced up to 2019, such as the US–China trade conflict, Brexit, and the increase in refugees to Europe from the Middle East, and the construction of a wall at the US–Mexico border to block immigrants from Latin America. These international policies played a symbolic role as a warning to the age of globalization. Deglobalization has now been reintroduced by the global pandemic while the mutual escalation of international policies such as tariff escalations due to the US–China trade conflict occurred concurrently.

One can conjecture that the spread of COVID-19 is not temporary but long-lasting, suggesting that deglobalization has been and will become a concrete phenomenon. For example, according to the website of the Ministry of Foreign Affairs of Japan, as of November 18, 2020, the number

of “countries/regions that have immigration restrictions on travelers from Japan and Japanese people” was 80, and the number of countries/regions that have restricted travelers and Japanese people after entering Japan was 106. Thus, people from 186 countries and territories were banned from entering Japan freely. As of August 2, 2021, foreign nationals who have stayed in any of 159 countries/regions within 14 days prior to the application for landing are denied entry into Japan.

There is no doubt that deglobalization will have a negative impact on the activities of multinational corporations. However, despite being in a situation where a pandemic makes it impossible for people to move across national borders, it is still possible to move goods such as raw materials, parts, products, and funds. Thus, stagnant economic activity likely recovers because of industrial segments where supply chain networks support procurement. This resilience of the economy indicates that the finance sector is the first to revive, followed by logistics and the movement of goods. The movement of humans, however, depends on the implementation of a quarantine system. This premise therefore suggests that short-term overseas travel cannot be started until the pandemic is over.

Let us consider the relationship between Japan and China as an example of deglobalized economic transactions. Foreign currency remittances between Japan and China continued without major disruption in 2020. From January to March 2020, there were cases wherein airmail did not arrive, but from April 2020 onwards, mail sent from China began to arrive in Japan. As of December 2020, stays for international business purposes between Japan and China were permitted. Japanese nationals working for a Japanese multinational company wished to travel from Japan to China were permitted to travel after undergoing a preliminary test such as a

polymerase chain reaction (PCR) test in Japan. Japanese businesspeople were obliged to isolate in a quarantine hotel managed by the Chinese government for two weeks after entering China. Economic transactions between Japan and China restarted by December 2020, but it is still difficult to begin international business in Western countries.

In this situation, it is possible to quantitatively analyze which countries have made early economic recoveries. In addition, it is possible to analyze cases of business contingency plans that multinational companies have devised to rebuild supply chains in response to the international supply chain disruption. Similar research is being conducted pertaining to how Japanese companies revived after the 2011 Great East Japan Earthquake, and it is possible to confirm the management strategies of companies that survive and grow during economic crises. Clarifying specific management methods and strategies is also an important research subject.

There are two research aims in this study. The first is to organize theoretical perspectives that explain the occurrence of exogenous deglobalization. I survey past studies in international political economy on deglobalization and critically assess discussions on hegemony, hegemonic stability theory, balance of power systems, and the international regime of liberalism.

Based on the theory of exogenous economic crisis, I explore the causes of deglobalization. Theoretically, I introduce the concept of a “socio-cultural ecosystem.” An “ecosystem” is a metaphor for describing the dynamic symbiosis of entities. A sociocultural ecosystem consists of the bases for governments and businesses, and it generates new businesses. It involves entrepreneurs, firms, banks, venture capitals, local governments, universities, and research institutions. As Horaguchi (2014, 2016, 2017) introduced the concept of commensalism, a form of symbiosis exists in a

sociocultural community. Commensalism is an appointed free rider in the situation of symbiosis in an ecosystem. A sociocultural ecosystem is an ecology that creates patterns of collective knowledge and can lead us to obtain guidelines for appropriate actions regarding social norms. Social norms are visible when people seek optimal behaviors under an emergent situation. A typical example is a pandemic.

The second aim is to survey past studies in international political economy on deglobalization and to organize theoretical analytical perspectives that explain the occurrence of exogenous deglobalization. Pandemics, earthquakes, forest fires, or abnormal weather are examples of exogeneous shocks. This is contrasted with endogenous deglobalization wherein economic shocks force deglobalized economic actions such as autarkic economic policies, which lead to deglobalized economic policies. I summarize discussions on hegemony, hegemonic stability theory, balance of power systems, and the international regime of liberalism.

Based on the theory of exogenous economic crisis, I explore the causes of globalization and critically assess related theories in international relations. Further, to fulfill the second research aim, I analyze the impact of exogenous factors on 44 countries and regions; this figure is limited to 44 for ease of visualization and because Hofstede (2001) used 44 countries to show cultural diversity. I present some results of factor decomposition on COVID-19 infection and mortality. The analysis reveals a tendency of sociocultural proximity between nations to similarly influence their respective infection and mortality rates. Although pandemics are universal phenomena, people in each country handled COVID-19 under their own sociocultural constraints. After discussing these two research issues, I summarize future research topics.

2. Globalization and deglobalization

2.1 Definition of deglobalization

Many studies define globalization. For example, Chase-Dunn et al. (2000) define globalization as having a high density of international economic activity compared with domestic economic activity. Witt (2019) applies the findings of research in international politics to international business research, defining globalization as deepening the interdependence between countries. Thus, in his study, deglobalization is the process of weakening international interdependence.

Economic agents that lead to globalization consist of nations, companies, and people. The deepening of their international interdependence, as given by Witt above, is globalization. Therefore, I define deglobalization as the occurrence and continuation of a state that weakens its interdependence. In addition, there is a term with a similar but distinct meaning—anti-globalization. Buckley and Hashai (2020) define anti-globalization as opposition to open international markets (without tariffs or non-tariff barriers). This means it is led by an opposition to foreign capital inflows and the liberalization of foreign exchange controls, labor movement and regulatory institutionalization (e.g., labor-relations laws and protective measures for labor).

In discussing deglobalization, Witt (2019) confronts liberalism and realism, which present a basic dichotomy in the field of international politics and influence multinational corporate behavior. Liberalism and realism respectively present two contrasting axes, “economic growth oriented” and “distribution oriented,” and these positions are common in domestic politics. Economic growth and distribution can be classified into

four categories; the relationship between these concepts and globalization is summarized below.

2.2 Liberalism

Liberalism has a wide range of meanings under certain contexts. It includes progressivism, reformism, free market-ism, idealism, and/or pro-international competition. In this study, we use the term “pluralism” as the most comprehensive proxy term to indicate liberalism. This is because liberalism by itself is multidimensional, and it is beyond the scope of this work to ascertain one meaning. According to Walt (1998), liberalism is a “desire for prosperity” and a “commitment to liberal values” for progressive market-oriented idealism. Liberalism is brought about by various means, such as international organizations, economic exchange, and promotion of democracy (p. 38). According to Walt (1998, p. 38), the representative work of liberalism is by Keohane (1984), who discusses the “international regime” —a system or institution formed by multiple countries and international organizations. An international regime is recognized when some group of countries have the proximity to handle an international problem internationally (Krasner, 1983).

Historically, the term “liberalism” is sometimes linked to Woodrow Wilson, who appealed for an “expansion of democracy” after the outbreak of World War I. Instead of the balance of power, “coordination of power” was called upon. The establishment of collective security by the League of Nations was advocated, and some argue that the international politics of liberalism as an academic discipline was born at this time (Baylis, Smith & Owens, 2020). Wilson was President of the United States from 1913 to 1921 and was awarded the Nobel Peace Prize. However, in June 2020, due to his racially discriminatory policies toward students at Princeton

University, where he was president, the university abandoned the names “Woodrow Wilson School” for a higher education institution specializing in public policy and international affairs and “Wilson College” for a student dormitory. In other words, Wilson’s actions, which were the origins of liberalism, were far from “liberal” in an era when the Black Lives Matter movement is flourishing.

Nye (2017) describes the liberal international order on which liberalism relies: the Marshall Plan, the North Atlantic Treaty Organization (NATO), the US-Japan Security Treaty (p. 11), World Trade Organization (WTO), International Monetary Fund (IMF), United Nations Peacekeeping Forces, United Nations Program on Ebola Hemorrhagic Fever and Global Climate Change (p. 13), US Navy, and US Federal Reserve (p. 14). According to Nye (2017), the United States “has about 60 treaty allies, and according to the economic magazine *the Economist*, 100 out of 150 large economies depend on the United States. Only 21 countries are hostile.” (p. 14). Liberalism thus considers the balance of power systems. This involves one-to-one interstate balance, or the balance of another multinational coalition corresponding to one multilateral coalition.

2.3 Realism

Realism, in contrast to liberalism, is the view of selfish nations in a state of constant competition for power and security. The means is “economic power, especially military power” (Walt, 1998). The emphasis in realism is on national survival and self-help (Baylis, Smith & Owens, 2020). Realists assert that all states have a national interest in survival. This is a precondition for adopting other goals, such as becoming hegemonic. Nation-states are assumed to have security as their principal interest. Self-help is the principle of national action, and a country must rely on its own

security. In the theory of realism, key ideas such as hegemonic stability, national power, power balance between nations, and the formation of an international regime by multiple nations are emphasized. Emphasis is placed on the “reality” in which the military and economic powers of large powers has a considerable influence on international politics. Hegemony is then understood as the influence or dominant power of a particular country (Artner, 2020).

Hegemony goes beyond economic and military power. Hegemons shape and disseminate a universal ideology that appeals to the values and goals of nations and justifies the world order. According to Kindleberger (1986), a hegemon is a country that provides international public goods, and with the United States becoming a hegemon, it created institutions such as the Bretton Woods system on international finance, the General Agreement on Tariffs and Trade (GATT), and an agreement to establish the Organization for Economic Cooperation and Development (OECD) (p. 8).

Kindleberger (1986) also cites Cooper (1985) and points out that it took 80 years to establish the World Health Organization (WHO). Chisholm (1950), the first Secretary-General of the WHO, notes that 68 countries participated in the 1st World Health Assembly, held in Geneva in 1948, and 18 countries that participated took seats on the Executive Board (p. 1023); in other words, Cooper (1985) credits not only hegemonic nations, but also others with the establishment of the WHO as an international public good. Cooper (1985) points out that the academic debate over cholera in the 19th century was led by Britain’s attitude of emphasizing international trade, while Britain ignored the quarantine at sea. Therefore, even in the area of epidemics, which clearly requires international cooperation, the political demands of the state are sometimes prioritized when scientific knowledge is limited.

Kindleberger (1986) compares the establishment of British-centered hegemony, or the world economic structure called Pax Britannica with the establishment of American-centered hegemony called Pax Americana. It is believed that the US as the hegemonic nation has had a positive impact for the establishment of the WHO, which is considered an international public good. Kindleberger (1986) thus credits hegemonic stability for the establishment of the WHO.

2.4 Doubts regarding the hegemonic stability theory

The theory of hegemonic stability in realism is an extremely rough scheme to provide a bird's-eye view of the world economy (Liu & Hung, 2011). Realism argues for this to occur under the influence of one central country with strong economic and military power. Chase-Dunn et al. (2000) argue that hegemony is thus not only a “matter of economic and/or military power, but a hegemon must also formulate and propagate a universalistic ideology in which world order is legitimated by appeals to general values and goals.” (p. 81) Thus, a universal ideology that justifies the world order has been formed and international organizations have been established. This is in stark contrast with the liberal view of international organizations with the intent of international cooperation.

In this sense, Kindleberger's (1986, 1996) proposal for hegemonic stability theory provides an interdisciplinary defense of American hegemony, gaining support from the economic power of the United States. Kindleberger (1996) revealed that the economic center shifted from Italy to Portugal to Spain to the Netherlands to the United Kingdom to Germany to the United States and then to Japan. However, Kindleberger's theory has some limitations. First, neither the Chinese empires, the steppe empires, nor the 600-year rule of the Ottoman Empire are recorded among the great

powers that Kindleberger extracts. Kindleberger (1974) sketched and compared the development of the international financial centers in London and Birmingham in the United Kingdom; Paris and Lyon in France; Berlin, Hamburg, and Frankfurt in Germany; Turin, Florence, Rome, and Milan in Italy; Zurich, Basel, and Geneva in Switzerland; Toronto and Montreal in Canada; and New York in the United States. However, Kindleberger (1974) does not compare cities that could be called financial centers in Asia, such as Mumbai in India, Shanghai in China, Hong Kong, Singapore, and Tokyo in Japan. It seems that Western European countries are selected to some extent a priori.

A second issue is the “grounds of stability.” According to Kindleberger (1986), when one country achieves hegemony, the system stabilizes, and when multiple countries are involved in the hegemony, it becomes unstable; however, it is unclear whether there really was a historical era in which this centralist proposition was established. There is also the issue of how to define “stability” in the hegemonic stability theory (Kawamura, 2021). Whether it is Pax Britannica or Pax Americana, it will be necessary to historically examine the meaning of “stability” and “peace.”

Third, the question remains regarding the countries on which the British and American hegemonies were exercised at the time when these hegemonies are said to have existed (Boothman, 2008; Yolun & Kopar, 2015). Furthermore, there is no clear answer for whether any country deviated from the hegemony of the United States. More specifically, the question remains regarding whether a hegemony was established against countries that were in a state of war with the United States, such as Vietnam and Iran.

Fourth, there is the question of how the international system changed with a change in the hegemon, such as from the League of Nations under

British hegemony to the United Nations under American hegemony; certainly, organizations such as the United Nations, WHO, and WTO cannot really be said to be linked solely to American hegemony. Countries that have benefited from the institutional settings of WTO or WHO are regarded as participants with commensalism.

2.5 Three questions regarding liberalism

Regarding liberalism, three main questions persist. The first is the range of countries responsible for liberalism. If an international regime is formed by multiple countries and international organizations, how can the scope be determined? Can developing countries that cannot substantially fund international organizations become part of an international regime? As some countries are members of the European Union and benefit from its enhancement to their international influence, and some countries are not, irrespective of their own importance, it may not be possible for poorer or more isolated countries to build an international regime.

The second is the correspondence between domestic political systems and international liberalism. Is it possible to maintain international cooperation against the tension of domestic populism, especially in a democracy, where putting national interests first and embracing protectionism and immigration restrictions win votes?

Third, just as hegemonic nations decline, so does the international regime, and the liberal way of thinking embodied in that regime and the emphasis on international cooperation fluctuates with the emergence of illiberalism or authoritarianism. It is also possible to formulate economic policies based on the guidelines.

2.6 Timing of deglobalization and hegemony change

From the view of realism, Witt (2019) argues that globalization deepens as hegemonic stability progresses, and that the phenomenon of deglobalization occurs when hegemony sways. The problem here is the matter of timing, when deglobalization is accompanied by a change in hegemonic power. Kindleberger (1974, 1996) argues that a change in hegemony is explained by the endogenous factor of the rise and fall of economic power. By contrast, Norrlöf (2020) points out that the US Trump administration of 2017–2021 may lose its hegemonic status due to its improper response to COVID-19. Cooley and Nexon (2020) state that US hegemony is declining as China becomes more involved in the WHO with the spread of the coronavirus infection.

The new coronavirus infection has induced an exogenous economic crisis. According to newspaper reports, the travel industry faces recession due to immigration restrictions, decrease in customers in the food service industry, breaking-up of the international supply chain, suspension of factory operations by automobile manufacturers, disruption of education, and postponement of sporting events, including the Tokyo Olympics scheduled for 2020. All of these have had repercussions on employment and stock markets. Activities were also restricted at educational institutions from nursery and elementary schools to universities and graduate schools, and classes were taught through remote systems. These phenomena have had a negative impact on human activity beyond the effects of the pandemic crisis on human life. Responding to the ongoing pandemic poses a new challenge for international management and international supply chains.

3. COVID-19 and sociocultural proximity

3.1 Data

Table 1 summarizes the number of people infected by COVID-19 and the number of deaths as of July 1, 2020, by country. Table 2 shows the same data as of December 28, 2020. In addition to Tables 1 and 2, we added data on the population of each country in Table 3. The infection rate can be calculated from these tables by dividing these data by the population.

The mortality rate can be calculated by dividing the increase in the number of deaths by the number of infected people. Figure 1 shows the descriptive analysis by simple regression. Here, y is the increase in the number of deaths from July to December 2020. x is the increase in the number of infected people from July to December 2020. The relationship between the two variables is quite stable, showing a high correlation coefficient of 0.8605.

$$y = 0.0133x + 6124.4, R^2 = 0.8605,$$

A beta coefficient of 0.0133 or 1.33% means 13 patients died among 1,000 infected people. We see that the United States and India are located lower than the regression line, while Brazil and Mexico are located above it. This means that Brazil and Mexico recorded higher mortality rates than the average.

Table 1. Number of people infected by and dead because of COVID-19 as of July 1, 2020, by country

country	infected	dead	Country	infected	dead
USA	2,634,432	127,410	Egypt	68,311	2,953
Brazil	1,402,041	59,594	Argentina	64,530	1,307
Russia	646,929	9,306	Belarus	62,118	392
India	566,840	16,893	Belgium	61,427	9,747
England	314,160	43,815	Ecuador	56,432	4,527
Peru	285,213	9,677	Indonesia	56,385	2,876
Chile	279,393	5,688	Netherlands	50,483	6,132
Spain	249,271	28,355	Singapore	43,907	26
Italy	240,578	34,767	Portugal	42,141	1,568
Iran	227,662	10,817	Philippines	37,514	1,266
Mexico	226,089	27,769	Switzerland	31,714	1,962
Pakistan	209,337	4,304	Israel	24,688	320
France	202,063	29,848	Japan	18,763	974
Turkey	199,613	5,131	Austria	17,766	705
Germany	195,418	8,990	South Korea	12,800	282
Saudi Arabia	190,823	1,649	Malaysia	8,639	121
South Africa	151,209	2,657	Australia	7,834	104
Bangladesh	145,483	1,847	Thailand	3,171	58
Canada	105,830	8,628	Hong Kong	1,203	7
Qatar	96,088	113	Taiwan	447	7
Colombia	95,269	3,376	Vietnam	355	0
China	84,785	4,641			
Sweden	68,451	5,333	World Total	10,450,628	510,632

Sources: The data for each country are based on published data from the *Nihon Keizai Shimbun* and *Yomiuri Shimbun* newspapers. If the numbers of infected and dead in the countries listed in the two newspaper articles did not match, the former numbers were posted. Data published in the *Nihon Keizai Shimbun* are “as of 4:00 pm on July 1, 2020,” and the data published in the *Yomiuri Shimbun* are “as of midnight on July 1, Japan time.” In both papers, original data are retrieved from Johns Hopkins University.

Table 2. Number of people infected by and dead because of COVID-19 as of December 28, 2020, by country

country	infected	dead	Country	infected	dead
USA	19,308,467	334,963	Egypt	133,900	7,466
Brazil	7,504,833	191,570	Argentina	1,590,513	42,868
Russia	3,073,923	55,107	Belarus	188,588	1394
India	10,224,303	148,153	Belgium	639,734	19,234
England	2,336,704	71,217	Ecuador	209,758	13,994
Peru	1,007,657	37,474	Indonesia	719,219	21,703
Chile	602,028	16,443	Netherlands	781,467	11,135
Spain	1,854,951	49,824	Singapore	58,529	29
Italy	2,047,896	71,925	Portugal	396,666	6,677
Iran	1,200,485	54,693	Philippines	470,650	9,162
Mexico	1,389,430	122,855	Switzerland	428,197	7,362
Pakistan	475,085	9,992	Israel	408,990	3,257
France	2,619,616	63,235	Japan	225,195	3,177
Turkey	2,162,775	20,135	Austria	353,484	5,931
Germany	1,674,559	31,145	South Korea	58,725	859
Saudi Arabia	362,339	6,196	Malaysia	106,690	455
South Africa	1,011,871	27,071	Australia	28,350	909
Bangladesh	510,080	7,479	Thailand	6,440	61
Canada	560,618	15,169	Hong Kong	8,671	141
Qatar	143,222	244	Taiwan	798	7
Colombia	1,594,497	42,171	Vietnam	1451	35
China	86,955	4,634			
Sweden	396,048	8,279	World Total	19,310,597	1,775,984

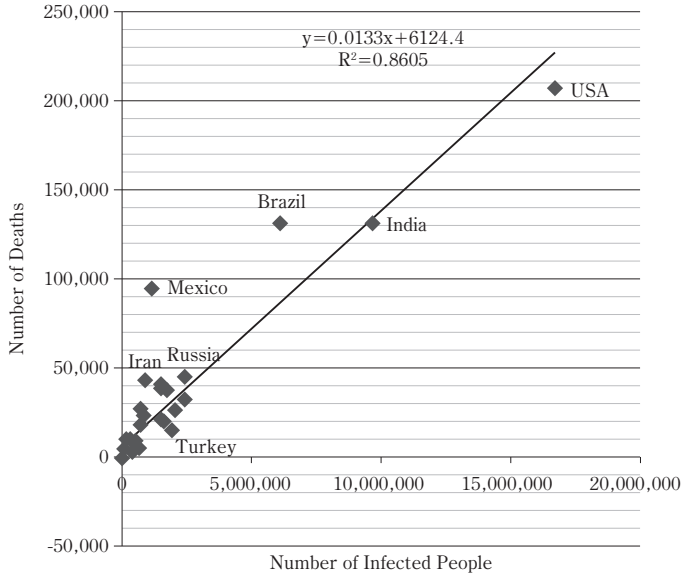
Source : The data are retrieved from Johns Hopkins University, <https://coronavirus.jhu.edu/map.html>, as of 17:22 pm, December 28, 2020.

Table 3. Population by country as of 2019 (in thousands)

country	population	country	population
USA	328,240	Egypt	100,388
Brazil	211,050	Argentina	44,939
Russia	144,374	Belarus	9,467
India	1,366,418	Belgium	11,484
England	66,834	Ecuador	17,374
Peru	32,510	Indonesia	270,626
Chile	18,952	Netherlands	17,333
Spain	47,077	Singapore	5,704
Italy	60,297	Portugal	10,269
Iran	82,914	Philippines	108,117
Mexico	127,576	Switzerland	8,575
Pakistan	216,565	Israel	9,053
France	67,060	Japan	126,265
Turkey	83,430	Austria	8,877
Germany	83,133	South Korea	51,709
Saudi Arabia	34,269	Malaysia	31,950
South Africa	58,558	Australia	25,364
Bangladesh	163,046	Thailand	69,626
Canada	37,589	Hong Kong	7,507
Qatar	2,832	Taiwan	23,816.78
Colombia	50,339	Vietnam	96,462.11
China	1,397,715		
Sweden	10,285	World Total	7,673,534

Source : <https://data.worldbank.org/indicator/SP.POP.TOTL>. This site shows population data on the United Nations Population Division, Real-World Population Prospects 2019 Revision, which is based on World Bank Data. The population of Taiwan is obtained from <https://www.worldometers.info/world-population/taiwan-population/>.

Figure 1. Number of infected people and number of deaths



3.2 Factor decomposition of mortality

In pursuit of a better understanding of the exogenous economic crisis in the case of COVID-19 infections, our analysis can begin with the following identity equation:

$$\frac{\text{Number of Deaths}(t)}{\text{Population}(t)} \equiv \frac{\text{Number of Deaths}(t)}{\text{Number of Infected People}(t)} \times \frac{\text{Number of Infected People}(t)}{\text{Population}(t)}$$

Given that

$$Y_t \equiv \frac{\text{Number of Deaths}(t)}{\text{Population}(t)} \text{ and } Y_{t-1} \equiv \frac{\text{Number of Deaths}(t-1)}{\text{Population}(t-1)},$$

we can define

$$\begin{aligned}
\Delta Y_t \equiv Y_t - Y_{t-1} &= \frac{\text{Number of Deaths}(t)}{\text{Population}(t)} - \frac{\text{Number of Deaths}(t-1)}{\text{Population}(t-1)} \\
&= \frac{\text{Number of Deaths}(t) - \text{Number of Deaths}(t-1)}{\text{Population}(t-1)} \\
&= \frac{\Delta D_t}{\text{Population}(t-1)} \\
&= \frac{\Delta I_t}{\text{Population}(t-1)} \times \frac{\Delta D_t}{\Delta I_t} \\
&= \text{infection rate} \times \text{mortality} \tag{1}
\end{aligned}$$

where we assume that the population of each country at time $t-1$ is equal to that at time t for the sake of simplification. We denote

$$\begin{aligned}
\Delta I_t \equiv I_t - I_{t-1} &= \text{Number of Infected people}(t) - \text{Number of Infected people}(t-1), \\
\Delta D_t \equiv D_t - D_{t-1} &= \text{Number of Deaths}(t) - \text{Number of Deaths}(t-1).
\end{aligned}$$

By subtracting the number of people listed in the data for July 1, 2020 (Table 1), from those for December 28, 2020 (Table 2), the difference between the two time points can be obtained.

Equation (1) consists of two components. *Infection rates* are affected by human-to-human contact, which in turn is affected by lockdowns, which is affected by the political orientation to freedom and government fiat; infection rates are also affected by the availability of medical facilities, such as PCR test facilities, in the country, which in turn reflects the political direction and wealth. The infection rate is measured on the horizontal axis in Figure 2. *Mortality* is affected by the level of medical treatment for those with confirmed infections, but not, seemingly, by political orientation. It is measured on the vertical axis. Figure 2 shows four quadrants depending on levels of infection and mortality.

Figure 2 indicates how countries around the world responded differently to the spread of COVID-19, even though the virus was identical and vaccination was still in its very early stage. From the standpoint of

Figure 2. Four quadrants of mortality and infection rates

Mortality	
Low infection rate = Government regulation on isolation High mortality rate = Paucity of medical resources <Isolation with austerity>	High infection rate = Economic policy-driven orientation High mortality rate = Paucity of medical resources <Infection explosion>
Low infection rate = Government regulation on isolation Low mortality rate = Advanced medical treatment <Control and medical remedy>	High infection rate = Economic policy-driven orientation Low mortality rate = Advanced medical treatment <Freedom and emergency medicine>
Infection Rate	

economic growth, some cities locked down, while some did not, choosing to continue economic activities. These latter cities would have experienced a longer and wider spread of the infection. If many people insist on a lockdown during the pandemic, the number of infected people and deaths will be relatively small, but economic activity will stop and there will be greater distortion of income distribution. Each country's government faced this type of dilemma and had to choose moral precepts on which to base its health policy.

3.3 Mapping the two factors

Figure 3 illustrates the number of infected people per capita and the ratio of deaths to the number of infected people in each country. We added a line to indicate an average of 0.0133 on the Y-axis and a marker of X at 0.005, so that we can have four quadrants. Since the results of the mapping are counterintuitive, let us explain the case of the United States, where 19,308,467 people were or had been infected as of December 28, 2020

(Table 2); at $t-1$ or July 1, 2020, this number was 2,634,432 (Table 1). Thus, we obtain $\Delta I_t = 19,308,467 - 2,634,432 = 16,674,035$ people who were infected between July and December 2020. The total population in the United States is 328,240,000 people (Table 3), and we assume this level is constant over the period. Dividing ΔI_t by the total population, we obtain 0.050798 as the infection rate of COVID-19 in the United States. Mortality from COVID-19 is calculated as $\Delta D_t = 334,963 - 127,410 = 207,553$ and $\Delta I_t = 16,674,035$ to get $\Delta D_t / \Delta I_t = 0.012447$.

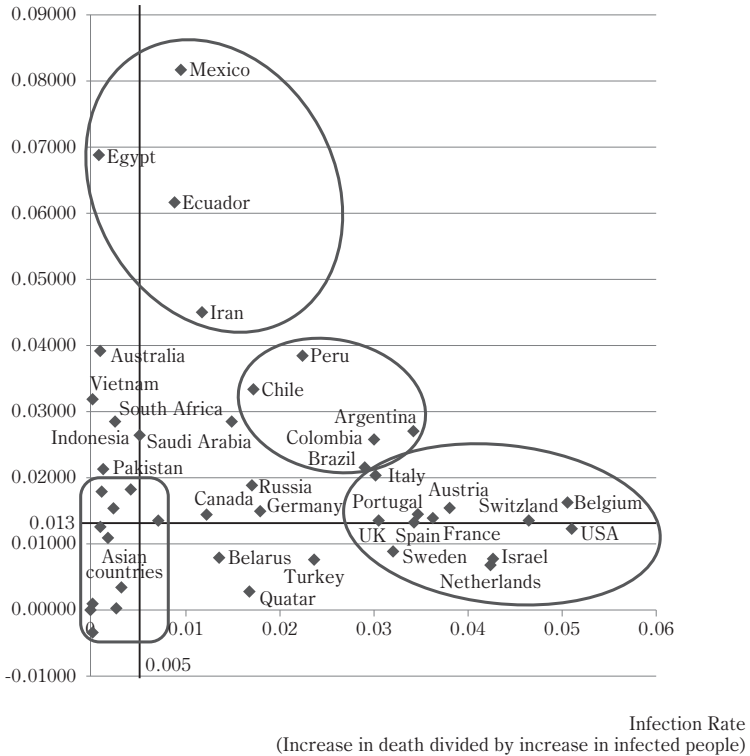
Strikingly, the United States' profile for infection and mortality rates is similar to that of Belgium, where the total population is 11,484,000 people, which is about 3.5% of the former's total population. The infection and mortality rates could be similar for these countries. In Mexico, Egypt, Ecuador, and Iran, per capita infection rates are low, but mortality rates are high. As Mounesan et al. (2020) summarize for Iran, the low infection rate can be explained by two possible reasons. First, the policy for epidemic prevention has succeeded in reducing the infection rate in these countries. Second, positive infected persons may be overlooked due to insufficient PCR testing systems. The high mortality rate could also indicate insufficient hospitalization resources. One can see that Peru, Chile, Argentina, Colombia, and Brazil have similar profiles.

The lower right of Figure 3 shows countries with high per capita infection rates but low mortality rates, such as the United States, Belgium, Switzerland, Israel, and the Netherlands. Countries with low mortality rates and low infection rates in Figure 3 include Austria, France (Raude et al. 2020), Spain, Sweden (Orlowski & Goldsmith, 2020), Portugal, Italy, and the UK. Including the United States and Israel, the Western countries are mapped in this cluster. In these countries, it may be difficult to regulate people's behavior of engaging in contact with others, but a sufficient

Figure 3. Infection rate and mortality from July to December 2020: 44 countries and regions

Mortality

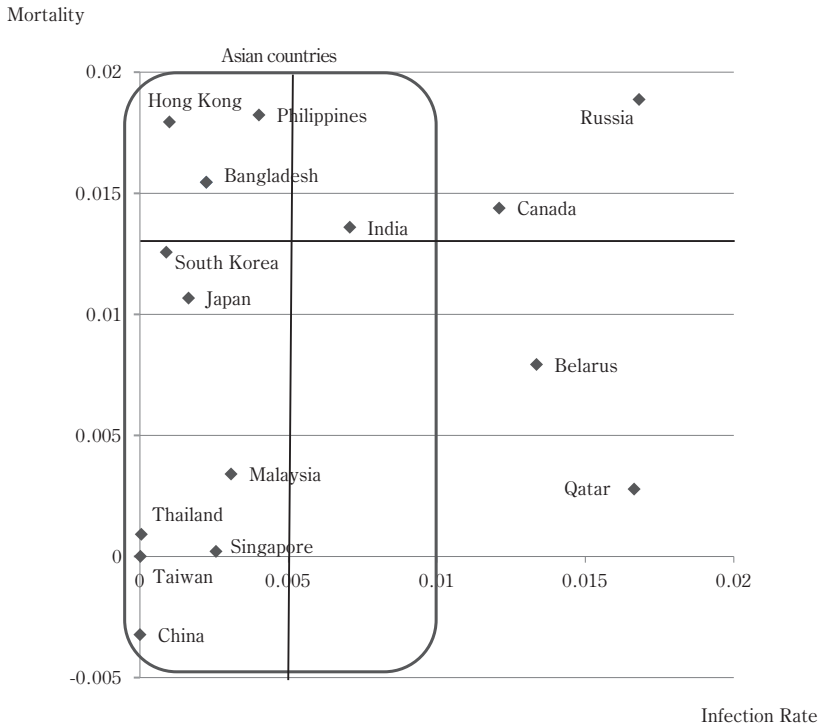
(Increase in infected people divided by population)



number of PCR tests could be performed to check for positives. Medical resources may also be abundant, reducing mortality when compared with other newly developed and developing countries.

Several countries are located around the origin in Figure 3; thus, Figure 4 shows an enlarged part of Figure 3. These countries with low infection and mortality rates include China, Taiwan, Singapore, Thailand, and

Figure 4. Infection rate and mortality from July to December 2020: 15 countries and regions



Malaysia. Hong Kong, the Philippines, Bangladesh, India, South Korea, and Japan. Recall that the average mortality rate is 0.013. Countries that have higher mortality rates are shown above the line. The average infection rate is 0.005. When we compare the ratio among the countries, we see Asian countries had lower infection rates than the countries in Latin America and Europe.

4. Discussion and future research topics

4.1 Sociocultural proximity and chopsticks effect

Dividing the number of people infected by the national population and the mortality reveal the sociocultural trends in COVID-19 spread. The mapping shows high mortality in several Latin American countries. In European countries, infection rates are high, but mortality rates are low. Both infection and mortality rates are lower in Asian countries. Why are there similar trends in countries with geographical proximity? The movement of people between neighboring countries may be a reason for similarities in infection rates, but it is not a sufficient explanation, because we retrieved data from July to December 2020, when travel by foreigners was already blocked by most countries.

The number of infected people per capita may represent the cultural characteristics of a country's inhabitants. One example is whether they behave in an individual or collective manner. In collectivist contexts, individual behavior is sanctioned through social groups; if one acts to spread the infection, one may be criticized socially. Although we checked the correlation coefficients between the four dimensions of Hofstede (1980, 2001) and infection and mortality in this study, we could not obtain statistically significant relationships.

Considering the commonality of sociocultural characteristics, the proximity of mapping in Figure 3 can be explained. The United States and Belgium are not geographically close but show similar levels of infection and mortality. We can call this proximity in the mapping a regime in the health care system. This regime is based on moral precepts, which are often based on the political ideology of freedom and paternalistic policy

standards to protect inhabitants. Their combinations of mortality and infection rate form the same clusters in the mapping. Mexico, Egypt, Ecuador, and Iran are also not geographically close, but they exhibit the same tendencies. This fact suggests that they belong to another regime in the health care system in contrast to the Asian countries. One can infer that these countries do not have a well-established healthcare system.

Why do the Asian countries show lower infection rates? One can also expect that the Asian countries depicted in Figure 4 have some cultural factors in common. This is sometimes called “factor X.” For instance, people use chopsticks to eat in Asian countries, and in doing so, they do not use fingers, unlike when eating bread. This life habit may have some effects on evading infection through fingers. This type of common sense is one type of collective knowledge management as Horaguchi (2014) calls this “common knowledge.” It is well known that countries such as China, Taiwan, and South Korea have implemented stringent individual location confirmation using mobile phones. Such systems may be introduced smoothly in countries where the inhabitants’ obligations can be emphasized through collective behavior. These trends also imply a relationship between the government and people. Different countries have different national consensuses on the degree to which governments can limit the freedom of individual behavior for the sake of public welfare.

4.2 Possibility of changing hegemony

As mentioned above, according to Witt (2019), from the perspective of realism in the international relations theory, the phenomenon of deglobalization occurs when hegemony changes. If this hypothesis is supported, we can predict a change in hegemony. An exogenous pandemic can be a cause of fluctuation in hegemony, and consequently the occurrence

of the deglobalization phenomenon can be predicted. If the older hegemon mishandles the response to COVID-19, the speed of its decline will be accelerated.

Norrlöf (2020) considers the COVID-19 vaccine as a public good and discusses how to deal with it through international cooperation. As discussed in this paper, however, this usual logic is reversed when a pandemic exogenous economic crisis occurs. Countries that fail to respond to the spread of COVID-19 can experience significant economic losses, weakened national power, and a change in supremacy. Then, as international economic activity is cut off in response to the pandemic, deglobalization is directly reflected in each field of economic activity. It is thought that a protracted economic crisis will weaken the economic power of the hegemonic nation, for instance, due to its inability to generate military spending; the same holds true for the international order in a broader sense.

Figures 3 and 4 suggest the extensive spread and economic impact of COVID-19 in Christian countries, including the United States, Brazil, Russia, and the United Kingdom. It is necessary to observe their future progress to determine whether this will damage either US hegemony or the West-led international regime. International regimes are observed here by which one can see the combination of political freedom and technological level of medical care for the COVID-19 infection.

4.3 Ethical power for the weak

Figures 3 and 4 indicate that Asian countries such as China, Japan, Taiwan, and South Korea will lead the primary economic recovery once they vaccinate their populations. Since they have contained the infection of COVID-19 without vaccination better than other advanced countries, their

records show both low infection rates and low mortality. Future trade and direct investment statistics will record enormous damage due to the spread of COVID-19. As the greater the “action” of international activity, the greater the “reaction” of deglobalization is cut off by a pandemic. If globalism is a new social system, it is expected that after the exogenous economic crisis has passed, it will converge again on the development path before the crisis. The more extensive the regional globalization, such as in the European Union and ASEAN Free Trade Area (Horaguchi, 2007), the greater the impact of an outbreak of COVID-19 in that region. If the proposition that the globalization caused COVID-19 is true, Figure 3 will show countries with a large degree of deglobalization. It is then predicted that the impact of pandemics will be small in countries with controlling the degree of globalization and with promoting the vaccination. In other words, globalization will resume when effective vaccination against COVID-19 becomes widespread. These changes need to be observed over the next few years until people vaccinate themselves for the global population of 7.7 billion people.

We must also consider that the exogenous economic crisis reverses conventional ethics. The disruption of international supply chains due to pandemics can be said to be another reaction under the globalism promoted by multinational corporations. Prior to the spread of COVID-19, employment opportunities in cities were good, with people riding crowded trains to work and going to crowded cinemas, theaters, concerts, and baseball games. With the pandemic, a “new normal” began to be called for, and it became common to avoid work and entertainment activities in crowded spaces. Uncertainties remain in the sense that qualitative changes that cannot be measured as quantitative restorations can occur. The pandemic may also have a significant impact on growth and distribution.

4.4 Vaccine supply and international cooperation

Containment of the virus is highly dependent on policy measures and medical business policy. These are formulated based on underlying sociocultural factors. By July 2020, few companies can supply vaccines against COVID-19 and they are located in very few countries. Vaccines as an infectious disease control tool are public goods in the political sense but not in the economic sense. In economics, public goods must have the properties of non-exclusiveness and non-competitiveness. Non-exclusiveness means that people who do not pay the price cannot be excluded, and non-competitiveness means that supply of the good does not decrease even if someone uses it. Radio waves and national defense are examples of public goods that appear in economics textbooks. Vaccines require compensation, and their supply is limited.

When strategizing on how to deliver vaccines to the 7.7 billion people that constitute the world's population, it is conceivable that there are limits to how countries can deliver vaccines based on their administrative capacity. It appears that the international business of private companies, that is, the business model premised on making a profit, is effective for not only the production of vaccines but also for the construction of the supply chain for vaccine supply. Vaccination is a supply of public goods, but it may also need to be carried out by private companies. This is similar to a broadcasting station as a private company establishing a business even though radio waves are a public good. Whether or not this intuition is accurate is a topic left to future research.

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