Taiwan's Effective COVID-19 Crisis Management: Developmental State Lineage, Digital Governance, and State-Society Synergy

Wei-Ting Yen[1]
wyen@fandm.edu

(published at Asian Politics and Policy, this is the preprint version)

Abstract

This paper examines the reasons behind Taiwan's effective COVID-19 response. While some have argued that Taiwan's success with COVID-19 is based in its experience with SARS, I argue that we should not attribute Taiwan's effective response solely to its SARS experience. The country's success mainly lies in three factors: 1) reliance on the mask policy as the main disease prevention measure and the ability to quickly expand mask production capacity; 2) use of big data and technology to enhance effective implementation of disease prevention and detection measures; and 3) strong state-society relations favoring transparency, communication, and collaboration. The first two factors can trace their roots to the country's developmental state model. Democracy provides the institutional underpinning for a vibrant civil society and the synergy between state and civil society, strengthening Taiwan's crisis governance legitimacy and increasing citizens' voluntary compliance.

[1] The author appreciates Li-Ying Liu, Chia-Chien Chang, and Tsung-Hsin Lee's feedback on the earlier version of this paper.

Introduction

Due to its geographical proximity to China and the intensive flow of people from/to China, Taiwan was believed to be at the highest risk for importation of COVID-19 when news of the virus first broke in January (Gardner 2020). Yet, at the time of writing (June, 2020), Taiwan only has 445 COVD-19 cases and 7 deaths in total. What explains Taiwan's success? What are the lessons policy makers can learn from Taiwan's experience?

Building upon the crisis management framework, I argue that there are three major elements in Taiwan's successful response. First, the government relies heavily on the face mask policy for disease prevention. The government ramped up the production capacity quickly by solving the coordination problem that could have emerged from the production process. Second, the government fully leverages the digital governance infrastructure and big data for effective implementation of measures related to disease prevention and detection, albeit that intrusive tracking and tracing raise privacy concerns (Ngerng 2020). These first two elements demonstrate how Taiwan manages to overcome the coordination and surge capacity challenges, two key obstacles to effective crisis response (Ansell, Boin, and Keller 2010). The developmental state model paved the foundation for these two elements.

Third, there is a strong two-way communication channel between the government and Taiwan's vibrant civil society. The strong state-society relation also facilitates more synergy in fighting COVID-19. In some cases, the civil society took the lead in initiating solutions which the government then adopted. Because the ongoing crisis is characterized by immense levels of uncertainty, transparency and communication are crucial for defining and making sense of the crisis for the society. The state-society collaboration also facilitates revision and refinement of crisis response. It increases citizens' voluntary compliance, which in turn helps enhance the overall effectiveness of Taiwan's crisis management. A lively democratic regime provides the political underpinning for the demand and supply of transparency, communication, and collaboration between state and society.

I organize the rest of the article in the following way. I first address SARS's legacy in Taiwan. Taiwan's successful COVID-19 response is widely attributed to its past SARS experiences, but I contend that even though the SARS experience has certainly had an impact, it cannot fully account for Taiwan's remarkable achievements in 2020. I then turn to the crisis management framework, discussing how the developmental state foundations and the democratic regime lead to Taiwan's success on mask policy, digital governance, and strong state-society collaboration and communication. I end by providing some concrete policy suggestions for policy makers.

The Legacy of SARS

There is a strong perception that Taiwan's effective COVID-19 response is mostly the result of its SARS experience (e.g. Graham-Harrison, 2020). It is worthwhile to address the extent to which SARS affects Taiwan's COVID-19 response first before we move on to other factors. I contend that Taiwan's COVID-19 response benefits from SARS's legacy mainly in two aspects: 1) the creation of legal and institutional foundations for future epidemic outbreak; and 2) a cohort of experienced technocrats whose

knowledge become valuable in the COVID-19 fight. Yet, besides SARS, Taiwan also possesses other unique factors that would prompt the country to take a more cautious and "self-help" approach to public health crises too, making it hard to tease out the causal effect of SARS.

SARS left a painful mark on Taiwan. Like COVID-19, SARS was a fatal respiratory disease caused by a coronavirus and was first discovered in southern China in 2002. Taiwan's handling of SARS was initially viewed as a success as there were only sporadic cases in the first month. Nevertheless, following the World Health Organization's (WHO) praise on Taiwan's response, clusters started to appear and spread in hospitals, causing an immediate lockdown of a major hospital in Taipei. Within the next month, clusters were identified in another 5 hospitals (Centers for Disease Control and Prevention 2003). The sudden spike and ongoing local clusters sent society into outright panic. Multiple nurses and doctors died of SARS because of inadequate protection gears and unknowing exposure to the virus. Taiwan's people criticized the government's sudden lockdown and the ill-prepared detecting and reporting mechanism. The WHO offered limited help too at the time because Taiwan was not a WHO member (Lin, Wu, and Wu 2020). In the end, Taiwan became one of the most severely affected countries by SARS. There were 346 cases, of which 71% were associated with hospital clusters, and 73 deaths (Taiwan 2013).

SARS's direct legacy in Taiwan was the creation of the National Health Command Center (NHCC) and the overhaul of the Communicable Disease Control Act (CDC Act). The new organization and the amended law are the central pillar in Taiwan's COVID-19 institutional design. Responding to SARS's regulatory failure, the NHCC became the centralized command point for any types of public health emergencies moving forward, including epidemic outbreaks and bioterrorism.[2] The Central Epidemic Command Center (CECC) is one of its subunits composed of experts from all fields, which became essential for Taiwan's COVID-19 fight. (Taiwan CDC 2020). The streamlined response system helped shorten the government's reaction time, effectively mobilized and allocated resources, and facilitated communication with the public. During the COVID-19 crisis, the CECC was quickly activated on January 20th, one day before the first case was detected in Taiwan, and coordination was set at the ministerial level to maximize CECC's authority.[3] The CDC Act provides the legal framework for government actions, including how the central and local government should coordinate with each other, procedures for resource mobilization, and compulsory measures on social behaviors. The law also grants the CECC the authority to penalize lawbreakers. Even though there was criticism of granting the CECC too much authority, the post-SARS institutional design authorizes the CECC with great power and discretion during public health emergencies (Lin, Wu, and Wu 2020; Huang 2020).

Another legacy of SARS was that many government officials and experts in the COVID-19 fight had direct experiences of SARS. Such experience created a cohort of technocrats who are more agile and cautious about any possible "second SARS" in Taiwan. From very early on in the COVID-19 crisis,

[2] NHCC includes the Central Epidemic Command Center (CECC), the Biological Pathogen Disaster Command Center, the Counter-Bioterrorism Command Center and the Central Medical Emergency Operations Center ("NHCC" n.d.).

3 Originally, the chief commander was the Director-General of Taiwan's CDC, but soon after China locked down Wuhan on January 23rd, the Minister of Ministry of Health and Welfare (MOHW), the superior unit of Taiwan CDC, became the new chief commander of CECC. Leveling up the command center to the ministerial level helps ease inter-ministry cooperation.

government officials constantly and repeatedly mentioned SARS in media interviews. This consensus directed the administration to take a more preemptive approach toward COVID-19. For example, out of precaution, Taiwan immediately sent doctors to Wuhan China on January 5th to gather more information once experts suspected a new epidemic.

There is also a strong consensus within the government that Taiwan cannot and should not repeat the mistakes made during SARS. The technocrats' SARS experience leads to their emphasis on face mask policy. During the SARS epidemic, panic buying of face masks became a major issue. As a result, the government foresaw that mask hoarding would occur again during this crisis. The government swiftly imposed export bans on N95 and surgical masks on January 24, one day after China decided to lockdown Wuhan. To combat panic buying, the government also took over the private sector mask distribution lines and launched a mask rationing system. SARS's panic buying was partially the consequence of inadequate face mask supply at the time. During COVID-19, to secure sufficient supplies of masks, the government leveraged its close public-private sector partnership to ramp up the mask production, a point I will elaborate more in the next section.

Even though SARS certainly contributed to Taiwan's quick reaction to COVID-19, there are other concurrent factors that contributed to Taiwan's quick reaction. The first was Taiwan's exclusion from the WHO. Research shows that countries excluded from international organizations would make more cautious and responsible policies (Lipscy and Lee 2019). Deprived of the WHO's support, Taiwan must resort to the "self-help" approach, nudging the administration to be more prudent (Chang 2020). Another factor is China's growing hostile relations with Taiwan. Taiwan's trust toward China has come to a new low. Two weeks before the Wuhan lockdown, Taiwan held its presidential election, during which President Tsai Ing-wen of the Democratic Progressive Party, the party more antagonistic to China, won her second term with a landslide victory. Voters endorse her firm stance against China. Taiwan's distrust of China can also lead to a quicker response.

Observationally, it is hard to tease out the effect of SARS, and it is likely that there are multi-factors leading to Taiwan's quick reaction. As such, we should not exaggerate SARS's legacy on country's COVID-19 response. Taiwan is not unique in its quick response to the new coronavirus outbreak either. Almost all China's neighboring countries (except for Japan) activated their response system to a greater or lesser extent in early January after China notified the WHO about the potential coronavirus disease.[4] Some of these countries do not have painful SARS memories.[5] South Korea is considered very successful in its comprehensive testing capacity; Vietnam, as a country that directly borders China but with only less than 400 cases in June 2020, is also another remarkable example. Neither of them suffered SARS. Moreover, not all SARS veteran countries orchestrate successful crisis responses this time. Judging from the number of COVID-19 cases, past SARS experiences do not fully shield Singapore and Canada, two SARS veteran countries, from this crisis.

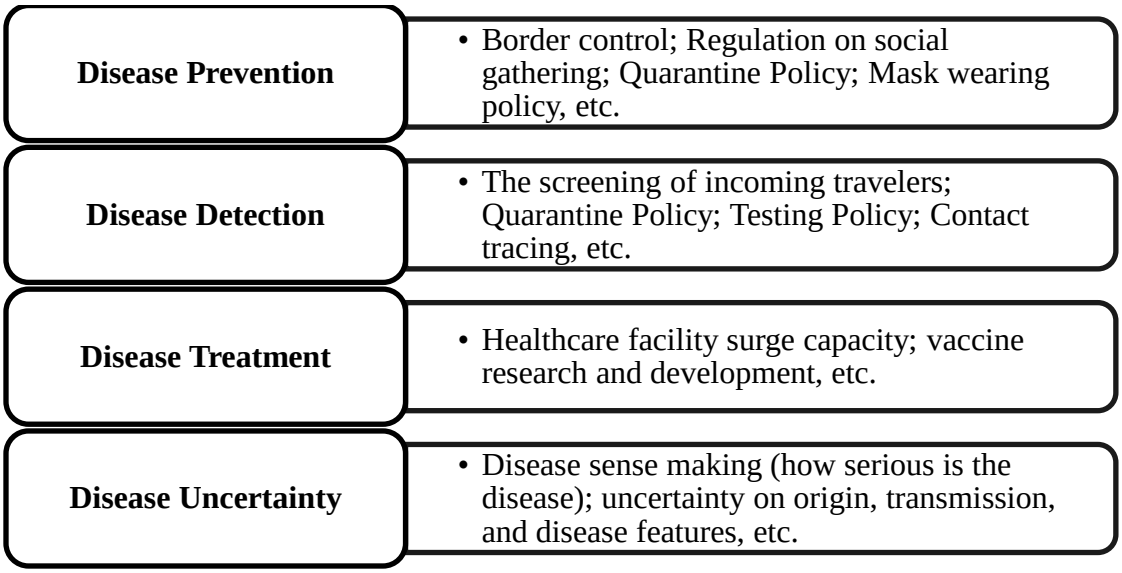
[4] China also shortened its reaction time compared to the country's reaction time to SARS. The first SARS case in China appeared on November 16th, 2002, but China only reported the outbreak to the WHO in February 2003 when there were already 300 cases and 5 deaths in China. During this crisis, the first reported official case appeared on December 8th 2019, and China reported the outbreak to the WHO on December 31st when there were only 27 reported cases (Wu and McGoogan 2020).

[5] Countries that were affected the most by SARS include China, Hong Kong, Taiwan, Singapore, and Canada.

Even though a coronavirus is the cause of both epidemics, COVID-19 and SARS are still different. Unlike SARS, the defining features of COVID-19 include longer incubation periods, higher transmission rates, more virus mutations, but lower death rates. Patients can be asymptomatic when spreading the virus. Relying solely on SARS's experience would not be adequate for containing the crisis. In addition, COVID-19 is a prolonged and ongoing crisis. Orchestrating a successful multi-agency response requires complex and different policy tools at different stages. An early reaction itself would not be sufficient. Therefore, while SARS's legacy is important and the SARS experience can be informative for the current crisis, we should not exaggerate SARS's impacts on Taiwan's success, or on any country's success.

Three Elements in Taiwan's Success

An effective COVID-19 response still hinges on a country's governance structure, capacity, and legitimacy. COVID-19 is a transboundary epidemic crisis. Facing an epidemic, all governments must compose a response strategy combining disease prevention, detection, and treatment. Disease prevention includes measures such as border control, regulations on mask wearing and social distancing, etc.; disease detection includes measures such as screening incoming travelers, contact tracing, quarantine policy, and testing policy, etc.; disease treatment measures focus on healthcare facility surge capacity and vaccine research and development. As a transboundary and unprecedented crisis, COVID-19 also confronts all governments with a common governance challenge (Ansell, Boin, and Keller 2010). That is, how to cope with the uncertainty brought by or embedded in this crisis? How do the public perceive the risks? Amid high uncertainty, how to make collective sense of this crisis as a society? The four tasks are part of the Public Health Crisis Management Framework, as illustrated in Figure 1.



Source: Author

Figure 1: Public Health Crisis Management Framework

The framework suggests that there is no one-size-fits-all strategy, and there are multiple routes to effective crisis management. No matter what the strategies are, an effective response would balance resources between disease detection, treatment, and prevention while minimizing the uncertainty and panic the public may feel. For an effective response, it is of vital importance that a government can mobilize resources to provide surge capacity and to coordinate a coherent response (Ansell, Boin, and Keller 2010). Moreover, the capacity of a government to define and communicate the uncertainty the crisis brings is also an essential element in an effective response because collective sense-making can help increase citizens' voluntary compliance.

Of the three epidemic tasks, Taiwan relies heavily on disease prevention and detection in their COVID-19 response. Relatively, the country spends fewer resources on disease treatment, such as increasing health care beds or investment on vaccine development. Moreover, the synergy and transparent communication between the government and the civil society strengthen governance legitimacy and citizens' cooperation. In this section, I will show that Taiwan's developmental state lineage benefits the country through resource mobilization and inter- and intra- agency coordination for their disease prevention and treatment measures. Its democratic regime and robust civil society also conducive to more transparency and open communication with the society, which in turn enhances the country's governance legitimacy and cooperative compliance.

The Developmental State Roots of the Successful Mask Policy

Taiwan adopts a border control and strict quarantine policy to block the outside-in transmission route for disease prevention. Domestically, Taiwan relies heavily on the mask policy to prevent disease from spreading. As mentioned above, the government quickly imposed export bans on masks and introduced a rationing system after the CECC was activated, but a crucial piece to a successful mask policy is ensuring sufficient mask supplies. In normal times, Taiwan imports facemasks from China. Therefore, at the beginning of the crisis, domestic production was only 1.8 million masks per day, far short of the quantity needed. Yet Taiwan managed to ramp up its mask production eight-fold in 3 months to 16 million per day (Yen 2020). Under the real-name rationing system, people can receive 2 masks per week in early February; by mid-April, the quantity was increased to 9 masks per 14 days. Taiwan was even able to start "mask diplomacy" to supply masks to other countries (Horton, Li, and Cheng 2020).

Facemask production is not a skill-intensive industry. Nevertheless, one of the most baffling issues during COVID-19 is the mask shortage around the globe. Taiwan's ability to produce sufficient mask, by contrast, stands out. Why can't countries produce facemasks like Taiwan does? According to Economics 101, if there is demand, there is supply. There is obviously huge demand for facemasks during this crisis, but why isn't there corresponding supply?

The reasons why it is hard to rely on the market to sort out the demand and supply issue are that, first, developing a production line poses high transaction costs. Even though facemasks are not a skill-intensive product, challenges still exist in sourcing raw materials, especially the melt-blown fabric for filtration, and re-tooling machines for rapid production. It would require a substantial amount of effort and time to coordinate and assemble a production line if the task was left to the private sector. Second,

from the private sector's perspective, it is not clear if investment in facemask machinery now can be profitable in the post COVID-19 world. China has been the major facemask supplier for the world because facemask is an industry of slim profit margins where other countries no longer have comparative advantage. Therefore, for private sector companies, investment without guaranteed returns or high yield would hamper their interest in massive investment in the first place.

Taiwan's mask policy success lies exactly on the government intervention in lowering transaction cost and enlarging future profitability for the private sector. The developmental state model, which governed Taiwan's industrial policy from the post war era, provided the foundations for resolving these issues. Briefly speaking, a developmental state is characterized by the government's active role in the economic growth process.[6] Under this model, the government maintains a very close relationship with the private sector but keeps its autonomy in making policy (Evans 1995). With the goal of rapid economic growth, the government would nudge specific industries by proactively solving growth-induced coordination problems, which, under a more market-oriented economy, are usually solved by the market's invisible hand. In general, there are three types of coordination the government helps overcome. First, the government coordinates the supply chain, linking upstream to downstream companies in an industry. Second, the government would also coordinate between the financial sector and industry by channeling the capital needed to grow the targeted industries. Last, to facilitate industrial upgrading, the government would support R&D and coordinate knowledge transfer between public research institutes and industries (Haggard 2018).

The developmental state logic is applied extensively behind the massive increase of mask production. First, to lower the transaction and coordination costs between different companies in the industry, the government directly intervened to coordinate the production line. The Industrial Development Bureau of the Ministry of Economic Affairs (MOE) and the Taiwan Textile Research Institute, a government funded agency supporting R&D for the textile industry, were both involved in the effort. In early February, the MOE directly gathered all facemask-industry related manufacturers, including machine tool companies (for producing face mask machines), raw material providers, and the downstream facemask manufacturers. By the end of the lengthy meeting, an ambitious facemask production plan was drafted and agreed upon by all companies. The government coordinated all the machine tool companies to produce more facemask machines, matched raw materials suppliers with downstream facemask manufacturers, assigned quotas to every company, and set the purchasing price structure. It was not coincidental that Taiwan successfully assembled and coordinated among relevant companies for mask production within such a short time. The long public-private partnership tradition made such task possible.

Though the government played a big role in the process, it is still different from a planned economy in the sense that, in a developmental state, the government does not directly force the private sector to reach certain production capacities. Instead, the government incentivizes or nudges (i.e., tax incentives, knowledge transfer, capital investment, etc.) industries to enhance voluntary compliance. In

[6] The rationale behind the government's active role is to address the latecomer issue that many Asian countries, Taiwan included, had after World War II.

the COVID-19 fight, the government incentivized the companies to participate in the government's plan through several measures that can guarantee and increase companies' future profitability.

On the one hand, the government directly supported the infrastructure needed for rapid mask production, which essentially lowered the private sector's machinery costs. The government intervened with a US$6.6 million subsidy and built 60 new mask production lines. When it realized that the production capacity still fell short of expectations, a second tranche of US$3 million dollars was released to add another 32 production lines. In total, Taiwan's government added 92 new production lines in 2 months. In the traditional developmental state, the government would channel the capital the industry needs through financial institutions. In this crisis, direct government interventions solved both the capital and the basic infrastructure issues (Yen 2020).

On the other hand, the government relied on price setting and guaranteed demand to further guarantee companies' profitability in working with the government. At the onset, a big concern for the manufacturers is how to tackle the potential oversupply issue when the crisis demand wanes. Amid the pandemic, the demand can easily be bigger than the supply, but in a post-COVID19 world, that demand might disappear. Oversupply could also create an undesirable price war situation between mask suppliers. To tame the concern and to incentivize production increase, Taiwan's government set the purchasing price structure and guaranteed that face masks will become a national security necessity.[7] The government will continue purchasing a fixed number of masks to ensure the demand stream (Yen 2020). Moreover, with the government-supplied facemask machines, the government promised that once the export bans are lifted, companies can re-start facemask export for more profit. The facemask export ban in Taiwan was lifted in June, and the facemask companies are now realizing substantial facemask profit margin given that the pandemic is still severe around the globe.

An Effective Digital Governance Regime

The second element to Taiwan's successful COVID-19 response lies in its full utilization of digital governance. Digital tools are not the main infrastructure to fight coronavirus, but when combined with other policy tools, digital governance reinforces the effectiveness of disease prevention and detection measures, such as GPS tracking, which greatly expands the government's governance capacity. Specifically, during COVID-19, digital governance helped improve disease detection through integrated databases of people's health records and travel history, through more accurate contact tracing, and through active surveillance tracking for people under quarantine. On disease prevention, the mask rationing system also benefited from the digitized mask distribution platform.

The most important e-governance step the government took early on was to link individual international travel history to the national health insurance system on January 27th. The database integration relies on the inter-agency collaboration between the National Health Administration and

[7] However, at the beginning, the pricing mechanism was set in a way that only a few manufacturers met their quota in the first week of production. After reviewing the gaps within the production line, the government identified ways to increase capacity and revise its purchasing and bonus structure to encourage suppliers to produce at maximum capacity.

Customs. With the data integration, all healthcare facilities can have access to patients' immediate travel history (first limited to 14 days and then extended to 30 days) when seeing the patient. Such measures enhance local health facilities' real-time classifying and monitoring capacity. Meanwhile, Taiwan asked incoming travelers to submit a mandatory health declaration form before entering the border. Such information would be further integrated into the database. Travelers could then be classified into different risk levels based on their flight origin and health symptoms, allowing proactive monitoring and testing.[8]

Digital tools are also used for active surveillance of quarantined people. Due to Taiwan's geographical advantage as an island, the coronavirus risks come mostly from imported cases. Therefore, Taiwan imposed a strict quarantine policy with a high monetary penalty (compared to other Asian countries) (Duchâtel, Godement, and Zhu 2020). Effective enforcement of the quarantine policy was further enhanced through active surveillance. Taiwan's government works with telecom companies to track quarantined people's whereabout through their phones' GPS data. To ensure accurate implementation, the standard operation procedure is as follows: The CDC first compiles the quarantine list, which is then reviewed by local health facilities and local civil departments (i.e., village chiefs) to check the accuracy of the quarantine people's phones and addresses. The local authorities then call the individuals twice a day to check on their physical and mental wellbeing. The quarantined individuals can also self-report their health conditions to the centralized tracking system through the mobile chat app (e.g., Line). Meanwhile, local authorities send these numbers to the telecom companies who can start tracking the quarantined people's movement. If the individual could not be reached or if the phone location changed based on triangulating the base station data, an alarm would be triggered. The quarantined person and local authorities (i.e., village chiefs, police, etc.) would all receive a text message. Local authorities would also pay an in-person visit to verify the individual's whereabout (Ngerng 2020).

Despite its effectiveness, active digital surveillance tools raised substantial concerns about individual privacy. The CECC claims such invasive monitoring is authorized by the CDC Act and the Special Act on Covid-19 Prevention, Relief and Restoration. Based on the Acts, the CECC can take any measures that deem necessary for disease prevention. However, this did not ease the public's concern. The government promised that all the data collected during the pandemic or for the quarantine purpose will be deleted after COVID-19. Yet, the issue of how to strike a balance between individual privacy and public interest remains an issue all societies must confront in the digital governance era.

To summarize, it is obvious that digital governance itself is not adequate for successful disease detection and prevention. The state is already capable of penetrating society and collecting people's information. For example, the prerequisite for database integration was the existence of such health data in the cloud space, which Taiwan's National Health Insurance had already completed when it digitalized individual health records in recent years (Ngerng 2020). Another example is that the central government was capable of working with local authorities to check the quarantined. The function of digital governance infrastructure is to help facilitate and further enhance the effectiveness of government

[8] Using the integrated database, the government was able to proactively re-test 113 cases that were tested negative for influenza for COVID-19. 1 out of the 113 cases was COVID-19 positive (Jason Wang, Ng, and Brook 2020). When permitted, the health authorities can also trace the infected or high-risk individuals' contact history to prevent any possible virus spread. In one Navy ship cluster infection case, the government sent out 210,000 text messages to people who may have close contact with the infected individuals based on location information from mobile phones.

regulations. Thanks to the digital governance infrastructure, Taiwan achieved the intended policy goals more effectively. To some extent, Taiwan's comprehensive digital infrastructure has its roots in the developmental state as well. Under the government's intentional planning in the 1980s, Taiwan upgraded its economic engines to semiconductor and technology-related industries, leveling up the basic digital infrastructure in Taiwan. The industrial transformation not only created the infrastructure hardware but also a population with high levels of digital literacy. The tech savvy civil society also played a big role in the COVID-19 fight.

Strong State-Society Relation with Open Communication and Synergy

Despite its impact on the world, we still know relatively little about COVID-19. For months, the world was learning whether and how the virus is transmitted from human to human and the complete range of symptoms. Six months after the outbreak, it is still not entirely clear how contagious asymptomatic cases can be (Yan 2020). The WHO also changed its policy from discouraging masks on healthy individuals to encouraging wide-spread mask use in June 2020. Still, it is unclear when or if a vaccine will become available. Simply put, COVID-19 is an epidemiological crisis with high levels of ongoing uncertainty.

Amid the immense level of uncertainty, governments around the world are confronted with two tasks. First, as the crisis and the inherent uncertainty are evolving, it is almost impossible for a government to identify best practices. Governments are likely to make mistakes. The task at hand is to continue calibrating the national response after considering the structural and moving factors. Second, since there are many unknowns, government responses are of vital importance. With an uncertain crisis, the public depends on the government to help define the nature of the crisis. This "meaning making" step is essential for how the public perceive the risk. Different perceptions can result in different health-related behaviors and compliance levels (Kushner Gadarian, Goodman, and Pepinsky 2020).

Taiwan's government dealt with such uncertainty through continuing and transparent communication with the country's vibrant civil society. Active communication helped the government define the crisis as dangerous at an early stage. The CECC used the analogy of "war time mobilization" to warn the seriousness of COVID-19. It helped the society's collective sense-making of the virus. The major communication channel between government and the people during COVID-19 has been a daily press conference. Starting on January 5th, Taiwan's CDC hosted a daily press briefing, during which the CECC provides the most recent update on COVID-19 and responds to questions. Moreover, the daily conference is used as an educational platform to address false information, social stigmas, and bias. For example, one case of COVID19 was an illegal migrant caregiver, which triggered panic and demands for crackdowns on illegal migrant workers. The CECC used the conference platform to educate the public that every migrant worker, legal or illegal, should be included and treated the same during the coronavirus fight. The CECC stated that illegal foreign workers should not be excluded from the healthcare system, explaining that a crackdown would only result in a bigger loophole in the fight against COVID19.[9] In

[9] With Taiwan's National Health Insurance program, every legal resident living in Taiwan for more than 6 months (citizens or not) can have access to health resources. The illegal migrant workers are the only group with no access

another example, a schoolboy was bullied because he wore a pink mask; the CECC team all appeared wearing pink masks at the next press briefing, fighting gender stereotypes (Chang 2020). These daily conferences are informative, educational, and morale boosting. It is not an exaggeration to say that the daily press briefing anchored and calmed Taiwanese society. People listened to and followed the instructions provided in those daily briefings.

Communications are not only top-down but bottom-up, and a robust civil society is essential for the bottom-up effort. Taiwan has developed a vibrant civil society since democratization in the late 1980s. After the Sunflower Movement in 2014, civil society networks have grown even stronger and can easily be mobilized. A democratic political structure is the institutional foundation that makes a strong civil society possible. Not all democracies breed strong civil societies, but strong civil societies only exist in democratic settings. During the COVID-19 fight, the civil society sometimes challenges the government, sometimes collaborates with the government, and sometimes even pioneers and leads the government. Instead of imposing rules and regulations on society, the government must persuade the society of the necessity of those regulations. The government has also benefited from the wisdom of the crowd as it sought to refine regulations. Two-way communications between the government and societal actors has been a hallmark of the Taiwanese response, rather than strictly top-down communications.

During the COVID-19 fight, there have been several collaborative efforts between digital civil society and the government. One example is fighting misinformation. Of the active civil society, a civic-tech community, pioneered by the G0v("gov-zero") movement, has grown rapidly. These "civic hackers" advocate for open government, transparency, and citizens' agenda-setting power (Tang 2019). During the crisis, they worked with the government to quickly correct misinformation about COVID-19 on the internet (Quito 2020). Such synergy was possible partially due to Audrey Tang, Taiwan's current digital minister. Tang was once a civic hacker and was one of G0v's core members. Her long-term advocacy for big data and open government facilitated active collaboration between the government and the digital civil society.

Another example of the civil society's energy is the "Taiwan Can Help" campaign. During COVID-19, Taiwan and the WHO had several disputes over Taiwan's exclusion from the WHO. While Taiwan's effective crisis response has gained attention, it remains isolated from the global health governance body. The dispute, at some point, developed into heated fight over racist slurs. Taiwan's civil society was furious about the response of WHO's Director-General. In response, the civil society initiated the "Taiwan Can Help" crowdfunded campaign. The goal was to place a full-page advertisement in the New York Times to promote Taiwan's effective crisis response and to increase cooperation with the international community despite being excluded from the WHO.[10] The campaign received more than enough money within a few days. With the #TaiwanCanHelp hashtag on Twitter, the campaign began a wave of activism works. Later, when the government launched its mask diplomacy, the same hashtag #TaiwanCanHelp was used to promote its ability to contribute to the international community.

to health resources. To further fix the hole, from April 1 through June 30, Taiwan ran the second amnesty programme for illegal migrant workers to encourage them to come forward (Wei 2020).

[10] The website of the campaign: https://taiwancanhelp.us/

In some cases, the tech-savvy community even pioneered better solutions that were later adopted by the government. One example is the optimization of mask distribution. As mentioned above, Taiwan launched a mask rationing system. Administration of the real-name rationing system was initially difficult, requiring long lines at pharmacies. Civic hackers voluntarily created mask apps combining the stock at local pharmacies and google maps to show mask stocks in different locations to help shorten the waiting queues during the early stages of distribution.[11] The government adopted the idea and later developed online mask purchasing platform. People can now pre-order masks online either through the government website, the National Health Insurance App, or through the wide-spread convenience stores on the island.[12] The state-society synergy indirectly contributed to e-governance expansion too. In the online purchasing platform example, to accommodate the surplus traffic, the National Health Insurance Administration set up 20 extra servers to expand the cloud capacity (Duchâtel, Godement, and Zhu 2020).

One myth about Taiwan's success is that Confucianism plays a role. Some have argued that the successful Asian experiences can be attributed to Asian Values, which emphasize social order and hierarchy. Asian people do not question the government as often and are more submissive to strict government regulation. However, Taiwan's experience suggests otherwise. In Taiwan, governments are subject to frequent criticism. Even when the government's measures are necessary, it does not mean that society accepts those decisions submissively. Society questions the government, forcing the government to be transparent and be responsive. The positive consequence is that when the regulatory measures are perceived as necessary and approved by the civil society, it increases citizens' cooperation and compliance. Governance legitimacy is reinforced through this interaction.

Moving Forward: Lessons from the Taiwan Case

In this article, I laid out some of the the factors behind Taiwan's success in fighting COVID-19. The legacy of the developmental state helped Taiwan create the "mask economy" within a short period of time as well as contributed to the digital governance infrastructure. Transparent communication helped define the nature of COVID-19 early on in Taiwan, decreasing public panic and increasing public trust in the government and citizens' compliance level. The tech-savvy civil society also collaborated with the government in refining crisis measures. The successful crisis management strategy has also had international repercussions, enhancing Taiwan's standing on the international stage.

The information presented above suggests a few policy lessons. First, while Taiwan has relied on the face mask policies, there are multiple routes to a successful COVID19 policy. Central to success is governance capacity, given a society's social, cultural, and economic factors. A centralized command center benefit inter- and intra- agency coordination to produce more coherent response strategies and to mobilize and allocate resources more efficiently. Second, for best crisis management outcomes, government legitimacy matters too. People must perceive regulatory measures as necessary to generate high cooperative behaviors. Therefore, the way a government defines the crisis is of utmost importance.

[11] https://mask.pdis.nat.gov.tw/
[12] https://www.nhi.gov.tw/Content_List.aspx?n=395F52D193F3B5C7

Transparency and communication can also help generate higher cooperation and compliance. An additional benefit transparency and communication bring to the table is to allow experts to debate and calibrate a more refined strategy moving forward. Third, the wisdom of the crowd can be useful in the COVID-19 fight. When possible, citizens' active engagement can be helpful for the government. Through repeated interactions with the society, the government can also refine its crisis manage strategies to better align the intended policy goals and people's behaviors.

Reference

Ansell, Chris, Arjen Boin, and Ann Keller. 2010. "Managing Transboundary Crises: Identifying the Building Blocks of an Effective Response System." *Journal of Contingencies and Crisis Management* 18 (4): 195–207.

Centers for Disease Control and Prevention. 2003. "Severe Acute Respiratory Syndrome --- Taiwan, 2003." Morbidity and Mortality Weekly Report. May 23, 2003. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm5220a1.htm.

Chang, Chia-Chien. 2020. "A Discussion on IMF's Governance Bias and Global Financial Crisis: Lessons for WHO and the COVID-19 Pandemic Crisis (從 IMF 與金融危機談國際組織、偏差治理、與全球危機：兼論對 WHO 處理武漢肺炎危機 (COVID-19)的問題)." Who Governs Taiwan. May 30, 2020. https://whogovernstw.org/2020/05/30/chiachienchang1/.

Chang, Eddy. 2020. "Pink (mask) Is the New Black: Fighting Gender Stereotypes." *Taipei Times*, April 23, 2020. https://www.taipeitimes.com/News/lang/archives/2020/04/23/2003735103.

Duchâtel, Mathieu, François Godement, and Viviana Zhu. 2020. "Fighting Covid-19: East-Asian Responses to the Pandemic." Institut Montaigne.

Evans, Peter B. 1995. *Embedded Autonomy: States and Industrial Transformation*. Princeton University Press.

Gardner, Lauren. 2020. "Update January 31: Modeling the Spreading Risk of 2019-nCoV." The Center for Systems Science and Engineering (CSSE) at JHU. 2020. https://systems.jhu.edu/research/public-health/ncov-model-2/.

Graham-Harrison, Emma. 2020. "Experience of Sars a Key Factor in Countries' Response to Coronavirus." *The Guardian*, March 15, 2020. http://www.theguardian.com/world/2020/mar/15/experience-of-sars-key-factor-in-response-to-coronavirus.

Haggard, Stephan. 2018. *Developmental States*. Cambridge University Press.

Horton, Chris, Lauly Li, and Ting-Fang Cheng. 2020. "Taiwan Counters China's Isolation Campaign with Mask Diplomacy." *Nikkei Asian Review*, April 23, 2020. https://asia.nikkei.com/Politics/International-relations/Taiwan-counters-China-s-isolation-campaign-with-mask-diplomacy.

Huang, Cheng-Yi. 2020. "Soft Regulation and Hard Compliance in Taiwan | The Regulatory Review." *The Regulatory Review* (blog). June 11, 2020. https://www.theregreview.org/2020/06/11/huang-soft-regulation-hard-compliance-taiwan/.

Jason Wang, C., Chun Y. Ng, and Robert H. Brook. 2020. "Response to COVID-19 in Taiwan: Big Data Analytics, New Technology, and Proactive Testing." *JAMA: The Journal of the American Medical Association* 323 (14): 1341–42.

Kushner Gadarian, Shana, Sara Wallace Goodman, and Thomas B. Pepinsky. 2020. "Partisanship, Health Behavior, and Policy Attitudes in the Early Stages of the COVID-19 Pandemic." https://doi.org/10.2139/ssrn.3562796.

Lin, Ching-Fu, Chien-Huei Wu, and Chuan-Feng Wu. 2020. "Reimagining the Administrative State in Times of Global Health Crisis: An Anatomy of Taiwan's Regulatory Actions in Response to the

COVID-19 Pandemic." *European Journal of Risk Regulation*, no. 2: 1–17.
Lipscy, Phillip Y., and Haillie Na-Kyung Lee. 2019. "The IMF As a Biased Global Insurance Mechanism: Asymmetrical Moral Hazard, Reserve Accumulation, and Financial Crises." *International Organization* 73 (2): 489–489.
Ngerng, Roy. 2020. "Taiwan's Digital Response to Covid-19: Impressive, But Is Privacy Respected?" The News Lens International Edition. March 27, 2020. https://international.thenewslens.com/article/133095.
"NHCC." n.d. Accessed May 23, 2020. https://www.cdc.gov.tw/En/Category/MPage/gL7-bARtHyNdrDq882pJ9Q.
Quito, Anne. 2020. "Taiwan Is Using Humor to Quash Coronavirus Fake News," June. https://qz.com/1863931/taiwan-is-using-humor-to-quash-coronavirus-fake-news/.
Taiwan, C. D. C. 2013. "嚴重急性呼吸道症候群 SARS." https://www.cdc.gov.tw/File/Get/InG8jagjxffXBDW1UexnrA.
Taiwan CDC. 2020. "Taiwan CDC Announces Activation of Central Epidemic Command Center (CECC) for Severe Special Infectious Pneumonia to Comprehensively Prevent Novel Coronavirus Pneumonia Outbreak in China and Ensure Health of Taiwanese Public." Taiwan CDC. January 22, 2020. https://www.cdc.gov.tw/En/Bulletin/Detail/vmv22PiH7-k3K-yh6FkmKw?typeid=158.
Tang, Audery. 2019. "Inside Taiwan's New Digital Democracy," March 12, 2019. https://www.economist.com/open-future/2019/03/12/inside-taiwans-new-digital-democracy.
Wei, Katherine. 2020. "Coronavirus: Taiwan Making Progress in Getting Illegal Migrant Workers to Come Forward." *The Straits Times*, May 8, 2020. https://www.straitstimes.com/asia/east-asia/coronavirus-taiwan-making-progress-in-getting-illegal-migrant-workers-to-come-forward.
Wu, Zunyou, and Jennifer M. McGoogan. 2020. "Characteristics of and Important Lessons From the Coronavirus Disease 2019 (COVID-19) Outbreak in China." *JAMA: The Journal of the American Medical Association*, February. https://doi.org/10.1001/jama.2020.2648.
Yan, Holly. 2020. "Fauci Says the WHO's Comment on Asymptomatic Spread Is Wrong. Here's the Difference between Asymptomatic and Pre-Symptomatic Spread." June 9, 2020. https://www.cnn.com/2020/06/09/health/asymptomatic-presymptomatic-coronavirus-spread-explained-wellness/index.html.
Yen, Wen-Ting. 2020. "The Secrete Behind 8.5 Times of Mask Production in 3 Months: How did Taiwan do it? Room for Industrial Upgrade? (3 個月產能增 8.5 倍幕後祕辛：台灣怎麼做到？產業升級可能嗎) " The Reporter. 2020. https://www.twreporter.org/a/covid-19-mask-national-team-taiwan-can-help.