Spring 5-14-2020

The Impact of COVID-19 on Singapore: Understanding Recent Events and Exploring Future Possibilities

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APS 650: MAPS Capstone Seminar

May 23, 2020

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ABSTRACT

Singapore has among the lowest COVID-19 infection and mortality rates in the world, despite being a major urban country and global economic hub in Southeast Asia. This paper explored how Singapore has accomplished this using an analysis of literature and current events news. The analysis demonstrated that Singapore has mobilized a cross-industry and cross-functioning group of healthcare professionals, medical researchers, biostatisticians, and personal protective equipment manufactures to effectively combat COVID-19. Singapore's government ministries have enacted a campaign of public education, social distancing, and business closures to combat the spread of COVID-19. The government has passed a significant economic relief bill to mitigate layoffs, help unemployed people find jobs, and help train new workers. Furthermore, the government has delayed personal and business contract obligations during this crisis to further mitigate the economic burden it is having. Despite these positive results, the Singapore economy is still under immense pressure due to COVID-19 for the foreseeable future.

Keywords: Singapore, COVID-19, economy, GDP, current events

INTRODUCTION

As an international student from China, I am deeply concerned about the ongoing viral epidemic occurring in China and around the world. I was shocked to see how a virus that spread to humans in a city market has so rapidly spread around the globe in just several weeks. Globalization, especially due to rapidly increasing airline travel, seems to have connected the entire world together in ways that clearly have significant impact on the public health policies for countries all over the world. Outbreaks of new infectious diseases can spread extremely quickly around the world before public health officials have a chance to identify and contain its spread. This is exactly what is happening right now with the current outbreak of a novel coronavirus (SARS-CoV-2) that causes the disease Coronavirus Disease 2019 (COVID-19).

From our current understanding, this virus had its first major outbreak beginning sometime in December 2019 (Guo, et al., 2020). Shortly after, the virus spread like wildfire, ignoring all borders. As of February 3, 2020, there were over 17,000 confirmed cases of COVID-19 globally, with confirmed cases in numerous countries around the world (World Health Organization, 2020). As of February 20, 2020, there were over 75,000 confirmed cases of COVID-19 globally, with over 2,100 confirmed deaths (Nature, 2020). Johns Hopkins University has a live tracker for global coronavirus incidence data; as of the morning of March 26, there were over 492,000 confirmed cases, with over 22,000 deaths worldwide. As of April 5,

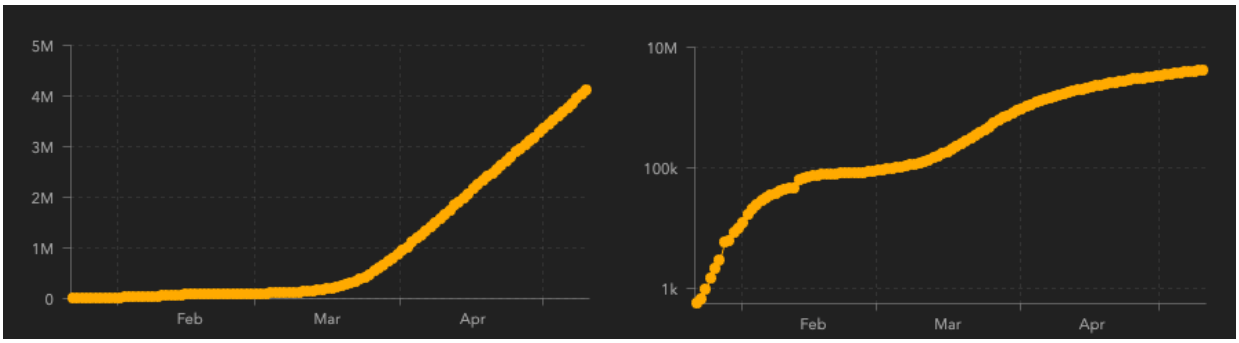

Figure 1: Cumulative Confirmed Global COVID-19 Cases
Total number of confirmed cases of COVID-19 globally plotted on linear y-axis (left) and logarithmic y-axis (right). For much of the past five months, the number of global COVID-19 cases has been growing at an exponential rate.
Source: Johns Hopkins' Coronavirus Resource Center as of May 11, 2020. The data used by Johns Hopkins comes from the following sources listed on their website: WHO, CDC, ECDC, NHC, DXY, 1point3acres, Worldometers.info, BNO, the COVID Tracking Project, state and national government health departments, and local media reports.

there were over 1.2 million confirmed cases, with over 64,000 deaths. As of April 29, there were over 3.2 million confirmed cases with over 227,000 deaths worldwide, a nearly 3x increase in both confirmed cases and death in about three weeks' time (Johns Hopkins University, 2020). The effectively exponential growth in the number of global COVID-19 cases are presented in Figure 1, which shows cumulative confirmed COVID-19 cases on a linear scale (left) and logarithmic scale (right).

As with the SARS outbreak two decades ago, the spread of COVID-19 has had a tremendously negative economic impact and fallout. This impact has been different between countries that have dealt with the virus outbreak in various ways and depending on the primary economic drivers in each respective country. Singapore was one of the first countries outside of China to confirm a case of COVID-19 and was among the first countries to institute policies in response to COVID-19. Interestingly, unlike many other countries, Singapore has, for the most part, avoided a massive outbreak. As of May 23, 2020, Singapore had only 31,616 confirmed COVID-19 cases with only 23 deaths, compared to 198,123 confirmed cases with 16,149 deaths

in New York City. New York City has only 50% more people than Singapore, but has over 6 times the number of confirmed COVID-19 cases and over 700 times more deaths due to COVID-19 compared to Singapore (Johns Hopkins University, 2020).

It is quite shocking that Singapore's COVID infection rate per capita is *more than 6 times lower* than that of New York City and its death rate per capita *is more than 700 times lower* than that of New York City, despite that Singapore is similarly urban and as densely populated. However, somehow Singapore has managed to keep COVID-19 infections and deaths to below one to two *orders of magnitude* compared to many other major cities (at minimum). The likelihood that this is due to random chance is effectively zero, it is very clear that Singapore's response to COVID0-19 has been vastly superior than most almost any other country in the world. Because of this massive difference in COVID-19 impact to Singapore compared to almost everywhere else in the world, this project aims to answer the following research questions:

1. How has COVID-19 acutely impacted Singapore?
2. What unique policies did Singapore enact to mitigate the magnitude of the COVID-19 outbreak? How have those policies evolved since February 2020? (when they were enacted)
3. In what ways has COVID-19 affected the overall economy in Singapore?
4. What are the predicted long-term impacts to Singapore's economy due to COVID-19?

METHODS

This capstone aims to qualitatively analyze qualitative and quantitative information regarding how Singapore's government has learned from previous public health crises to become one of the most prepared to deal with COVID-19. First, this capstone analyzes the literature on how the SARS epidemic was initially received by Singapore and how the epidemic ultimately

impacted the country. The literature is used to access how successful Singapore was in dealing with SARS and what learnings Singapore derived from the SARS crisis. Next, this capstone analyzes the various methods Singapore is currently using to battle the global COVID-19 epidemic. The effectiveness and economic impact of these methods will be compared to that of Singapore during the SARS crisis. Finally, this capstone will conclude by using the literature to predict the long-term impact of COVID-19 to Singapore's economy and government policies.

LITERATURE REVIEW

Background

The SARS epidemic was caused by the SARS-associated coronavirus (SARS-CoV). The emergence of this virus that mutated to be able to infect humans has been attributed to the selling of wild mammals, such as bats, both dead and alive, for human consumption (Knobler, et al., 2004). This virus actually has a relatively low basic reproduction number (average number of people infected by a single infected individual) of 2.24 to 3.58, compared to other infectious diseases, such as 5 for smallpox and nine for measles and whooping cough (Zhao, Lin, Ran, & Wang, 2020). However, such characteristics about this novel coronavirus were not understood about this virus until many weeks after it had spread around the world.

From the start of the outbreak being identified in China, it took several weeks before this infection was understood by health officials in China to be a public health emergency. This was because at this time, the potential for novel infectious diseases to cause significant harm to entire regions or countries was poorly understood by Chinese government officials, even at the highest levels of the Chinese government (Schwartz & Evans, 2007). This lag between the beginning of the outbreak and identifying it as a source of great public health concern, combined with the

increasing ease of international travel, caused SARS to spread from China to five other countries within 24 hours and to 30 countries across six continents within just six months (Knobler, et al., 2004). The way that SARS was able to quickly spread across most of the planet, despite the best efforts of cooperating world government leaders and top scientists, underscores the dangers and unpredictability of novel infectious diseases. It became clear that human society needs to become significantly better at anticipating and addressing such potential global health risks.

Economic Impact of SARS in Asia, Including Singapore

SARS had a real detrimental impact to Asian economies in 2003, including Singapore. During this time, impending conflict in the Middle East including Iraq caused turmoil in global markets, especially oil. SARS exacerbated these negative economic drivers, wreaking havoc in within financial markets and destroying businesses. Across Asian economies, travel, tourism, and business travel revenue dropped by 30% year-over year in March and April of 2003. Retail sales all over Asia experienced a gross 5% lower than normal and expected growth in May of 2003 (Hanna & Huang, 2004). The massive drops in economic activity and output in Asia and Southeast Asia due to SARS took several quarters after the epidemic was resolved to fully recover back to pre-SARS levels.

Import and export businesses were especially hit hard. The Canton Import and Export Fair in China recorded a 77% drop in business development by contract value during the 2003 fair as compared to the 2002 fair, from $16.86 billion to $3.9 billion. Furthermore, there were widespread delays in manufacturing for a variety of products that resulted in widespread global delays in business and product launches and sales. Post-mortem analyses of the SARS outbreak in China estimates the cost of the SARS outbreak in China to have been about 1.5% of China's

GDP. Better containment would have reduced this economic impact to only 0.5% of China's GDP (Hanna & Huang, 2004). SARS was one of the first instances where an acute economic and public health stressor was able to cause so much lasting economic damage beyond the public health. However, this data indicates through proper preparation and response, the negative economic impacts of such infectious disease outbreaks can be greatly mitigated.

Economic Impact of SARS in Singapore

The industries most severely negatively impacted by SARS in 2003 were industries related to tourism and transport. This includes hotels, restaurants, retail stores, airlines, cruises and other water transport services, taxis, and travel agencies. Revenue due to tourism in Singapore in 2002 made up about 5% of Singapore's GDP, underscoring just how important tourism and these related industries are to Singapore's economy (Asia-Pacific Economic Cooperation, 2004). Tourist arrivals to Singapore declined 15% year-over-year during March of 2003, and further declined by 67% year-over-year during April of 2003. Hotels reported occupancies between 10% to 30% in April of 2003, compared to 75% occupancy just two months prior. 34 airlines cut service to Singapore Changi Airport in Singapore between March and June of 2003. There were 17% fewer flights in and out of Singapore Changi Airport in April of 2003 compared to March, one month prior. There was an approximately 50% year-over-year reduction in the number of passengers that flew in and out of Singapore Changi Airport in April of 2003 (Asia-Pacific Economic Cooperation, 2004). This all occurred during one of Singapore's busiest times of the year for tourists and travelers deepening the acute economic toll that many Singaporeans experienced due to SARS.

Studies have estimated the impact of SARS on industry revenue in Singapore. Comparing revenue in April of 2003 versus one-month prior in March of 2003, retail sales fell up to 50%, restaurants and catering sales fell up to 50%, hotel revenues fell up to 70%, taxi revenues fell between 30% and 40%, and tour sales fell between 70% and 80%. Other industries in Singapore not related to tourism and transport were also significantly negatively impacted due to SARS. For example, these include private healthcare and education institutions that cater to international clients. Manufacturing output in Singapore, which experienced double-digit growth in 2002, slowed down to just 6.5% year-over-year growth in March of 2003. Manufacturing output remained very weak until beginning recovery around September of 2003 (Asia-Pacific Economic Cooperation, 2004).

The SARS pandemic was relatively short-lived compared to the ongoing COVID-19 pandemic; the vast majority of new cases were recorded within the three-month period of March — June of 2004. Nonetheless, it still had massive negative economic impacts all over the world, including Singapore. SARS caused massive acute drops in economic activity, and economic recovery back to pre-SARS levels took several quarters. Furthermore, massive healthcare expenditures, both public and private, resulted in billions of US dollars of opportunity cost as well. The estimated total to Singapore's GDP as a result of SARS in 2003 is a loss of 0.47% (Knobler, et al., 2004), which is not trivial but also not too substantial of a contraction. This demonstrated that even acute public health crises can have major consequences across much of the economy. Investing the time and resources to better prepare for future public health crises is therefore extremely prudent and can potentially prevent the loss of many quarters or years of economic growth and activity.

Singapore's Response to SARS

Singapore is a unique country in that its government is a representative democracy (a parliamentary republic with similarities to the United Kingdom), but its government has significantly more centralized power compared to other democracies around the world. The People's Action Party has maintained an overwhelmingly majority presence in the Singaporean government since 1959, a feat that almost no other political party in a legitimate democratic country has ever accomplished. As a result, the Singaporean government is able to pass cohesive legislation swiftly and rigorously enforce any legislation passed.

A major result of Singapore's democratic yet authoritarian form of government is an extremely well-constructed, well-financed, and efficient healthcare system. Singapore has among the best healthcare outcomes for the developed world, and its healthcare spending per capita as a share of GDP is by far the lowest of all the world's high-income nations (Haseltine, 2013). Furthermore, due to Singapore's significant centralization of government power, the Singaporean government was able to quickly mobilize in response to SARS. The government mobilized on two fronts, public health and the economy (Asia-Pacific Economic Cooperation, 2004).

Singapore mobilized its public healthcare and hospital systems to optimize treating SARS and developed a system to prevent the further spread of the virus. Singapore used a strategy of detection, isolation, and containment for individuals who were infected or who might have been infected. Singapore's Ministry of Health implemented extremely strict policies at hospitals, including mandatory use of personal protection equipment for all healthcare professionals with routine temperature checks for everyone. Hospital visits were extremely limited, even for family members of patients. The Ministry of Health also issued home quarantine orders to various

businesses and individuals as it saw best saw fit to mitigate the spread of SARS (Asia-Pacific Economic Cooperation, 2004).

Additionally, Singapore's Ministry of Environment underwent a campaign to educate the public about best practices regarding personal hygiene and public health. The Ministry of Environment collaborated with the Ministry of National Development to continue to regularly clean and disinfect all public areas and prioritize the functionality of waste disposal and sewage systems. The Ministry of Environment also required food preparation professionals to monitor and record their body temperatures twice daily (Asia-Pacific Economic Cooperation, 2004).

Singapore's Ministry of Education implemented immediate changes to school curricula. Students of all ages were educated about SARS, and each student was given a personal thermometer and taught to take their own temperatures frequently and to consult with a parent or teacher if their temperature was abnormal. Students and teachers were also required to record and declare their travel history so that the government could have a history of people's movements in order to better track and isolate patients and anyone they might have come into contact with (Asia-Pacific Economic Cooperation, 2004).

At Changi Airport, the Singaporean government began screening all inbound and outbound passengers, reviewing their travel histories and taking temperatures. Similar measures were enforced at other international transportation hubs, including the various land and sea international transportation hubs in Singapore. Inbound foreign workers coming from countries that had reported the presence of SARS were required to undergo a 10-day quarantine and observation period before being allowed to go to work (Asia-Pacific Economic Cooperation, 2004).

While various ministries in Singapore were collaborating to treat SARS patients and to prevent the spread of SARS to others through policy enforcement and monitoring of the public and their movements, The Singapore legislature worked to provide economic relief to Singaporeans. On April 17, 2003, the Singaporean government passed an economic relief and aid packaged of around SG $230 million to help businesses and individuals directly economically impacted by SARS. Furthermore, the government developed business recommendations and temporary best practices to help businesses cut down on costs, such as shorter work weeks, wage cuts, and layoffs. This was strategically combined with the relief package that was passed that would help individuals who received wage cuts or were laid off as a result of the negative economic impact of SARS (Asia-Pacific Economic Cooperation, 2004).

While Singapore quickly responded to the SARS outbreak on many fronts, there were still relatively many SARS patients and deaths in Singapore. Singapore had 2.94% (238) of all global SARS cases and 4.26% (33) of all global SARS deaths, the fifth highest country in both SARS cases and deaths in the world (World Health Organization, n.d.). Since the 2003 SARS outbreak and the 2009 H1N1 influenza outbreak, Singapore has taken steps to institutionalize its response to outbreaks of novel infectious diseases. These have become apparent in the face of the current COVID-19 outbreak, as Singapore currently has one of the least infection rates and death rates for a major city.

SINGAPORE & COVID-19

Singapore's Rapid Response to COVID-19

The Singaporean government has made repeated significant investment into bacterial and viral infectious disease research due to the recent prevalence of novel infectious diseases

outbreaks appearing all over the world (i.e. anthrax, SARS, MERS, Ebola, H1N1). The Singaporean government has also established epidemic-triggered emergency governmental agency task forces and collaborations and have strengthened their public health system response protocols and emergency supplies. These constant investments and iterations into infectious disease understanding and preparedness have made Singapore one of the most well-equipped countries to properly deal with in late December 2019 seemed to be a novel coronavirus outbreak in China that was fairly likely to spread across the globe.

In response to this novel coronavirus outbreak, Singapore quickly began to implement travel restrictions, protocols for identifying people who potentially were infected, and quickly isolating them plus every single person that came into contact with identified potential virus carriers. The Singaporean government implemented very strict social distancing and isolation policies, including canceling all public events and gatherings and developing home quarantine policies (Rogers, 2020). The Singaporean government quickly implemented social distancing policies for the workplace as well. Banks and other major white-collar businesses established off-site workspaces and work from home policies so that they could split their work force into these three segment categories to limit probability of infection while also mitigating the effect of the virus on business operations. In this way, the Singaporean government aimed to "flatten the curve" — reduce the peak number of daily confirmed cases at the cost of prolonging the outbreak — so that its public healthcare system would at no point be overwhelmed by the influx of COVID-19 patients.

The Singaporean government's scientific research and development arm, in collaboration with private industries, quickly developed one of the first initial coronavirus testing kits within one week of Singapore's first COVID-19 patient. They have been continuously improving on

them. Singapore is among the top coronavirus testers per capita, along with South Korea and Germany. The Singaporean government has been extremely transparent with the public about its policies, details about where people confirmed to have COVID-19 have visited, and testing statistics (number tested, cases confirmed, and number of deaths). It is authoritative and has strict punishments for those who do not follow its laws and policies. Such transparency has been instrumental in making sure the general Singapore public follow the government's recommendations for social distancing and hygiene and personal health monitoring best practices. Furthermore, the Singaporean government has enacted extremely strict penalties and punishments for individuals or organizations spreading misleading or false information about the novel coronavirus, COVID-19, and related public policy.

While public health officials of western countries have relied on interviewing potential virus carriers about their travel history and people they have come into contact with, Singapore has gone a step further. The government of Singapore has developed a mobile app called TraceTogether that tracks who individuals come into contact with (Singapore Government, 2020). The app uses Bluetooth communication to record physical distance between a user's phone and phones of others who have the app installed. This app is opt-in (not mandatory for Singaporeans) and the data collected is encrypted and sent to Singapore's Ministry of Health, where it is stored for 21 days (Palma, 2020). The data collected by TraceTogether will in theory allows public health officials to know exactly when, where, and whom individuals with COVID-19 came into contact with, allowing for a significantly more efficient detection, isolation, and containment process to mitigate the spread of COVID-19 in Singapore.

Present Economic Impact to Singapore by COVID-19

COVID-19 has already been many times more detrimental to Singapore's economy than was SARS. Singapore's rapid mobilization to care for COVID-19 patients and mitigate the spread of the virus as much as possible has very clearly paid off, especially by comparing Singapore COVID-19 statistics with that of almost every other country in the world. However, the economic impacts due to the pandemic and the home and business social distancing policies necessary to mitigate the spread of the virus as much possible have already been significantly detrimental.

Singapore's economy contracted by 2.2% year-over-year and 10.6% quarter-over-quarter in the first quarter of 2020 (Lee, 2020). This contraction has mostly been led by large contractions in tourism and transport related industries, although other areas of businesses also have contracted significantly as well. In March, Singapore Airlines cut its passenger capacity by 96% until the end of April 2020; these massive flight cancellations have been recently extended by Singapore Airlines on April 27 to until at least the end of June 2020 (Asaf, 2020).

Singapore's Ministry of Trade believes that based on 2020 Q1 economic data, they expect Singapore's GDP to contract by 1.0%–4.0% in 2020 (Lee, 2020). This is many times (potentially by an order of magnitude) worse than the estimated 0.47% contraction of Singapore's GDP in 2003 due to SARS (Knobler, et al., 2004). This order of magnitude higher negative economic impact of COVID-19 versus SARS demonstrates how important Singapore's efforts to minimize the spread of the disease within the country. These economic figures would be substantially worse if Singapore experienced anything similar to what has been ongoing in New York City, for example, where massive infection rates and death tolls have led to closed businesses and industries to the point where many experts believe that many parts of New York, such as museums and theater, will take several years at minimum to recover (Goodman, 2020).

The Singaporean government is not just focusing on limiting disease spread thought widespread testing and strict quarantine protocols and social distancing instructions. To help millions of Singaporeans survive the current rough economic waters, the Singaporean government at the end of March passed a SG $48 billion (US $33.17 billion) relief package to support businesses and households. This relief package contains five relief measures to bring assistance to the millions of Singaporeans currently financially suffering due to the significant negative economic impacts of fighting COVID-19 (Zhou, 2020).

The first measure is a SG $15.1 billion (US $10.6 billion) expansion to a newly Singapore welfare program called the Jobs Support Scheme, which was introduced on February 18, 2020. This expansion of the Jobs Support Scheme aims to help over 1.9 million local workers retain their jobs by co-funding portions of each worker's monthly income through the end of 2020. The Singaporean government will co-fund up to 25% of the first SG $4,600 of each worker's monthly wage. Co-funding is higher for jobs in sectors hit especially hard by COVID-19, with co-funding for jobs in food services set at 50% and co-funding for jobs in aviation set at 75% (Zhou, 2020). Several companies have received their Jobs Support Scheme funding but then returned the money, asking that it be distributed to companies in the tourism and travel industries that have been hit the worst by the current pandemic and have insufficient levels of liquidity (Lai, 2020). Mitigating rising unemployment by paying a large portion of their compensation is an extremely insightful move. This prevents jobs from being lost into the COIVD void by incentivizing companies that as many jobs as they can alive. As Singapore starts to reopen and relaxes its social distancing rules, companies can begin to seamlessly scale back up with their existing employees that otherwise would let go into the unemployment system.

The second measure establishes a monthly cash payout for eligible self-employed Singaporeans. Eligible self-employed Singaporeans will receive SG $1,000 (US $706.68) per month for the remainder of 2020 (Zhou, 2020). The third measure expands Workfare Special Payment, increasing welfare payouts to lower income workers and self-employed Singaporeans to SG $3,000 (US $2,105.04) per month. For many, this a significant increase when compared to the payment previously agreed for 2020, which as 20% of their total 2019 payout (Zhou, 2020). Putting cash directly in the hands of families who many need that cash to pay for their next meal is a very efficient and high-impact use case for those allocated relief funds.

The fourth measure aims to create jobs and train first-time job seekers. Under an SGUnited Jobs initiative, the Singaporean government aims to create 10,000 new jobs. These jobs will encompass many sectors, including short-term jobs to help the government handle the COVID-19 crisis, long-term jobs in essential services, and other jobs in emerging areas in the government and public sector. Additionally, government will help connect people looking for employment to private sector companies looking to fill important roles during their current shortages in available labor through virtual career fairs. The government will create a new SGUnited Traineeships program in collaboration with Workforce Singapore that will support up to 8,000 jobs across many different business sizes and sectors. The SGUnited Traineeships program is designed specifically for first-time job seekers so that they can receive job training and gain work experience (Zhou, 2020). This is a highlight of this relief bill. The government also believes that COVID-19 and its deep and expansive economic accepted that the labor markets will likely never be the same, so they are offering temporary positions to assist members of the government with surviving this pandemic gracefully and retraining these people for forward-looking jobs and professions. The training they will provide for careers for the future

demonstrates that the government is trying to leverage this with and jobs that assist with the government managing.

The fifth and final major measure the recently passed Singaporean relief package contains SG $145 million to help unemployed Singaporeans. This money will be utilized by social service offices and community centers to assist unemployed Singaporeans and their families navigate Singapore welfare programs and long-term assistance, such as ComCare. Additionally, a relief fund has been established to directly help families in dire need of assistance. The social service offices will administer a new COVID-19 Support Grant that gives SG $800 (US $561.34) per month for three months to those who lost their jobs recently while they search for new job or seek training (Zhou, 2020).

More recently, the Singapore Parliament passed the COVID-19 (Temporary Measures) Act 2020, which went into effect on April 20, 2020. This new law will provide individuals and businesses relief from many different types of contract obligations, including loan repayments, rent payments, deposit forfeitures, and many others. Most contracts agreed upon before Marth 25, 2020 that involve obligations that have to be met on or after February 1, 2020 are covered by this new law. Contracts present in many personal and business areas, such as weddings, conferences, hotel bookings, real-estate, and manufacturing are all covered under this law (Ng, 2020).

This is another extremely important law passed recently by Singapore Parliament. This law offers significant financial relief for many individuals and businesses temporarily but does not cancel contracts. Instead, government officials have stressed that this law only temporarily postpones contractual obligations, and that the obligations will need to be fulfilled down the road (Ng, 2020). As a result of this law, countless individuals and businesses in Singapore will be able

to retain their cash reserves in order to survive the economic hardships due to this crisis, but guarantees individuals and organizations with accounts and services receivable that what has been agreed to will still come to pass as this crisis is resolved and life starts to return back to normal.

Predicted Long-term Impacts of COVID-19 to Singapore

As Singapore is a major global up for both finance and trade (especially in Southeast Asia), Singapore's economy is not only impacted by changes to domestic business, but also intimately tied to the economies of other global economic powers, including the United States and China. COVID-19 will have economic impacts on a global scale much greater than what is currently being experienced. Many countries have yet to control their respective outbreaks. The United States has far surpassed China in terms of reported cases of COVID-19 and reported deaths of COVID-19 to become the global leader in both. Furthermore, experts expect a second wave of cases in countries that have begun their net recovery, including China and Singapore, as global travel returns to normal and social distancing policies become more relaxed.

Industries within the tourism and transportation sectors will likely continue to suffer for the next two quarters as other countries continue to grapple with COVID-19. COVID-19 has significantly reduced the world's energy demand, causing major uncertainty in oil markets. This has caused recent conflict between major oil-producing countries. Additionally, the recent April 2020 crash in crude oil futures is causing a crisis-level economic meltdown in Saudi Arabia (Nereim & Ratcliffe, 2020), a major trade partner and strategic military ally to the United States. The global economic consequences of COVID-19 will be exacerbated by these and other major geopolitical events. There is a looming global credit crisis that, due to the massive economic

slowdown due to COVID-19, may in fact burst and lead the world into a global recession or even depression.

A global depression, based on current economic data and trends, would most closely resemble the Great Depression from the 1930's in the United States. This was a depression that had at times had a nearly 30% unemployment rate. The United States recovered from the Great Depression as a result of joining the allied forces during World War 2. It is difficult to imagine another true global conflict of that scale over occurring again.

CONCLUSION

Singapore's failure at its policies used to try to keep SARS at bay, combined with the negative economic consequences of SARS, prompted Singapore to begin developing a systematic way to be prepared for future public health crises. While other parts of the world have experienced local epidemics of other novel infectious diseases since SARS, Singapore continued to develop a series of policies, protocols, and private sector partnerships to be prepared for future infectious disease public health crises that might arrive at Singapore.

By the time COVID-19 hit Singapore, Singapore had become one of the most prepared countries in the world to deal with this pandemic. Public health officials and world leaders should be paying more attention to Singapore and how it is has successfully navigated these dangerous but somewhat familiar waters. Despite Singapore's stellar response, there is a very clear economic burden that is unavoidable, but at least Singapore has managed to mitigate this economic downturn and is preventing it from being accompanied by mass public infections and mortality.

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