The ‘Real’ Wolf of Wall Street- COVID-19’s Impact on Global Economies & Healthcare Systems

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ABSTRACT

Globally, over 3.3 million people have contracted COVID-19 and > 230,000 have died. The outbreak has strangled the world economy and has tested the resilience of all health systems—robust or fragile. While all categories of the economy have been affected, pandemic has directly affected people and possession processing services the most. For all countries analyzed, an average economic impact of -4.5% of GDP is expected.

We assessed the response to the COVID-19 pandemic by healthcare systems in terms of testing capability, surge capacity, and collaboration; focusing on United States, United Kingdom, Singapore, China, and Pakistan. Despite its success, the China model cannot be the go-to paradigm everywhere as level of compliance to local authorities, harsh lockdown measures, and ability to quickly complete labor-intensive projects may not be replicable in other countries. Therefore, a context-specific strategy is necessary to deal with pandemic.

COVID-19 pandemic has exposed multiple fault lines in health systems in term of accessibility, adaptability, and preparedness. It has also become clear that a global economy centered on the principle of capital accumulation and not societal uplift is not sustainable through times of crises.

INTRODUCTION

Coronaviruses are a family of zoonotic viruses which primarily result in respiratory tract infections, ranging from mild flu like symptoms to life-threatening multi-organ failure. The first ever human coronavirus was discovered in the early 1960's and since then these have been associated with seasonal outbreaks resulting in upper respiratory tract infections on an annual basis. However, there have been three major outbreaks of severe respiratory infections associated with betacoronavirus: Severe acute respiratory syndrome (SARS)-CoV, Middle Eastern Respiratory Syndrome (MERS), and the five months old Corona Virus Disease 2019 (COVID-19), which is believed to have originated from the Wuhan city of China and later declared a pandemic by the World Health Organization (WHO) [1].

Globally, there are over 3.3 million people with confirmed infection so far and >230, 000 deaths have been reported. With pandemic of this scale, the resilience of healthcare systems around the globe was tested. In this report, we analyze how healthcare systems in selected countries have performed and continue to perform in handling this crisis.

Due to the concern that healthcare systems can become overwhelmed and unable to handle the surge of COVID-19 cases with severe infection, the idea of “flattening the curve” quickly gained traction and there was strong emphasis on “social distancing” and “staying at home” to slow the spread of infection. Many governments imposed complete or partial lockdowns. This strategy has worked in favor of healthcare systems by decreasing the influx of exposure-driven patients to the hospitals but has adversely impacted commerce and economy. Enterprises, especially those based on customer-interaction models, have suffered more than companies who could operate through online sales and services. In this report, we review the impact of COVID-19 on global economies, macroeconomic policies, trade, and travel. We use a ‘Glocal’ approach, highlighting the global impact on macro economies around the world and a more local impact on the healthcare system (Figure 1).

METHODS

We performed a thorough literature review of published articles in Medline, Web of Science, Google Scholar, renowned business analysis blogs, and indexed economic journals using keywords: novel coronavirus (and its root derivatives such as n-CoV, COVID-19, SARS-CoV), economy (and its root derivatives such as global economies, first world economies, third world

economies), and healthcare systems with particular emphasis on United States (U.S.) healthcare systems, National Health Service (NHS) in United Kingdom (U.K.), China, Singapore and Pakistan's healthcare system. All article types were included, including original research papers, newspaper articles, perspective reports, and expert opinions to increase the content and diversity of our analysis. The content was then subjectively analyzed for risk of bias by the authors. Personal communications and interview with a government official from the Health Ministry of Khyber Pakhtunkhwa (KPK) province in Pakistan were also used to, gain insights on the government's response to COVID-19.

IMPACT ON GLOBAL ECONOMIES

World economy runs on two major industries, the service industry and the product industry. This article addresses the impact COVID-19 is expected to have on various aspects of both (Figure 2 shows how the global gross domestic product (GDP) is declining because of the pandemic). While the world tries to manage and cope with this medical and economic tragedy, The Bretton Woods Institutions (World Bank and the International Monetary Fund - IMF) have accelerated their response and commitment to assist many developing countries. This involves "calling on all official bilateral creditors to suspend debt payments from the International Development Association countries that have requested forbearance" [2].

Services Industry: Almost 70% of the world's economy is based on service industry [3]. The service industry can be broadly divided into four categories:

1. People Processing Services
2. Information Processing Services
3. Possession Processing Services
4. Mental Stimulation Services

While all categories have been affected by COVID-19, the direct affect has been most severe on people processing services, as they are highly dependent on direct customer contact. Possession processing services are also affected as virus can persist on materials and surfaces and hence people may not want their possessions coming in contact with other individuals. COVID-19 has caused a hurdle for the air cargo industry that falls under possession processing. In a press release, IATA warned that "The disruptions from [COVID-19] will negatively

impact air cargo developments across all of the key international trade lanes” [4] “Thousands of air flights have been canceled due to outbreak, which makes the idea of air cargo unsteady”, IATA added.

Since COVID-19 originated in China, the “manufacturing hub of the world for electronics, footwear, apparel, and other non-food products”, companies working in consumer products sector are facing serious shortages in the provision of raw materials, essential components, and finished goods. A surge in the consumer demand is predicted in certain industrial sectors once the situation starts to normalize. However, an “economic recession looms as consumer spending is expected to decrease in the medium term. Consumers will continue to shift to online sales which will require consumer products companies to revisit their business-to-consumer (B2C) strategies”.

China & It's Impact on Global Economy: Wuhan is China’s principal transportation center [5]. There have been strict restrictions on transport in Wuhan specifically and in Hubei generally, which is expected to affect trade adversely. Tourism and entertainment industries are expected to face the worst effects. Around 70,000 movie theatres have been closed down in China, airlines have cancelled both cargo and passenger flights, which has not only affected travel but also other business activities [6-8].

Wuhan is an important trade center, in addition to being the headquarters for the country’s major local steel and vehicle makers [5]. The city is also a home to 300 plus factories of the world's best 500 companies, including Microsoft, German software company SAP, and French car maker Group PSA [9]. After the accelerating spread of the virus in Wuhan, many companies have evacuated their workers and halted their business activities. The retail industry is expected to be the most negatively affected.

IHS-Markit Automotive reports that the eleven Chinese provinces that are on lockdown account for more than two thirds of the vehicle production of the country. They also supply auto parts to car makers in the US, Europe and South Korea. Experts believe that the production loss has been almost 1.7 billion units [3]. Carmakers around the world have already started expressing concerns over the shortage of auto parts that were to be supplied from China, and Hyundai has shut down its domestic factories because they ran out of parts from China [10].

The stock market is a whirlwind at this point [11], which indicates the economic impact of the coronavirus on China. The lockdown of the Hubei province has threatened to affect the global

economy as China is thoroughly integrated and is the second largest economy after the U.S. China contributes almost 16.3% of the world's GDP and according to IMF, the country alone accounted for 39% of the economic growth in 2019. Hence, a downfall in its economy is predicted to affect the global economy [12]

With breaks on the Chinese economy in terms of production and manufacturing, the functioning of global supply chains has been severely disrupted. Companies all over the globe, irrespective of size, that are dependent upon inputs from China have started experiencing contractions in production. With limitations in transport and restrictions of trade among countries, global economic activities have greatly slowed down. Moreover, the pandemic has generated a degree of panic among companies and consumers, resulting in "unusual consumption patterns" and "market anomalies". The authors believe that "global financial markets have also been responsive to the changes and global stock indices have plunged" [13].

Prediction of Economic Growth: According to Fernandes and colleagues [14], if the lockdown situation declines and May becomes the recovery month, the economic impact may range from 3.5 to 6% depending on the country. In the USA, the crisis is expected to cost nearly 4% of its GDP. Overall, for all countries analyzed, an average economic impact of -4.5% of GDP is expected (median = -4.4%). The model takes into account the different compositions of GDP in different countries. However, if the lockdown persists longer than May, the growth in GDP can be visualized in Table 1.

Effects on Trade: The million dollar question perhaps, is: is a massive restriction of mobility desirable? And second, is it feasible at all? It is time to introduce smart policies and weigh the costs and benefits of uninhibited exchanges of people and goods. If global stakeholders can afford an outbreak every few years in order to reap the benefits of globalization, it is imperative to ponder whether future epidemics might get worse. "The free exchange of goods and capital does not have to be restricted since only a count few diseases are transmitted by contaminated goods. The free movement of people itself also contributes to the advantages of globalization, but it is far less important for production. Restrictions may well be desirable and justifiable, bringing to an end a half-century of ever-increasing individual mobility", Voth says [15].

Developing Economies: Loayza and colleague [16] suggest that in times of such crisis, the short term goal should be to "avoid mass layoffs and bankruptcies and the medium term goal involves monetary and fiscal stimulus. However, in developing economies, the stimulus may be less effective because monetary transmission is weak and fiscal space and fiscal multipliers

are often small”. The authors suggest that in such situations, the viable goal should be to “avoid procyclicality, ensuring the continuity of public services for the economy, and supporting the vulnerable”.

IMPACT ON HEALTHCARE SYSTEMS

In assessing response to the COVID pandemic, and comparing the responses of different health systems around the world, we divide our discussion into three broad categories as defined by Jennifer and colleagues [17]: early detection & subsequent testing, hospital adaptability to emergencies, and communication & collaboration between departments within and without the healthcare system. This paper discusses the healthcare systems in USA, UK, Singapore, China and Pakistan (representing a spectrum of low, middle, and high income countries)

Section A- Early Detection & Subsequent Testing: Early detection of cases would require, as a prerequisite, being alert and receptive to the reality of the problem. While this may not strictly be a health system’s purview, many governments have been criticized for not realizing the magnitude of the threat early enough, delaying the activation of their public health systems. President of United States and British premier downplayed the effects of pandemic and were slow to implement the mitigation strategies, sometimes disregarding dire warning and modeling by healthcare experts.

The UK’s first cases were identified in late January but it broadcasted its official “Coronavirus Action Plan” on 28 February. Pakistan’s first cases were announced on February 26. On March 13, a lax lockdown went into effect, with the federal government announcing closure of schools, universities, and a suspension of international flights. Although complete effects of that lockdown on the disease curve remain to be seen, early signs point towards some flattening of the curve.

Having pronounced COVID 19 as a pandemic on March 11, a week later the WHO Director General urged all affected countries to “test, test, and test.” China and Singapore have tested widely –which has been the key to their success in containment of the virus. In Singapore, SARS-CoV-2 RT-PCR laboratory testing capacity was scaled up rapidly to all public hospitals and is able to handle 2,200 tests a day for a population of 5.7 million. The US detected its first case on 12 January 2020. A month and half later, it had only conducted 426

nation-wide tests (1.3 tests per million, for a population of 328 million), even when the importance of widespread testing was being underscored by the WHO. Pakistan registered its first two cases on 26th February and as of April 15, has conducted only 73, 349 tests for a population of over 210 million. Even as the country seeks to ramp up its testing capacity, absolute testing numbers remain too low to drive confident data-driven conclusions.

A better metric in evaluating Pakistan's response would be the *positive tests: total tests* ratio –because it indicates the efficiency of contact tracing, identification of clusters, and if the lack of testing capacity is being supplemented with judicious use of the tests that are available... Khyber Pakhtunkhwa (KPK) province had a significantly higher ratio than other provinces (20.2%, compared to Punjab (6.9%, Sindh 10.4%, Baluchistan 6.5%).

Testing capacity is not only subject to the availability of kits, but also depends on factors which include, but are not restricted to: organized data, effective transport, technical staff, and trained healthcare professionals. For these reasons and more, including Pakistan's much larger land area, it would be wholly unrealistic to expect a Singapore-*esque* response.

In UK, thousands of medical students were allowed to graduate early and doctors who retired were requested to rejoin the NHS. Medical professionals working in education, research and inspection were encouraged to return to clinical duties and within hospitals, clinical staff was redeployed to areas of greatest need with additional training provided rapidly [18].

Section B- Hospital Adaptability to Emergencies: Hospital adaptability is largely a matter of emergency preparedness. Following the SARS outbreak, Singapore armed itself with the health infrastructure necessary to respond to pandemics. It had generated a network of more than 800 Public Health Preparedness Clinics (PHPCs), which were activated to enhance the management of respiratory infections in the primary care setting, with subsidies extending to Singapore residents to incentivize them in seeking care at these PHPCs. Singapore had also built the National Centre for Infectious Diseases (NCID), which is a 330-bed hospital built specifically for the management of infectious diseases and has an “integrated clinical, laboratory, and epidemiologic functions” to better enable the healthcare system to battle situations such as COVID-19.

This was not the case for Pakistan –where the pandemic caught an already dilapidated public health system by surprise and in distress. This is exemplified by the hurried setting up of make-shift quarantine facilities all around the country, marred by criticism of their quality and incidences of patients escaping their premises. The number of acute care providers and

ventilators quickly became a cause of concern. National Disaster Management Authority (NDMA) chairman remarked that “there were more than 3,800 ventilators in the country of which 2,200 were owned by the public sector”. In an attempt to aid their neighbors, China exported more than 500 ventilators to Pakistan and skilled professionals to train Pakistani health care professionals [19-21].

In essence, the Pakistan healthcare system showed that it lacked the surge capacity should a worst-case scenario unfold. Hospitals across the country tried to expand their contingency capacity (adapting patient care spaces to provide functionally equivalent care) and crisis capacity (adapting to provide an altered level of care in times of crisis). Army-run Expo-Centers have been converted to bedded isolation centers, and even railway cabins are now being used for the same [22, 23].

Devolving emergency healthcare service to small, city-level response teams could prove efficient –but that would need strong local bodies’ representation and an equitable standard of healthcare across most cities, which is not immediately possible in Pakistan. In our consult with the KPK official, we noted how the collaboration between the public and private sector is proving indispensable. While the government is still reliant on public/government hospitals in arranging quarantine and isolation facilities, more and more testing is now being done by private laboratories.

Extensive triaging and prioritizing patient care have been recommended around the world, however the altered standard of care being offered will likely be lower in a developing country than elsewhere. Troug and colleagues discussed the scarcity of resources and healthcare equipment in the USA, with patients needing ventilation ranging between 1.4 and 31 patients per ventilator. They advocated rationing during this time and mobilizing resources for patients who have a higher chance of survival [24]. However, this rationing approach is not without ethical and moral concerns.

While public health systems and health-earmarked taxation is often lauded, systems that embody this ethos, like the NHS, have also collapsed when confronted with the pandemic. Many have blamed this on budget cuts, but the fact remains that the UK remains low on human and material resources. Hospitals lack tests to screen frontline staff, with about 20 to 25 per cent of NHS doctors and nurses on sick leave or self-isolating [25]. “Medical beds and critical care capacity have required substantial expansion, which is being enabled by cancelling

elective procedures, repurposing operating theatres, and commissioning the use of private facilities” [18].

Section C- Communication & collaboration between departments within & without healthcare systems: It is clear from our review of published literature and other coverage of the pandemic that health systems cannot function in isolation –that their success and resilience is suffused with that of governmental policy, the communication of that policy, and its implementation. Countries have needed containment measures beyond hospitals, mainly to reduce burden on hospitals, including wide-spread social distancing, border closures, and contact tracing.

A success story here is of China [26], where aggressive measures such as a complete lockdown and electronic surveillance have shown to be effective, but not easily replicable. The two broadly used mobile phone apps, AliPay and WeChat—which have successfully become an alternative to cash in China—have “helped enforce the restrictions, allowing the government to keep track of people's movements and even stop people with confirmed infections from traveling”. China has also built hospitals over the span of a week and ensured stringent implementation of mandatory quarantine of 50 million people in the Hubei province.

There are four main reasons why the China model cannot be the go-to paradigm everywhere.

- 1) Outside of China, these measures will constitute human rights violations and be resisted as such
- 2) Not every country has the capacity to complete such labor-intensive projects so quickly
- 3) The level of compliance found within the Chinese population is unlikely to be found everywhere
- 4) Poorer economies will not be able to withstand the costs of continued economic disruption.

An idea we identified as being of importance, and one that could possibly be replicated elsewhere, was that of “cluster lockdowns”. To weigh the consequences of an economic fallout against those of an unmitigated outbreak of SARS-CoV-2 is beyond the scope of this paper, but an interesting way to strike a realistic, sustainable balance between “suppression” and “mitigation” strategies is what is happening in parts of the KPK Province in Pakistan. Cluster lockdowns involve identifying a potential disease hotspot after a case is discovered and others in the locality have tested positive. The area is then sealed, preventing entry and exit to that

area. The provincial government has successfully carried this out in Manga, a village in the Mardan district. Manga is now being gradually de-sealed [27].

The reason this strategy may work in low-resource settings – and possibly work better than absolutist, indefinite nation-wide lockdowns – is because of two reasons: (1) it allows stricter shutdown enforcement, given the small perimeter, and contains confirmed cases and almost all their potential local contacts, (2) it helps reduce the scale of the economic and food crisis that follows. UC Manga was supplied food and basic necessities via utility-carrying trucks and because the size of the locked-down area was small and more manageable, door-to-door distribution was more efficient. Naturally this lockdown was less taxing than shutting down the province in a similarly stringent manner would have been. Once a disease incubating town has been pinpointed, chance of wasting testing kits that are already scarce is reduced.

Apart from this, the Singapore model which seems the most viable. Underlying Singapore's response is their preparedness – a count on which even the most developed countries stand exposed. Singapore had set up a Multi-Ministry Task Force before it had its first case. Notably, Singapore has not implemented school closures or other major social distancing measures, because it acted early and so there is no evidence of widespread community transmission, and rates of COVID-19 infection among children remain low [28].

Communicating policy becomes essential in such a time. In Pakistan, there has been a rigorous national awareness campaign, pioneered by Digital Pakistan, employing the use of radio, telephone networks, television, and social media. A live dashboard, lists of testing labs, and a 24/7 chat bot is available on the government COVID website. But in a time of crises, social media has almost become a bane –there are too many conflicting sources of data, and much misinformation about the virus. This is not as big a problem in China, where mainstream sources of disinformation (Facebook, Twitter, YouTube), are blocked. Singapore sought to stem this by sharing detailed anonymized information on COVID19 cases publicly to prevent speculation, while misinformation is quickly debunked and clarified on a government website.

In our view, this has highlighted the need for strong centralization in disseminating policy – one certified authority that issues and maintains official figures, so that there is no ambivalence, and that the public does not have so much difficulty separating signal from noise.

South Korea, too, extensively planned for a pandemic response after MERS outbreak in 2015. Instead of resorting to measures that restricted mobility, South Korea deployed a trace, test, and treat strategy, in collaboration with the country's advanced information technology (IT)

system. This data included the location of the patient; his/her personal identification information; medical and prescription records; immigration records; card transaction data; transit pass records for public transportation; and closed-circuit television (CCTV) footage. Even though this has raised privacy and legal concerns, these measures have successfully helped South Korea flatten the curve [29]. In United States, however, lack of trust of government by public has been a major barrier to centralized contact tracing systems.

CONCLUSION

The coronavirus outbreak has both strangled the world economy and tested the resilience of all healthcare systems —robust or fragile. The authors are of the view that COVID-19 has been both an equalizer and an eye-opener —it has not broken our systems, but in fact tested their fault lines, exposing how broken they already were. It has pointed us towards what needs to be improved in our health systems —affordability, access, adaptability, emergency response preparedness. However, it is clear that no one size will fit all and context-less comparisons between small and large, rich and poor countries do not help the fight. Also, success cannot be achieved without a strong partnership between governments and public. The economic impact has been dire and while not part of our discussion, it is for this reason that even an LMIC like Pakistan has rolled out the largest welfare handout programme in its history, called “Ehsaas” (“Care”). Lastly, economic impact of the COVID-19 pandemic has made it clear that a global economy that is centered on the principle of capital accumulation, and not societal uplift, is not sustainable through times of crises.

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378 **TABLES & FIGURES**

Figure 1: The ‘Glocal’ Approach

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Figure 2: Global GDP declining due to COVID-19

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Table 1: Growths in GDP in different lockdown situations (Fernandes and colleagues)			
	Growth in GDP (lockdown persists to May)	Growth in GDP (lockdown persists till July)	Growth in GDP (lockdown persists till September)
Argentina	-5.0%	-8.5%	-12.4%
Australia	-2.2%	-5.8%	-9.8%
Austria	-3.8%	-8.1%	-13.1%
Belgium	-3.0%	-6.8%	-11.3%
Brazil	-1.9%	-5.2%	-8.8%
Canada	-2.1%	-5.5%	-9.2%
China	+1.6%	-1.9%	-5.8%
Czech Republic	-2.0%	-5.9%	-10.6%
France	-3.0%	-6.6%	-10.6%
Germany	-3.5%	-7.4%	-11.9%
Greece	-3.9%	-8.6%	-13.8%
India	+3.1%	-0.2%	-3.8%
Ireland	-1.3%	-5.5%	-10.8%
Italy	-4.5%	-8.4%	-12.9%
Japan	-3.1%	-6.3%	-9.7%
Mexico	-4.1%	-8.3%	-13.0%
Netherlands	-2.6%	-6.3%	-10.8%
Norway	-2.0%	-5.7%	-9.9%
Poland	-0.8%	-4.2%	-8.2%
Portugal	-4.3%	-8.8%	-14.0%
Russian Federation	-1.7%	-4.9%	-8.5%
Saudi Arabia	-2.2%	-5.9%	-10.0%
South Africa	-3.2%	-6.8%	-10.8%
South Korea	-1.6%	-4.9%	-8.7%
Spain	-3.4%	-7.5%	-12.1%
Sweden	-3.1%	-6.8%	-11.2%
Switzerland	-3.3%	-7.2%	-11.8%
Turkey	-1.7%	-5.4%	-9.6%
United Kingdom	-3.1%	-6.8%	-11.0%
United States	-1.7%	-5.0%	-8.5%

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