

## THE EPIDEMIC COVID-19 OUTBREAK AND ECONOMIC SLOWDOWN IN DEVELOPING ASIA: A REVIEW

Sarfraz Ahmed Bhutto<sup>1\*</sup>, Saifullah Shaikh<sup>1</sup>,  
Muhammad Ashraf<sup>1</sup>, Hussain Amar<sup>2</sup>

<sup>1</sup> Institute of Commerce, Shah Abdul Latif University Khairpur, Sindh, PAKISTAN.

<sup>2</sup> Government Islamia Arts & Commerce College, Sukkur, Sindh, PAKISTAN.

### ARTICLE INFO

#### Article history:

Received 28 February 2020

Received in revised form 21  
March 2019

Accepted 26 March 2020

Available online 31 March  
2020

#### Keywords:

Infectious COVID-19  
epidemic; MERS; PRC;  
Coronavirus pandemic;  
Tourism loss; SARS;  
Economics recession;  
Developing Asia;  
Tourism industry shrink;  
Coronavirus  
consequences for  
tourism.

### ABSTRACT

This study has taken a review of COVID-19 outbreak on the economic slowdown in developing Asia. Wuhan, City of PRC where this outbreak raised to the whole world, made several economic challenges for PRC and developing Asian economies. It is observed in this study that economic channels like trade, travel, production and services are affected through demand shock spillover and investment decline. Additionally, this study has reported different economic uncertainties and economic scenarios like best, moderate, and worse for PRC and other developing Asian economies. A brief review has taken for pandemic like SARS (severe acute respiratory syndrome), MERS (Middle-east respiratory syndrome), Ebola, Seasonal flu, and COVID-19. Elliptically, the transition and spread of COVID-19 is higher than other outbreaks, however, death ratio is relatively small compared to Ebola and MERS epidemics. Moreover, this study also briefed the role of Asian Development Bank (ADB) to provide financial and non-financial (knowledge and partnership) assistance to PRC and other developing economies of Asia.

**Disciplinary:** Management & Economic Sciences, Public Health.

©2020 INT TRANS J ENG MANAG SCI TECH.

## 1. INTRODUCTION

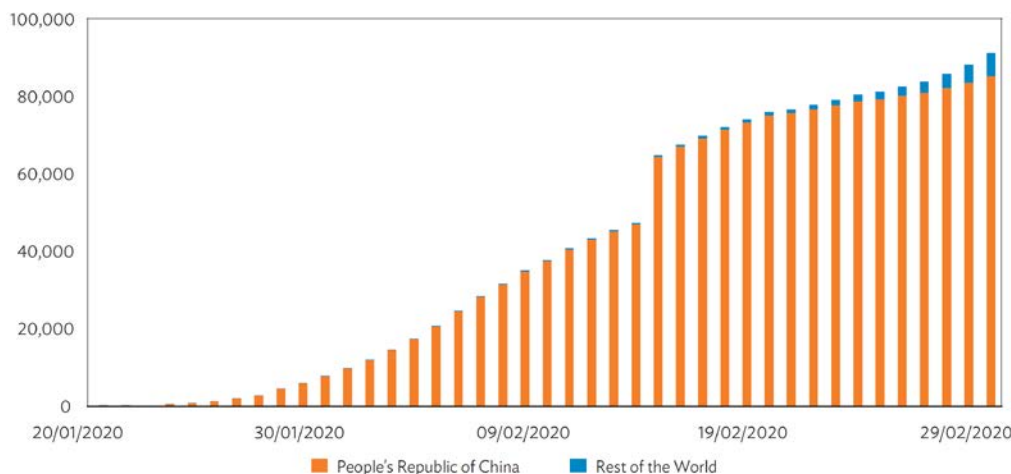
This disease is also known as novel Coronavirus, which mean a new coronavirus and medically it is termed as Covid-19. This outbreak was initially raised in December 2019 from Wuhan, a city of China or People's Republic of China (PRC) (Chang et al. 2020; Chen et al. 2020). The medical science referred the belongingness of this virus from the same family of coronavirus that were previously caused as MERS (Middle East Respiratory Syndrome) and SARS (Severe Acute Respiratory Syndrome). SARS and MERS outbreak were raised in 2003 and 2012 respectively (Althus, 2014; Brahmhatt & Dutta, 2008). Covid-19 outbreak mortality rate was quite smaller (or

lower) and impressively estimated (ranged from 1% to 3.4%) than SARS and MERS. However, SARS outbreak contained 10% of mortality rate and MERS outbreak 34%. Table-1 Shows the infection rate (human-to-human) of covid-19 is higher than MERS and Seasonal flue, with approximated ranges around the rates of infection like Ebola and SARS

**Table 1:** Fatality rates and Infection rates of COVID-19 and Other Epidemics

Disease	Fatality rate (deaths/cases)	Infection rate ( per infected person )
Ebola	50%	1.5–2.5
MERS	34.30%	0.42–0.92
SARS	10%	3
COVID-19	1%–3.4%	1.5–3.5
Seasonal flu	0.05%	1.3

(Sources: Center of Disease Control and Prevention (CDC), (WHO, 2003). CDC, MERS Clinical Features, (2019)



**Figure 1:** Total COVID-19 Cases, 20-Jan to 29-Feb, 2020

Note: The discrete jump in the series in mid-February is due to the change in the diagnostic criterion applied to identify infections.

(Sources: CEIC Data Company; and World Health Organization. 2020. Coronavirus disease (COVID-19) situation reports. <http://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/> (accessed 2 March 2020)).

It is observed that cases of Covid-19 (confirmed) have been rapidly increased in PRC but now, the spread is also faster worldwide and exceeded from SARS (CDC, 2020). In the end of Feb, 2020, the nCov had infected more than 86000 among 55 economies and forecasted the spread of pandemic among 190 economies and may infect more than 1 million people if it continues with the same pace (Wu et al., 2020). In the end of February 2020, death toll of 2924 was reported among 55 economies. However, majority of this figure contained in PRC and it is expected that USA could be the next epicenter for this disease after PRC. Figure 1 shows the spread. Moreover, in the start of March, 2020 it is observed that spread is rapidly increasing outside the PRC (Heymann et al., 2020), like Italy, USA, Iran, Korea etc. Covid-19 seemed lower fatality rate that SARS, however, infection rate has been surpassed from SARS, Figure 2 shows the statistics.

According to Asian Development Bank (ADB) Covid-19 outbreak has brought up several challenges for the economies and affected various economic channels. Further, ADB put forward analysis from global economy to regional or specific sector's economies influenced from prevailing covid-19 outbreak (Wang et al., 2020). This study quantifies and forecasts likely approximations or effect size of this pandemic under several scenarios. The scenario assumptions and method behind effect size is clear. Moreover, this study does not only provide a bunch of regional or global influence but also roughly estimates about individual economies and sectors with their economies by experiencing and facing a significant outbreak. Additionally, present study summarizes the

respond of developing member countries and actions of ADB against this pandemic.

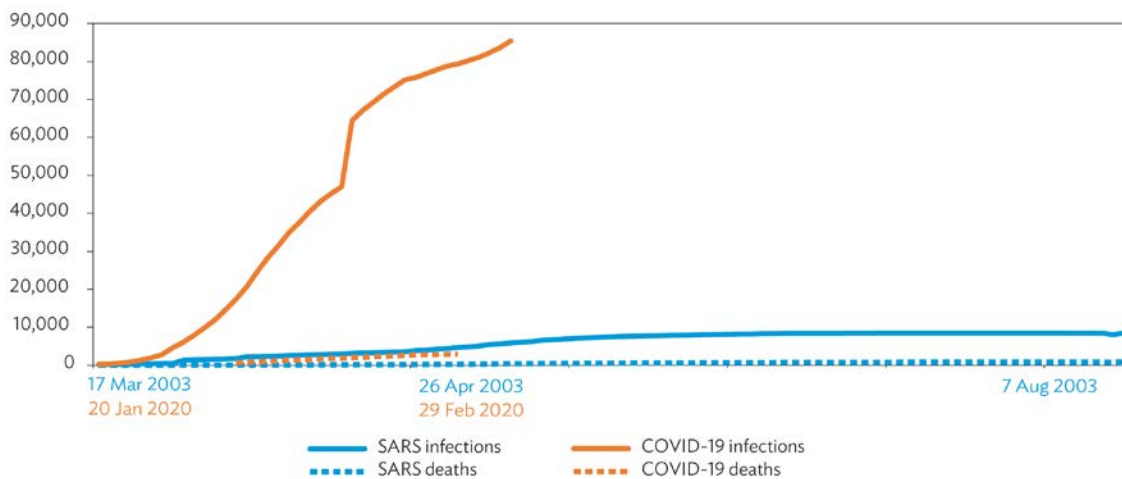


Figure 2: SARS and COVID-19 Infections and Fatalities

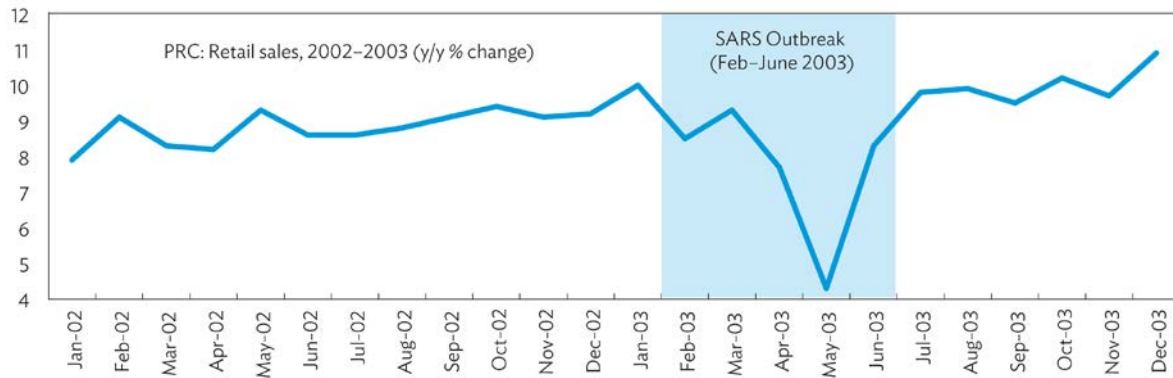
**Source:** ADB calculations using data from CEIC Data Company and World Health Organization. 2020. Coronavirus disease (COVID-19) situation reports.

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports> (accessed 2 March 2020).

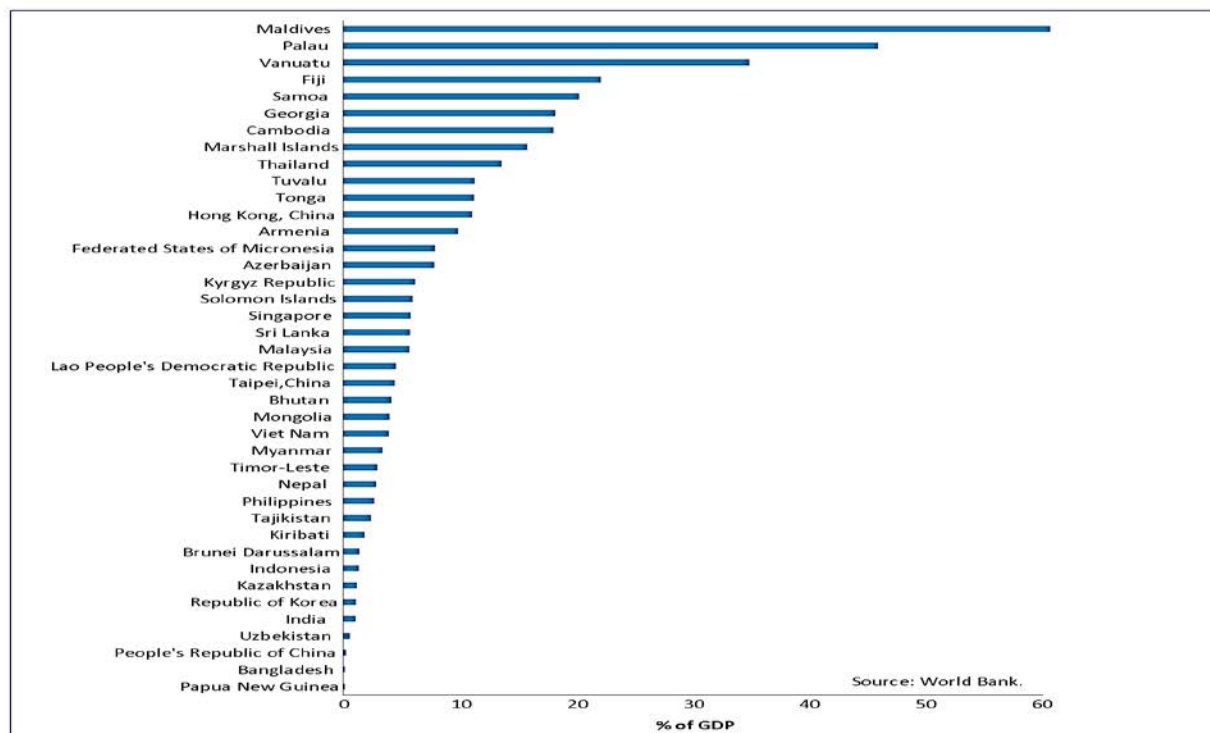
## 2. SEVERAL AFFECTED ECONOMIC CHANNELS

The nCov will effect several economic channels not only in that country where this outbreak started (PRC) but also among other developing nations of Asia. The domestic consumption (except basic goods) in PRC and other affected nations have temporarily declined. As consumption shrunk, decline in investment is also possible, because, acceleration in business activities is only possible when there is high rate of consumption. The business like travel and tourism, weak trade & production due to fall in international demand and barriers of freight and carriage, disruption of supply due to spillover of demand (or shocks), and a relatively high effect on health sectorial industries they temporary pump due to high mortality brings excess of demand for health care equipment. According to IMF (2019) (accessed 10<sup>th</sup> February 2019), experiencing SARS outbreak during 2003, PRC's rate of consumption had dropped temporarily and that was mainly domestic consumption, domestic was effected because people were told that if they stay home they become safe (Noy and Shields. 2019). Figure 3 shows that a massive decline rate in retail sales growth when experiencing SARS outbreak in PRC. The magnitude or effect size of Covid-19 may be much bigger than SARS, as world started suffering from this epidemic. Hence, this scenario forecasts a global investment decline in future and it is much dangerous for under developing countries like Pakistan. It is depicted that among several economic channels, business travel and tourism would have damaging effects in PRC and other nations. It is notion in developing Asia that tourism is one of the important sources of revenue for economies. The statistics shows that worldwide tourism receipt considered to be 40% of the GDP in nations such as Maldives and Palau. For instance, it is observed in Figure 4 that a total of tourism and travel is more than GDP with a rate of 10% among the members of ADB. Moreover, Chinese national are significant part for any country in terms of visitors. It is seen than outbound Chinese tourist 11 Million (in 2003) to 87 Million (in 2018). It is more than a quarter of world tourist, so, Figure 5 shows that countries like Hong Kong, Palau, Cambodia, Viet Nam, Korea, Mongolia, Thailand, Myanmar, and china himself (domestic travel) mostly experiences Chinese visitors. After nCov outbreak bans of tourism arrivals and receipts have been taken as precautionary measures which results a massive decline or slowdown in developing

Asian economies. Initially, 24 January 2020 travel and tourism bans was imposed by PRC. After imposition of the ban, 55% of the outbound tourism has been affected and expected to decline more. On 29 January 2020, experiencing china, 47 economies (mainly were USA, Australia, and Russia) have taken bans (travel to and from China) as precautionary measures. Figure 6 Shows that china sustained a 7.7% decline while experiencing SARS outbreak in 2003. Figure 7 shows that the outbreak of 2003 (SARS) East and Southeast Asian nations like Korea, Thailand, and Indonesia had declined even though they have few cases SARS.



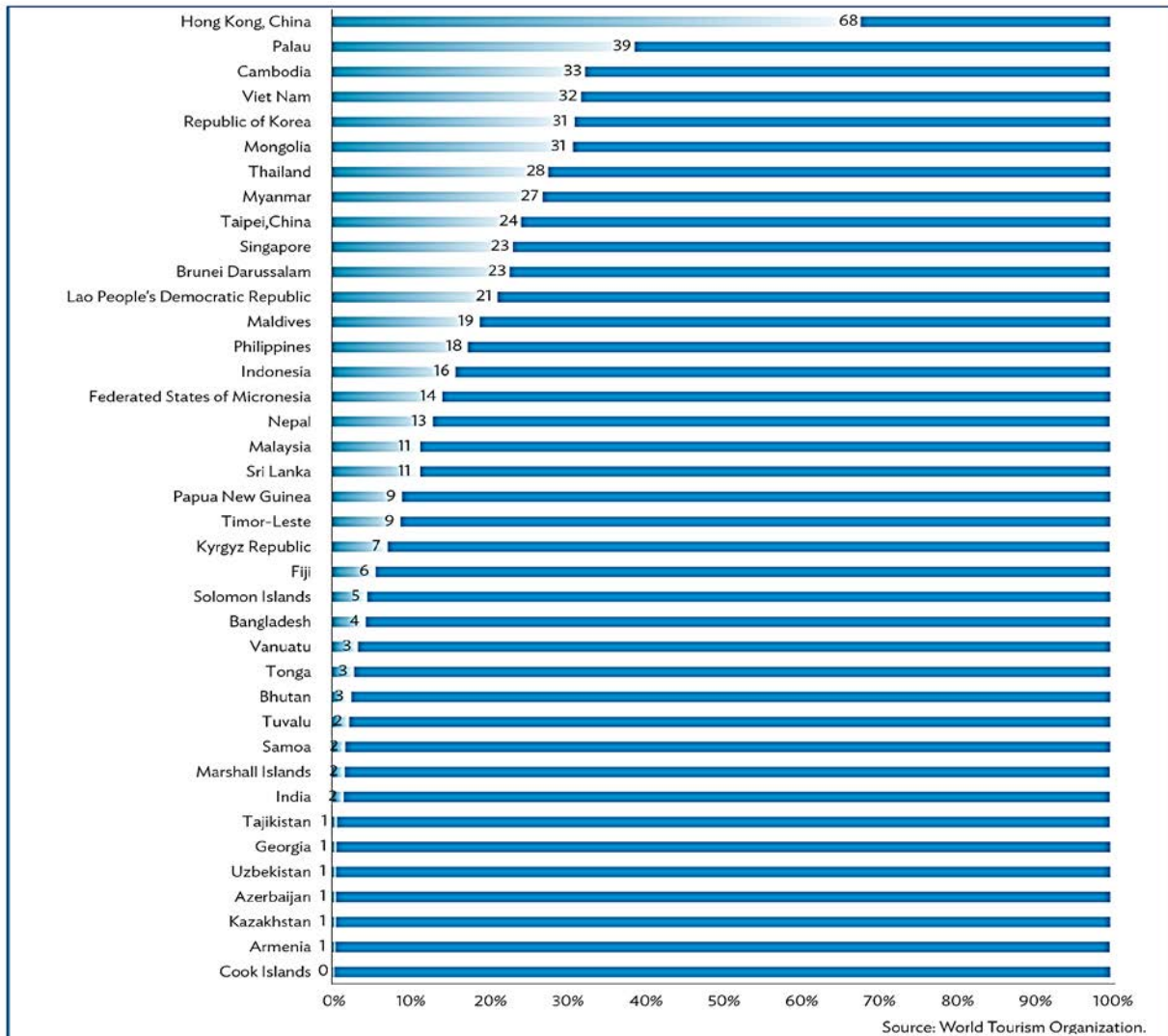
**Figure 3:** Retail Sales and Personal Consumption Expenditures during SARS Episode (Sources: Haver Analytics; CEIC Data Company; WHO; and ADB).



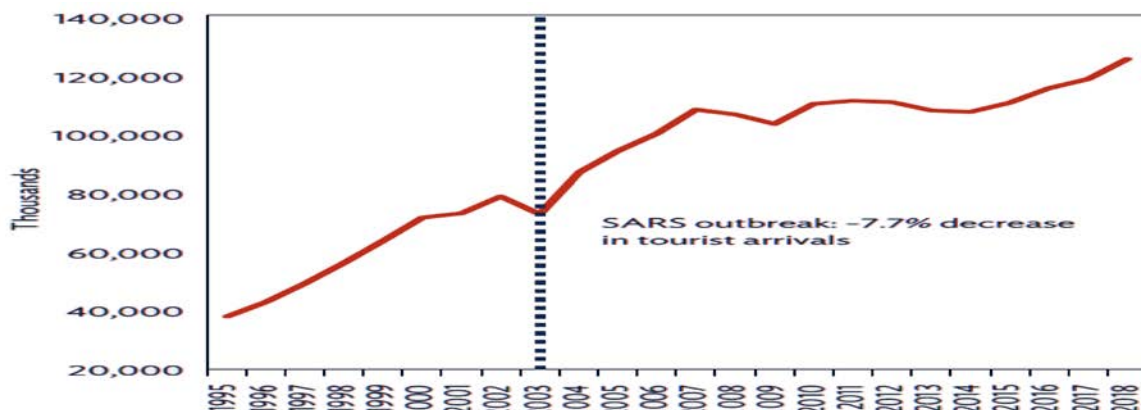
**Figure 4:** International Tourism receipts by percentage of the GDP, 2017.

Further, trade and production would also be effected due to external shocks and demand spill over. Trade & production sector also considered as one of the main and important sector of economy. After USA, China is world's largest and remunerative economy, it is considered as 1/3 of the global economic growth. A large export among Developing Member Countries (DMCs) and ADB member countries (Figure 8). Hence, the outbreak (nCov) caused a massive drop in demand of goods and services of PRC (domestically and internationally). In 2018, MRIOT (Multiregional Input-Output Table) had used to incorporate and examine demand shocks spillovers on account of

trade and production. It estimates inter-economy and inter-sector connections for 62 nations (which is taken as 95% of world's GDP) and every economy is being isolated into 35 sectors containing both goods and services. Hence, the Knock-on effects of tourism bans on trade and production can be traced through MRIOT. Another important economic channels is supply-side, especially, health & health care. Certain disruption is observed in the process of production because lockdowns (forced closure of business) and workers' inability or non-willingness to join workplace.



**Figure 5:** Tourist Arrivals from the PRC as share of Total arrivals, 2018.



**Figure 6:** Inbound Tourist Arrivals in the People's Republic of China , 1995–2018 (Source: UNWTO (2019)).

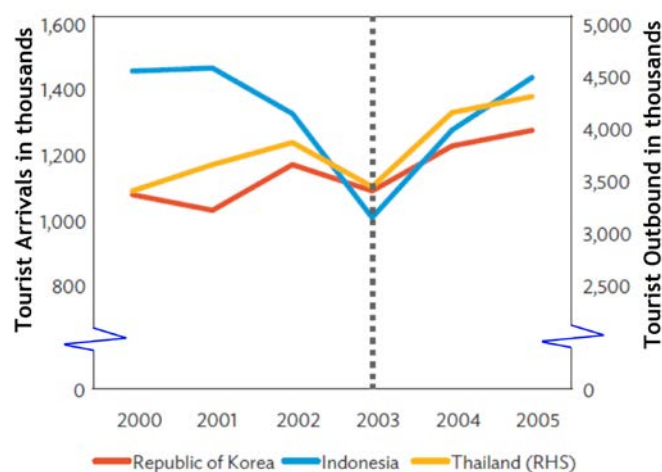


Figure 7: Tourist Arrivals from Outside Asia to Selected Developing Member Countries, 2000-2005. (Source: World Tourism Organization.)

The economic indicators revealed that at start of nCov outbreak PRC had lost 50% to 60% of normal level but now they are moving towards normal conditions. China is considered as hub for trade & add to trades (or value chains) and manufacturing concerns. Figure 9 shows the input of PRC (from & to). Although, effects of this disruption spreading out through the world because economies are interdependent.

### 3. Uncertainties and numerous after scenarios

The progression of nCov outbreak is being observed among unpredictable trends and it has need to use and assume numerous after scenarios. Chunyun a right middle of PRC where the outbreak was originated in a festival from 10<sup>th</sup> Jan, 2020 to 18<sup>th</sup> Feb, 2020. This festival is basically for Chinese Lunar New Year. Festival griped a large number of people (including foreigners and local migrants). The estimated data given by PRC’s authorities revealed that during time of festival a number of 79m local and international flights have been taken by Chinese and other transportation modes such as road trips, rail and sea contains 2.4b, 440m and 45m respectively. The cumulative gathering (containing on in Wuhan dated 18<sup>th</sup> Jan, 2020) and incubation period of Covid-19 reported by WHO is from 1-14 days, has drastically played a role in spread of this epidemic within and outside of China (Wu and McGoogan, 2020). Consequently, different scenarios are being explored along with detailed assumptions, Table 2 Shows the cases comprising best, moderate and worst.

- *Best-Case Scenario:* The Chinese outbreak has included some quick responses like bans of travel and implication of social distancing. Thus, the outbreak has been successfully quarantined which results a very short decline in consumption growth of PRC having 2.77pp in a quarter or 0.7pp for rest of the year. Compared to SARS, nCov outbreak is at its best scenario.
- *Moderate-Case Scenario:* The Chinese outbreak is considered as last longer and widespread. Due to travel bans and slogan of “Stay at home” can bring a decline of 2pp in Chinese consumption growth for the whole year.
- *Worse-Case Scenario.* The Chinese outbreak considered to adopt more precautionary measures and restrictive policies which can be continued for 6 months or might be more than six months. This economic slowdown can damage the growth in consumption as well as prevailing investment due to demand shock spillover. This decline is expected to 2pp.

- *Hypothetical Worst-Case Scenarios:* Following the patterns of Chinese outbreak, other economies have assumed to describe if the outbreak reached to their inbound. However, it not a prediction, it is definite to say outbreak does grab these economies. There are several economies where facing this outbreak would be very costly and it may push them back economically for 10-15 years. The worst-case could not be similar for all economies, pandemic after scenarios depend on the economic strength of countries. Although, economies would experience a massive decline in consumption growth due to precautionary measures and restrictive policies. Moreover, weak economies will suffer more as they would be less medical or health facilities, but, nothing can be explained rigidly the outbreak sets its patterns on its own.

**Table 2: Full Set of Scenario Assumptions**

CHANNELS SCENARIOS	Duration of travel bans and sharp decline in domestic demand	Tourism and travel bans	Decline in PRC consumption relative to no-outbreak scenario	Decline in PRC investment relative to no-outbreak scenario	Decline in [selected DMC] domestic consumption
Best case	2 months	<ul style="list-style-type: none"> <li>- Outbound PRC tourism drops by 50% for 2 months</li> <li>- For economies imposing travel bans, no tourism receipts from the PRC for 2 months</li> <li>- Inbound PRC tourism and receipts fall by as much as during the SARS outbreak</li> <li>- Tourism from outside Asia to non-PRC East and Southeast Asian economies falls by as much as during the SARS outbreak (assume peak decline lasts 2 months)</li> </ul>	0.7% (based on 2.75pp decline in retail sales growth in 2003 Q3 vs. prior 9 quarters)	none	none
Moderate case	3 months	<ul style="list-style-type: none"> <li>- Outbound PRC tourism drops by 50% for 3 months</li> <li>- For economies imposing travel bans, no tourism receipts from the PRC for 3 months</li> <li>- Inbound PRC tourism and receipts falls by an additional 10% relative to the base case</li> <li>- Tourism from outside Asia to non-PRC East and Southeast Asian economies falls by an additional 10% relative to the best-case scenario (i.e., 1 additional month)</li> </ul>	2% (based on 2pp decline in PCE growth in 2003 vs. 2000–2002 average)	none	none
Worse case	6 months	<ul style="list-style-type: none"> <li>- Outbound PRC tourism drops by 50% for 6 months</li> <li>- For economies imposing travel bans, no tourism receipts from the PRC for 6 months</li> <li>- Inbound PRC tourism and receipts falls by an additional 30% relative to the base case</li> <li>- Tourism from outside Asia to non-PRC East and Southeast Asian economies falls by an additional 40% relative to the best-case scenario (i.e., 4 additional months)</li> </ul>	2% (based on 2pp decline in PCE growth in 2003 vs. 2000–2002 average)	2% (protracted outbreak worsens business sentiment)	none
Hypothetical worst case (specific to each economy)	6 months; plus outbreak in other DMCs lasting 3 months	<ul style="list-style-type: none"> <li>- Outbound PRC tourism drops by 50% for 6 months</li> <li>- For economies imposing travel bans, no tourism receipts from the PRC for 6 months</li> <li>- Inbound PRC tourism and receipts falls by an additional 30% relative to the base case</li> <li>- Tourism from outside Asia to non-PRC East and Southeast Asian economies falls by an additional 40% relative to the best-case scenario (i.e., 4 additional months).</li> </ul>	2% (based on 2pp decline in PCE growth in 2003 vs. 2000–2002 average)	2% (protracted outbreak worsens business sentiment)	2% (selected economy only)

DMC = developing member country, PCE = personal consumption expenditures, pp = percentage point, PRC = People's Republic of China, SARS = Severe Acute Respiratory Syndrome.  
(Source: ADB staff estimates).

The above mentioned scenarios would be changed if the pandemic spread throughout the world. Although, after PRC (accounted as 97% of the cases till Feb, 2020) now it hits hard to EU countries and USA. It is expected that EU countries and USA would be highly effected from COVID-19 and their economy might face a worse scenario. Moreover, ADB issued the safety warrants to Asian countries especially to Iran, Pakistan and other countries to adopt precautionary measures and make their policies more restrictive. The next update of ADB would be launched in the end of April, 2020.

## 4. PRC'S REFLECTIONS AND GLOBAL IMPACTS

Table 3 shows that scenarios have determined and directs that 77-347 billion dollars would be the global impact and in terms of GDP 0.1-0.4%, while in the moderate level it is estimated as of 156b dollars (or .2%) of global GDP. Following best, worst, and moderate scenarios the 2/3 global impact accounted with PRC. This impact is relatively equal (roughly) to the rest of the developing Asia and world. Quantifying the loss (with moderate-case) for developing Asia would may be 22b dollars which is 0.24% in terms of global GDP. Among several economic channels, the channel of tourism among ADB and DMCs will be drastically affected results as massive drop in demand of tourism. Table 4 revealed that country like Palau, which mainly rely on tourism business (50% of its GDP based on tourism receipts) would be effected 3-9% of GDP from best to worst case scenario. Moreover, other countries who also mainly depends on tourism like Thailand, Maldives and Cambodia would face significant fall in revenue generated from tourism. A big drop in tourism arrivals among other developing Asian economies anecdotally depict a fall of 50-90% compared to the previous year. The authorities approximated a loss in terms of tourism revenue 19-45 billion dollars among developing Asian economies and 15-35 billion dollars only for PRC. Although, countries whose trade and production lineage is relatively strong with PRC, would be mainly affected from the outbreak. In this connection (Figure 10), several economies would be materially affected like Viet Nam, Singapore, Magnolia, Hong Kong, and Philippines. However, Figures 8 & 9 considering destination, PRC is important for finished and in-process goods and services.

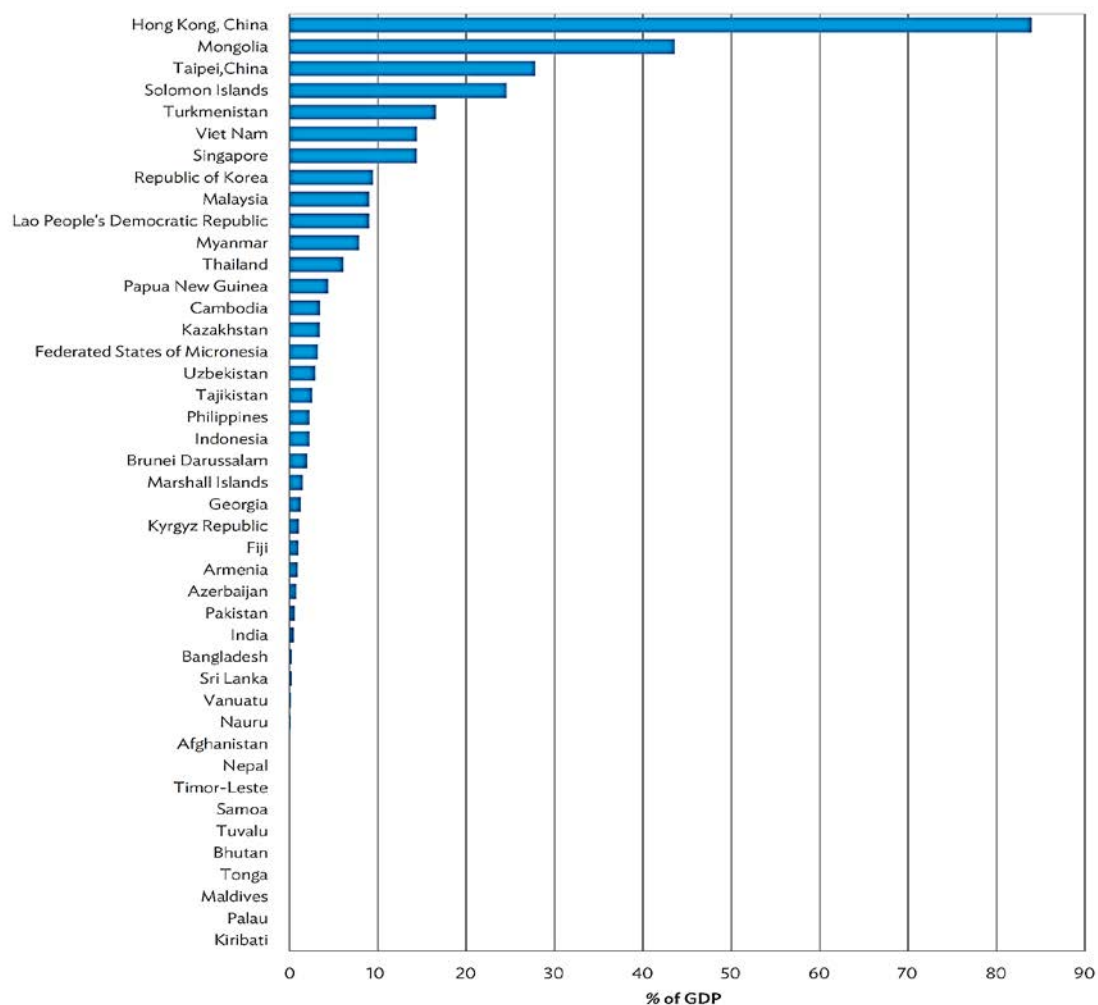
**Table 3:** Estimated Global Regional Impact of COVID-19, under different Scenarios  
(Source: Asian Development Bank staff)

	Best case		Moderate case		Worse case	
	as % of GDP	losses in \$ millions	as % of GDP	losses in \$ millions	as % of GDP	losses in \$ millions
World	-0.089	\$76,693	-0.182	\$155,948	-0.404	\$346,975
People's Republic of China	-0.323	\$43,890	-0.757	\$103,056	-1.740	\$236,793
Developing Asia excluding the People's Republic of China	-0.171	\$15,658	-0.244	\$22,284	-0.463	\$42,243
Rest of the World	-0.011	\$17,145	-0.020	\$30,608	-0.044	\$67,938

## 5. ADB'S RESPONSE FOR nCov OUTBREAK AND DEVELOPING ASIAN ECONOMIES

As it is seen that the whole world responding for Covid-19 outbreak through making and adopting different precautionary measures and new policies. In the same manner, mostly countries from developing Asia is also adopting suggested measures to face the virus outbreak significantly. Hence, authorities of different countries have organized certain task forces and suitable mechanism for coordination to retain a smooth response. ADB and DMCs intend to protect their natives and various restrictions have been imposed and regulated on travels and trying to make strong process for more screenings, isolation facilities, awareness and quick quarantine while suspecting infected people. Therefore, continuous efforts have been delivered to make the people aware to understand the nature of outbreak and convince them for staying at home. Thus, authorities of several economies are taking quick actions to improve their health facilities. It is become mandatory for government to arrange and supply medical equipment (or protective equipment) especially for frontline forces like doctors and paramedics.

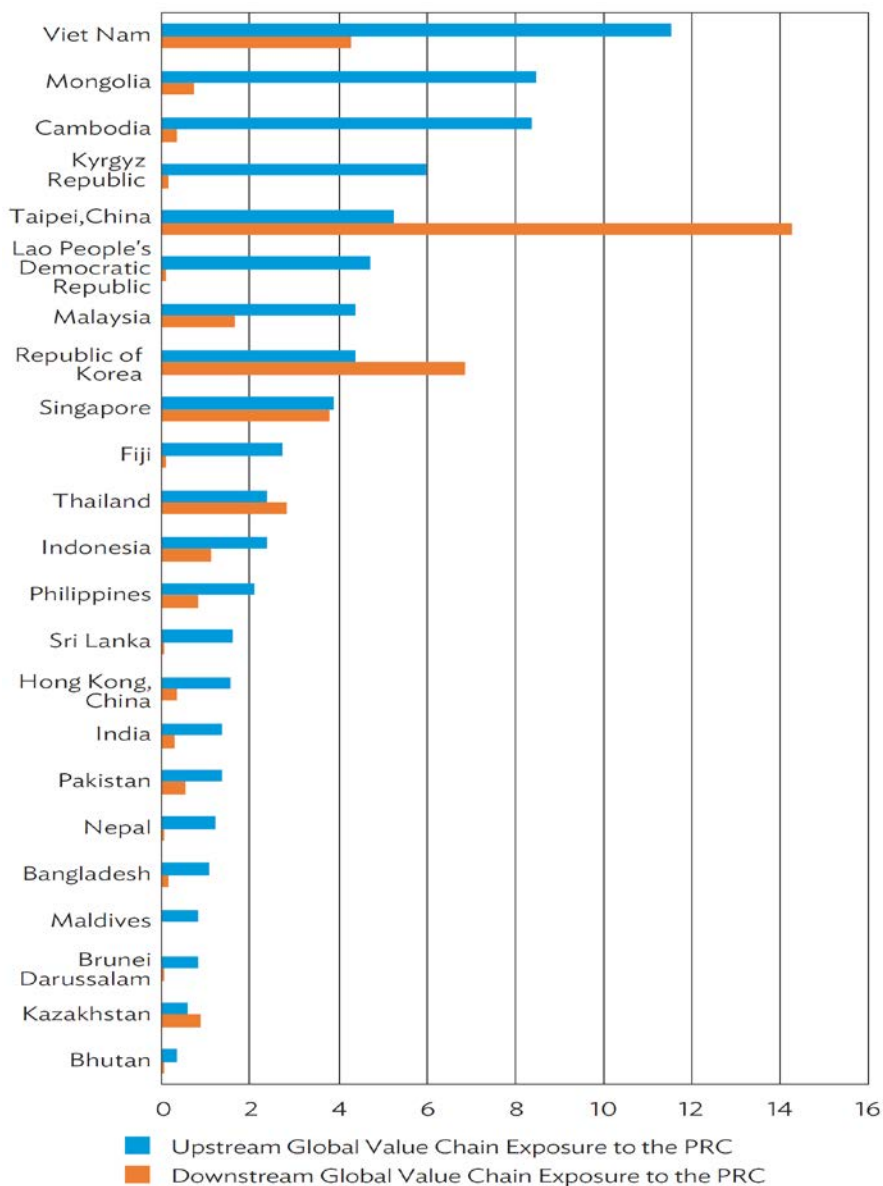




**Figure 8:** Exports to the People’s Republic of China by % of GDP, 2016-2018 average.  
Source: CEIC Data Company (accessed 10 February 2020).

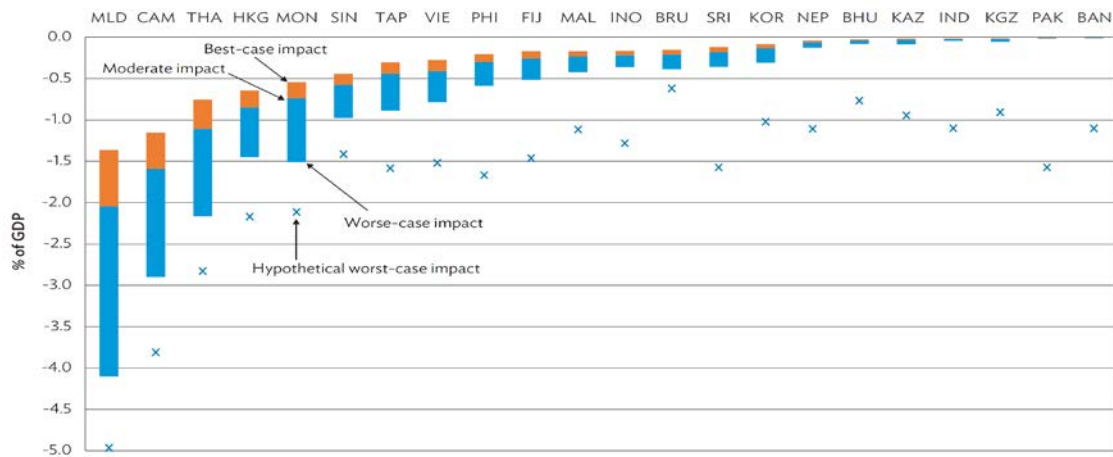
Economies are also working hard to increase the testing facility and building-up more laboratories. Thus, overcoming on these issues, few economies have already planned in their macroeconomic supportive policies. Interest-cuts are observed for several DMCs to support their fiscal measures and to make their economic cycle more smooth and ease. ADB’s continuous support contains financial and non-financial (like Knowledge and partnership). ADB has provided a technical assistance of 2b dollars to Chinese government to respond and detect nCov. ADB also granted 2m dollars of TA among other DMCs for supportive activities to fight with nCov. Moreover, ADB has reallocated the existing regional health projects by 469m dollars to respond nCov epidemic. ADB offered further assistance (when needed) to all DMS in terms of emergency loans, instruments, countercyclical programs etc. Moving towards *Knowledge* perspective, which brings the continual analysis of outbreak and taken as part of ADB’s work. ADB is in partnership with WHO and other international partners like scientist and viral disease experts. ADB is also working to build an advisory group who may continuously look after the mitigation and certain measures for controls and to make an imminent response strategy. Figure 8 contains the average export ratio as per GDP percentage from 2016-2018. On average percentage of GDP, Hong Kong, China made more than 80% of exports and Mongolia is about 44% of its export as per average GDP. Taipei is on third in line, showing 28% of GDP. Moreover, Pakistan had made minimum export to the PRC, showing 3% of GDP which is more than India and less than Azerbaijan.

The global value chain (GVC) describes the people and activities involved in the production of a good or service and its supply, distribution, and post-sales activities when activities must be coordinated across geographies. Figure 9, Taipei had a slowdown in upstream GVC and increased by its downward GVC, and, the case of Republic of Korea is same like Taipei, China. Moreover, Vietnam, Mongolia and other countries had higher upstream GVC exposure to PRC.



**Figure 9:** Global Value Chain (GVC) Exposure to the PRC, selected Economies, 2018.

From Figure 10, bars indicate the range of estimated impact, with the top of the bar indicating the best-case scenario impact, the midline indicating the moderate scenario impact, and the bottom of the bar indicating the worse-case scenario impact. The marker shows the economic impact of a hypothetical worst case scenario where a significant outbreak occurs in that economy. These should not be interpreted as a prediction that an outbreak will occur in any of these economies; in most of these economies there are very few cases of COVID-19. Rather, they are meant to guide policy makers in determining how costly an outbreak could be, so they can properly evaluate the benefits and costs of prevention and early response.



**Figure 10: Impact of COVID-19 on the GDP of Selected Economies**

(Sources: Asian Development Bank (ADB) calculations using data from ADB Multiregional Input–Output Table).

BAN = Bangladesh; BHU = Bhutan; BRU = Brunei Darussalam; CAM = Cambodia; FIJ = Fiji; HKG = Hong Kong, China; IND = India; INO = Indonesia; KAZ = Kazakhstan; KGZ = Kyrgyz Republic; LAO = Lao People’s Democratic Republic; MAL = Malaysia; MLD = Maldives; MON = Mongolia; NEP = Nepal; PAK = Pakistan; PHI = Philippines; ROK = Republic of Korea; SIN = Singapore; SRI = Sri Lanka; TAP = Taipei; THA = Thailand; VIE = Viet Nam.

Figure 10 elaborates the impact of COVID-19 on the GDP of Selected Economies. The impact is forecasted by ADB. The impact classified as best-case impact, moderate case impact, worse case impact, and hypothetical worst-case impact. The bottom fall of bar indicates that Maldives and Cambodia could be in the worst-case scenario. However, they have a few cases but they need to be prepared to get rid from the outbreak cost. Thailand has also predicted to have the impact best-case scenario, but, if not prepared so it could be fall into worst case scenario.

**Table 4: Decline in Tourism Revenues by Percentage of GDP among Asian Economies**  
(Source: ADB staff estimates).

Economy	Best case		Moderate case		Worse case	
	as % of GDP	in \$ millions	as % of GDP	in \$ millions	as % of GDP	in \$ millions
Palau	-2.918	-8.3	-4.376	-12.4	-8.753	-24.9
Maldives	-1.839	-98.0	-2.758	-147.0	-5.517	-293.9
Cambodia	-1.409	-345.7	-1.929	-473.4	-3.490	-856.5
Hong Kong, China	-0.906	-3,286.7	-1.178	-4,273.6	-1.995	-7,234.1
Thailand	-0.845	-4,265.8	-1.224	-6,180.2	-2.361	-11,923.5
Mongolia	-0.773	-101.0	-0.979	-127.9	-1.595	-208.4
Singapore	-0.739	-2,692.8	-0.941	-3,427.4	-1.546	-5,631.3
Viet Nam	-0.432	-1,059.2	-0.614	-1,504.6	-1.158	-2,840.6
Taipei,China	-0.340	-2,068.7	-0.455	-2,764.3	-0.798	-4,851.1
Philippines	-0.242	-801.4	-0.352	-1,164.4	-0.681	-2,253.6
Fiji	-0.209	-11.6	-0.314	-17.4	-0.627	-34.7
Vanuatu	-0.170	-1.6	-0.255	-2.3	-0.511	-4.7
Indonesia	-0.166	-1,730.5	-0.207	-2,155.9	-0.329	-3,432.1
Lao People’s Democratic Republic	-0.164	-29.5	-0.231	-41.5	-0.431	-77.4
Malaysia	-0.163	-584.3	-0.212	-762.0	-0.361	-1,295.0
Myanmar	-0.149	-106.3	-0.224	-159.4	-0.448	-318.8
Sri Lanka	-0.120	-106.5	-0.180	-159.7	-0.359	-319.4
People’s Republic of China	-0.112	-15,241.6	-0.149	-20,215.0	-0.258	-35,135.3
Federated States of Micronesia	-0.091	-30.3	-0.137	-45.5	-0.274	-91.0
Brunei Darussalam	-0.086	-11.7	-0.113	-15.3	-0.192	-26.1
Republic of Korea	-0.073	-1,184.5	-0.103	-1,671.7	-0.193	-3,133.3
Samoa	-0.068	-0.6	-0.102	-0.8	-0.205	-1.7
Solomon Islands	-0.047	-0.7	-0.071	-1.0	-0.141	-2.0
Tonga	-0.046	-0.2	-0.069	-0.3	-0.138	-0.6
Marshall Islands	-0.045	-0.1	-0.068	-0.1	-0.135	-0.3
Nepal	-0.033	-9.7	-0.050	-14.5	-0.100	-29.1
Timor–Leste	-0.021	-0.5	-0.032	-0.8	-0.064	-1.6
Armenia	-0.009	-1.2	-0.014	-1.8	-0.028	-3.5
Bhutan	-0.009	-0.2	-0.014	-0.4	-0.028	-0.7
Azerbaijan	-0.007	-3.4	-0.011	-5.1	-0.022	-10.3
Georgia	-0.007	-1.2	-0.010	-1.8	-0.021	-3.6
Tajikistan	-0.004	-0.3	-0.005	-0.4	-0.011	-0.8
Kyrgyz Republic	-0.003	-0.3	-0.005	-0.4	-0.010	-0.8
India	-0.003	-84.2	-0.005	-126.3	-0.009	-252.7
Kazakhstan	-0.001	-2.2	-0.002	-3.3	-0.004	-6.6
Bangladesh	-0.001	-3.1	-0.002	-4.7	-0.003	-9.4
Papua New Guinea	-0.000	-3.0	-0.000	-4.5	-0.000	-8.9

Table 4 elaborates the decline in tourism revenue among Asian economies. The specific decline in tourism receipt is estimated by percentage of GDP. Table 4 shows all Asian economies considering best case, moderate case, and worse case. It is observed that in all cases (best, moderate, and worse) the Asian economies have negatively shifted in terms of tourism revenue. Countries like PRC, Thailand, Maldives, and Singapore have high tourism receipts, thus, they sustained with a massive decline in tourism receipt.

## 6. CONCLUSION

In the wake of COVID-19 (Coronavirus) which is disclosed as world pandemic by the world health organization (WHO), mystified world economic system. In the very beginning, the damages came from this virus hits economic as well as health system of Wuhan City of PRC and now the outbreak has effected several economies. This study has reviewed the ongoing economic challenges and a massive slowdown among Asian developing economies (mainly for PRC). Firstly, it has reviewed that Asian developing economies indulged with investment decline and demand shock spillover which effected substantial economic channels like trade, travel, production and services. Secondly, it has reported different economic uncertainties and economic scenarios like best, moderate, and worse for PRC and other developing Asian economies. Thirdly, the essential role of ADB is reviewed with regard to financial and non-financial (Knowledge and Partnership) assistance provided among Asian developing economies.

## 7. DATA AND MATERIAL AVAILABILITY

This study data can be provided upon contacting the corresponding author.

## 8. REFERENCES

- Althus, C. 2014. Estimating the Reproduction Number of Ebola Virus (EBOV) during the 2014 Outbreak in West Africa. DOI: 10.1371/currents.outbreaks.91afb5e0f279e7f29e7056095255b288 .
- Brahmbhatt, M., and A. Dutta. 2008. On SARS Type Economic Effects During Infectious Disease Outbreaks. Washington DC: The World Bank. <https://elibrary.worldbank.org/doi/pdf/10.1596/1813-9450-4466>.
- Centers for Disease Control and Prevention (CDC). 2020. 2019-2020 U.S. Flu Season: Preliminary Burden Estimates. <http://www.cdc.gov/flu/about/burden/preliminary-in-season-estimates.htm>
- CDC. 2019. MERS Clinical Features. <http://www.cdc.gov/coronavirus/mers/clinical-features.html>.
- CDC. 2017. SARS Basics Fact Sheet. <http://www.cdc.gov/sars/about/fs-sars.html>
- Chang, D. et al. 2020. Epidemiologic and Clinical Characteristics of Novel Coronavirus Infections Involving 13 Patients outside Wuhan, China. JAMA. DOI: 10.1001/jama.2020.1623.
- Chen, N. et al. 2020. Epidemiological and Clinical Characteristics of 99 Cases of 2019 Novel Coronavirus Pneumonia in Wuhan, PRC: A Descriptive Study. Lancet. 395 (10223). 507-513.
- Heymann, D. L. and N. Shindo. 2020. COVID-19: What is Next for Public Health? Lancet. DOI: 10.1016/S0140-6736(20)30374-3.
- IMF. 2019. Direction of Trade Statistics. International Monetary Fund. <http://www.imf.org/en/Data> (accessed 10 February 2019).

- Noy, I., and S. Shields. 2019. The 2003 Severe Acute Respiratory Syndrome Epidemic: A Retroactive Examination of Economic Costs. ADB Economics Working Paper Series. No. 591. Manila: Asian Development Bank.
- Wang, C. et al. 2020. A Novel Coronavirus Outbreak of Global Concern. *Lancet*. 395(10223), 470-473.
- UNWTO. (2019). Guidelines for the Success in the Chinese Outbound Tourism Market. World Tourism Organization, Madrid. DOI: 10.18111/9789284421138.
- WHO. (2019). Coronavirus Disease (COVID-19) Situation Reports. World Health Organization <http://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports>
- WHO. 2003. Consensus document on the epidemiology of severe acute respiratory syndrome (SARS). <https://www.who.int/csr/sars/en/WHOconsensus.pdf>
- WHO. 2020a. Middle East Respiratory Syndrome. <http://www.emro.who.int/health-topics/mers-cov/mersoutbreaks.html>.
- WHO. 2020b. Ebola Virus Disease. <http://www.who.int/news-room/fact-sheets/detail/ebola-virus-disease>.
- Wu, J. T., K. Leung, and G. M. Leung. 2020. Nowcasting and Forecasting the Potential Domestic and International Spread of the COVID-19 Outbreak Originating in Wuhan, China: A Modelling Study. *The Lancet*. [https://doi.org/10.1016/S0140-6736\(20\)30260-9](https://doi.org/10.1016/S0140-6736(20)30260-9).
- Wu, Z. and J. McGoogan. 2020. Characteristics of and Important Lessons from the Coronavirus Disease 2019 (COVID-19) Outbreak in China: Summary of a Report of 72,314 Cases from the Chinese Center for Disease Control and Prevention. *JAMA*. 395 (10225). 689–697.



Sarfaraz Ahmed Bhutto is a PhD Scholar at institute of commerce, Shah Abdul Latif University, Khairpur, Sindh, Pakistan. He earned an M.Phil (Finance) from the same university. His core research area has been remained with Corporate Finance, Investments, Financial Markets and Economics. He is an Assistant Professor (Full Time) at Dadabhoj Institute of Higher Education, Pakistan and also works at The Shaikh Ayaz University, Shikarpur, Pakistan as a visiting faculty.



Saifullah is a PhD Scholar (Commerce). He is an Assistant Professor (Full Time) at Shah Abdul Latif University Khairpur, Sindh, Pakistan. Shaikh got his M.Phil from SALU Pakistan. His main research interest is in the field of human resource management (HRM)



Ashraf is a PhD scholar at institute of Commerce, Shah Abdul Latif University Khairpur, Sindh, Pakistan. He got an M.Phil (HRM) from University of Karachi, Pakistan. He is an Assistant Professor (Visiting Faculty) at Indus University Karachi, Pakistan. His core research area is HRM.



Dr. Hussain Amar is a Lecturer at Government Islamia Arts & Commerce Government Sukkur, Pakistan. He got his PhD (Commerce) from Institute of Commerce, Shah Abdul Latif University Khairpur, Sindh, Pakistan. He is also a visiting faculty at Dadabhoj Institute of Higher Education. Human resource management is his core research interest. He can be reached at amarjumani88@gmail.com