

## Return of the Facemask Monopoly System in Taiwan to Tackle the COVID-19 Challenge: Is It Successful?

Anton Ming-Zhi Gao<sup>\*</sup>, Yunchang Jeffrey Bor<sup>\*\*</sup>, Jong-Shun Chen<sup>\*\*\*</sup>, Kuan-Chuan Tsou<sup>\*\*\*\*</sup>

**Abstract.** With the global outbreak of coronavirus disease in early 2020, authorities in every country advocated wearing facemasks to control the spread of the virus. However, a shortage of facemasks hit Europe, the US, and Asia. Using facemasks in Taiwan—with a 23-million population, and fewer confirmed cases than in other countries, is common. The export ban, a name-based rationing system, and particularly the facemask monopoly scheme, was responsible for maintaining Taiwan’s relatively modest supply of facemasks in early February 2020. Taiwan also used this opportunity to establish a national industry, producing facemasks during an economic downturn. This study uses document analysis to examine the historical development of this facemask monopoly scheme and conducts an in-depth critical review of such schemes using an interdisciplinary approach. The key research question is whether such a facemask monopoly scheme is better than the free market regime worldwide in dealing with such a facemask shortage.

**Keywords:** *Facemask Expropriation, Name-based Rationing System, Legal Monopoly, COVID-19*

### 1. Introduction

By 5 October 2021 the world had over 235 million confirmed cases of coronavirus disease 2019 (COVID-19).<sup>1</sup> Most countries have adopted unprecedented measures to tackle the pandemic, such as stay-at-home, maintaining social distance,

and mandatory wearing of facemasks in public.<sup>2</sup> It would have been difficult to imagine a civilised city locked down to prevent the virus from spreading, as in the pandemic movies.<sup>3</sup> Facemasks are one of the most effective ways to control the spread of the virus.<sup>4</sup> However, because the pandemic had a significant impact on China, the

<sup>\*</sup> Institute of Law for Science and Technology, National Tsing Hua University 101, Section 2, Kuang-Fu Road, Hsinchu 30013, Taiwan, ROC. (Email: antongao@mx.nthu.edu.tw).

<sup>\*\*</sup> Head of the Department of Economics, Chinese Culture University (CCU), Taipei, Taiwan Professor in the Department of Economics, and the Department of Natural Resources, CCU. Hwa-Kang Road, Yang-Ming-Shan, Taipei 11114, Taiwan.

<sup>\*\*\*</sup> Chung-Hua Institution for Economic Research, 75 Chang-Hsing St., Taipei, Taiwan 106, R.O.C.

<sup>\*\*\*\*</sup> MD, National Taiwan University College of Medicine Graduate Institute of Clinical Medicine, No. 7, Chung-Shan South Road, Taipei, Taiwan; Department of Surgery, Taipei City Hospital, Zhongxiao Branch, No.145, Zhengzhou Rd., Datong Dist., Taipei, Taiwan.

*Acknowledgements.* The authors would like to thank the Ministry of Science and Technology Taiwan for project funding support (project number: 109-2410-H-007 -038 -MY2). An early draft of this article was accepted and presented at the 2020 Management and Medical Sciences Interdisciplinary Conference (30 October –1 November 2020), organised by NTU

Management Review, College of Management, National Taiwan University.

<sup>1</sup> L Hurst, ‘Coronavirus: More than 13 million cases confirmed worldwide’ (*Euro News*, 14 July 2020) <<https://www.euronews.com/2020/07/13/coronavirus-who-reports-record-daily-increase-globally-of-over-230-000-cases>> accessed 15 October 2021; WHO, ‘Coronavirus (COVID-19) Dashboard’ (*World Health Organization*, 2021) <<https://covid19.who.int/>> accessed 15 October 2021.

<sup>2</sup> Enrico Lavezzo and others, ‘Suppression of a SARS-CoV-2 outbreak in the Italian municipality of Vo’ (2020) 584 *Nature* 425–429.

<sup>3</sup> Siyue Li, Bo Feng, Wang Liao and Wenjing Pan, ‘Internet use, risk awareness, and demographic characteristics associated with engagement in preventive behaviors and testing: cross-sectional survey on COVID-19 in the United States’, (2020) 26 *JMIR e19782* (*National Library of Medicine*, 16 June 2020) <<https://pubmed.ncbi.nlm.nih.gov/32501801/>> accessed 15 October 2021.

<sup>4</sup> William Tse and others, ‘Evidence to support wearing masks is helpful during the COVID-19 pandemic’, (2020) OSF Preprints.

primary global supplier of facemasks,<sup>5</sup> there was a shortage of facemasks in Europe, the US, and Asia, as the virus spread.<sup>6</sup> Many countries began adopting facemask rationing measures; most commonly, this took the form of price control.<sup>7</sup>

Taiwan, with a population of 23 million, has been successful in avoiding widespread cases, with only 938 confirmed cases and nine deaths, as of 7 April 2021.<sup>8</sup> Even after the large-scale outbreak in mid-May, only 16,262 confirmed cases were identified by 5 October 2021.<sup>9</sup> Such success is because of the wide use of facemasks.<sup>10</sup> Even before the panic-buying spree in March 2020, Taiwan had secured its facemask supplies through an export ban, a name-based rationing system, on the Made in Taiwan (MIT) facemasks in early February 2020, and the centralised monopoly scheme to control the price and quota.<sup>11</sup> The Taiwanese government utilised this opportunity to establish a national

facemask production team and industry during a time of economic decline.<sup>12</sup> The stable supply of facemasks is a key factor for Taiwan in combating COVID-19.<sup>13</sup> Taiwan's success in preventing COVID-19 spread is because to two keys: masks and medical care<sup>14</sup>

Much of the literature approaches Taiwan's experience from a public health perspective,<sup>15</sup> particularly how wearing facemasks and their stable supply in Taiwan, a non-World Health Organisation (WHO) member, contributed to the lower number of confirmed cases.<sup>16</sup> Most existing studies approach mask-wearing from a general design of the name-based distribution scheme and its role in avoiding virus spreading.<sup>17</sup> These often ignore the economic aspects of the facemask monopoly scheme in Taiwan, prompting the present study. Most studies appraise the success of such a regime, but do not provide a balanced review

<sup>5</sup> Cyn-Young Park and others, 'Global shortage of personal protective equipment amid COVID-19: supply chains, bottlenecks, and policy implications', (*Asian Development Bank*, 2020) <<https://www.adb.org/publications/shortage-ppe-covid-19-supply-chains-bottlenecks-policy>> accessed 15 October 2021.

<sup>6</sup> Julii Suzanne Brainard and others, 'Facemasks and similar barriers to prevent respiratory illness such as COVID-19: A rapid systematic review' (*medRxiv*, 06 April 2020) <<https://www.medrxiv.org/content/10.1101/2020.04.01.20049528v1>> accessed 15 October 2021.

<sup>7</sup> Victor Cha, 'Asia's COVID-19 Lessons for the West: public goods, privacy, and social tagging' (*Taylor and Francis Online*, 16 June 2020) WQ 1–18 <<https://www.tandfonline.com/doi/full/10.1080/0163660X.2020.1770959>> accessed 15 October 2021.

<sup>8</sup> Taiwan Centers for Disease Control, 'COVID-19 (SARS-CoV-2 Infection)' (*Taiwan Centers for Disease Control*, 2021) <<https://www.cdc.gov.tw/En>> accessed 7 April 2021.

<sup>9</sup> *Ibidem*.

<sup>10</sup> Wen-Ta Chiu, Ronald P Laporte, and Jonathan Wu, 'Determinants of Taiwan's early containment of COVID-19 incidence' (*American Journal of Public Health*, 2020) 110 *AJPH* 943–944 <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7287555/>> accessed 7 April 2021.

<sup>11</sup> Chih-Yu Chin, and others, 'How Taiwan, a non-WHO member, takes actions in response to COVID-19' (*Journal of Global Health*, 17 June 2020) 10 *JGH* <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7307800/>> accessed 7 April 2021; Lung Wang, 'Why do you wear a face mask? Taiwanese public epidemic awareness of COVID-19 from social media behavior' (*Research Square*, 13 April 2020) <<https://www.researchsquare.com/article/rs-21186/v1>> accessed 15 October 2021.

<sup>12</sup> Ministry of Economic Affairs Bureau of Foreign Trade, 'Taiwan will become the 2nd largest producer of surgical masks' (*Ministry of Economic Affairs Bureau of Foreign Trade*, 13 March 2020)

<<https://www.trade.gov.tw/English/Pages/Detail.aspx?nodeID=855&pid=689849>> accessed 18 February 2021.

<sup>13</sup> Sheng-Fang Su and Yueh-Ying Han, 'How Taiwan, a non-WHO member, takes actions in response to COVID-19', (2020) 10 *JGH*.

<sup>14</sup> Vincent Yi-Fong Su, and others 'Masks and medical care: Two keys to Taiwan's success in preventing COVID-19 spread', (*Elsevier Public Health Emergency Collection*, 04 June 2020) *TMID* 101780 <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7270822/>> accessed 18 February 2021.

<sup>15</sup> Irving Yi-Feng Huang, 'Fighting against COVID-19 through government initiatives and collaborative governance: Taiwan experience' (*Public Administration Review*, 22 May 2020) 80 *PAR* 665 <<https://pubmed.ncbi.nlm.nih.gov/32836446/>> accessed 15 October 2021.

<sup>16</sup> Frank Bickenbach and Wah-sin Liu, 'How Taiwan and South Korea contained the spread of COVID-19 and why this matters for attracting FDI' (*Kiel Policy Briefs*, May 2020) <<https://www.ifw-kiel.de/publications/kiel-policy-briefs/2020/how-taiwan-and-south-korea-contained-the-spread-of-covid-19-and-why-this-matters-for-attracting-fdi-14581/>> accessed 15 October 2021.

<sup>17</sup> Tsung-Ling Lee, 'Legal preparedness as part of COVID-19 response: the first 100 days in Taiwan' (*BMJ Global Health*, 2020) e002608 <<https://pubmed.ncbi.nlm.nih.gov/32434776/>> accessed 15 October 2021; Lin Ching-Fu, Chien-Huei Wu, and Chuan-Feng Wu, 'Reimagining the administrative state in times of global health crisis: an anatomy of Taiwan's regulatory actions in response to the COVID-19 pandemic' (*European Journal of Risk Regulation*, 2020) 11 *EJRR* 256 <<https://www.cambridge.org/core/journals/european-journal-of-risk-regulation/article/reimagining-the-administrative-state-in-times-of-global-health-crisis-an-anatomy-of-taiwans-regulatory-actions-in-response-to-the-covid-19-pandemic/A279AD25F9F98A3C964F6E6134229C00>> accessed 15 October 2021.

of this scheme. This study attempts to answer whether such a scheme is better than other schemes in dealing with the supply crisis of facemasks from February to April 2020.

This study summarises the historical development of the facemask monopoly scheme in Taiwan and conducts an in-depth critical review of this scheme, particularly examining the lessons learned. It aims to provide a balanced thinking approach to evaluating Taiwan's facemask monopoly scheme.

For this purpose, this article first outlines the facemask monopoly scheme in Taiwan. Next, it investigates the economics, human rights, and legal issues during implementation. Our preliminary finding is that such a unique scheme relying on MIT facemasks alone and a lack of price signals to encourage market supply may not alleviate Taiwan's facemask shortage situation. A free-market model may prove its success, even in such an urgency.

## 2. Evolution of the Facemask Monopoly System in Taiwan

### 2.1. Severe Acute Respiratory Syndrome (SARS) Crisis in 2003

SARS is a viral respiratory illness caused by the coronavirus acute respiratory syndrome coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. The illness spread to over two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003.<sup>18</sup>

The facemask monopoly scheme originated in the facemask expropriation scheme during the shortage of facemasks in the SARS crisis in 2003.<sup>19</sup> To provide facemasks for medical staff, the

Industrial Development Bureau of the Ministry of Economic Affairs launched the first wave of expropriation of four medical facemask companies from 6 May to 10 May 2003. The expropriation included 1.2 million facemasks of the N95 and disposable types, priced at 25 NTD/piece (N95) and 3 NTD/piece (disposable), respectively.<sup>20</sup> In addition to local production measures, the Centers for Disease Control (CDC) announced the expropriation of facemask imports without goods declaration on 14 May 2003; two days later, they expropriated 201,000 facemasks (mainly non-N95) for medical staff. Finally, unsold N95 facemasks in local warehouses were released for medical use.<sup>21</sup> Following a similar scheme during the COVID-19 pandemic, the government expropriated 4.55 million N95 and 15.98 million non-N95 facemasks.<sup>22</sup>

The slow expropriation process led to widespread criticism from the medical sector and the resignation of the Minister of Health.<sup>23</sup> To facilitate and legalise the expropriation process, Article 53 was added to the Communicable Disease Control Act to confer power on the central government to expropriate or requisite private land, products, buildings, devices, facilities, pharmaceuticals, and medical devices for disease control practices, facilities for the treatment of contamination, and transportation means for disease control.<sup>24</sup> At the time of the outbreak of COVID-19, a similar clause was provided in Article 54 of the Communicable Disease Control Act of 2019.<sup>25</sup> However, until early 2020, this clause was never used.

### 2.2. Early January 2020

Before the Wuhan City lockdown on 23 January 2020,<sup>26</sup> the prices and supply of facemasks were modest. For instance, a 50-piece box cost 150 NTD

<sup>18</sup> Centres for Disease Control, 'Severe acute respiratory syndrome (SARS)' (CDC, 6 December 2017) <<https://www.cdc.gov/sars/index.html>> accessed 15 October 2021.

<sup>19</sup> Yu-Chen Hsu, and others, 'Risk and outbreak communication: lessons from Taiwan's experiences in the Post-SARS era' (Health Security, 2017) 15, 165 <<https://pubmed.ncbi.nlm.nih.gov/28418746/>> accessed 15 October 2021.

<sup>20</sup> Legislative Yuan Republic of China (Taiwan), 'Four dollar price difference after recruiting mask factories! Cho, Po-Yuan, member of Legislative Yuan, asked Control Yuan to investigate' (*Legislative Yuan Republic of China*, 22 May 2003) <<https://www.ly.gov.tw/Pages/Detail.aspx?nodeid=5476&pid=46481>> accessed 18 February 2021.

<sup>21</sup> Su, S-I I., Liou, D-M., Shih, T-Y., Lee, L-H., Peng, Y-J., Pan, M-L, 'Study on rational inventory level and the supply chain model of national material stocks for the infectious disease with focus on personal

protection equipments' (*Soochow University Department of Business Administration*, 2006) <https://www.cdc.gov.tw/uploads/files/3ac8da6d-9b11-4381-9e7d-52f35b9356ca.pdf>> accessed 18 February 2021.

<sup>22</sup> The Storm Media (2020), 'Where is the production capacity? SARS made factories coming back to Taiwan for expansion Covid-19 period happens masks shortage again' (*The Storm Media*, 7 February 2020) <<https://www.storm.mg/article/2260945>> accessed 15 October 2021.

<sup>23</sup> The Storm Media, 'Where is the production capacity? SARS made factories coming back to Taiwan for expansion Covid-19 period happens masks shortage again' (*The Storm Media*, 7 February 2020) <<https://www.storm.mg/article/2260945>> accessed 15 October 2021.

<sup>24</sup> Communicable Disease Control Act 2004, s. #.

<sup>25</sup> Communicable Disease Control Act 2019, s. #.

<sup>26</sup> Lily Kuo, 'Coronavirus: panic and anger in Wuhan as China orders city into lockdown'

on 17 December 2020.<sup>27</sup> The price on 4 January was 109 NTD.<sup>28</sup> Therefore, the price ranged from 1 to 3 NTD per piece, depending on the selling channel. However, with government intervention, a sudden change occurred in supply, demand, and prices.

### 2.3. Facemask Version 1.0 Since 2 February 2020

The Taiwanese government banned the export of surgical masks on 24 January 2020 three days after it confirmed the first COVID-19 case in Taiwan, causing a surge in domestic demand. One week later, it required all facemask factories to control the distribution and output, as panic buying began after more cases were reported.<sup>29</sup> Facing a global supply shortage during the outbreak, the government began collaborating with 30 Taiwanese machinery and automation companies as a national team. Such a team effectively reduced the production cycle of mask equipment from two months to one week and increased production to meet domestic demand.

Taiwan became the second-largest global producer of surgical masks because of these measures.<sup>30</sup>

The centralised facemask monopoly scheme has been in operation since January 2020. All local facemask manufacturers were required to provide and sell all of their facemasks to the government under Article 54 of the Communicable Disease Control Act of 2019. The Special Act for Prevention, Relief and Revitalisation Measures for Severe Pneumonia with Novel Pathogens of 2020 passed

by the parliament and published on 25 February 2020 endorses such provisions by providing an extra and similar legal basis in its Article 5:<sup>31</sup>

‘To produce disease prevention supplies specified in Paragraph 1, Article 54 of the Communicable Disease Control Act, where necessary, government authorities on all levels may, based on instructions of the Commander of the Central Epidemic Command Center, expropriate or requisition required production equipment and raw materials and provide appropriate compensation.’

Initially, the government ordered convenience stores to sell facemasks at eight NTDs per piece between 28 January and 30, 2020. The public could purchase three masks every three consecutive days.<sup>32</sup> However, after the Lunar New Year vacation, a new scheme came into play. From 2 February all facemask purchases became name-based.<sup>33</sup> Only 6,505 pharmacies and drugstores that contracted with the National Health Insurance (NHI) could sell MIT facemasks.

The government banned other original primary suppliers before launching Facemask Version 1, such as convenience stores/cosmeceuticals and e-commerce platforms, except for local district public health centres.

The price was subsequently reduced to five NTDs.<sup>34</sup> Under this name-based regime, wherein identification of the buyers’ identity and quota is necessary, presenting the NHI card became mandatory. Office workers and those with disabilities or children could ask their family members/friends to purchase on their behalf.<sup>35</sup>

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(*The Guardian*, 23 January 2020). <<https://www.theguardian.com/world/2020/jan/23/coronavirus-panic-and-anger-in-wuhan-as-china-orders-city-into-lockdown>> accessed 18 February 2021.

<sup>27</sup> Line Shopping, ‘Blue Eagle Mask’ (*Line Shopping*, 2020) <<https://buy.line.me/s/%E8%97%8D%E9%B7%B9%E7%89%8C%20%E5%8F%A3%E7%BD%A9>> accessed 18 February 2021.

<sup>28</sup> 9x9 Stationery, ‘Let-Green Bacterial Filtration Face Mask’ (9x9 Stationery, 2020) <[https://www.9x9.tw/m/mod/product/index.php?REQUEST\\_ID=55a65ce32a0f9d7015e5755b7e11e3b5ce4a80426f475eb1a94f34c378b77a19](https://www.9x9.tw/m/mod/product/index.php?REQUEST_ID=55a65ce32a0f9d7015e5755b7e11e3b5ce4a80426f475eb1a94f34c378b77a19)> accessed 15 October 2021.

<sup>29</sup> Focus Taiwan, ‘Taiwan’s ban on mask exports to be extended until end of June’ (*Focus Taiwan*, 13 April 2020) <<https://focustaiwan.tw/society/202004130017>> accessed 18 February 2021.

<sup>30</sup> Ministry of Economic Affairs Bureau of Foreign Trade, ‘Taiwan will become the 2nd largest producer of surgical masks’, (*Ministry of Economic Affairs Bureau of Foreign Trade*, 13 March 2020) <<https://www.trade.gov.tw/English/Pages/Detail.aspx?nodeID=855&pid=689849>> accessed 18 February 2021.

<sup>31</sup> Special Act for Prevention, Relief and Revitalization Measures for Severe Pneumonia with Novel Pathogens 2020, s. 5.

<sup>32</sup> Global News for New immigrants, ‘Government and enterprises ensure enough face mask supply in convenience stores’, (*Immigration.gov*, 30 January 2020) <<https://news.immigration.gov.tw/PH/NewsTopic.aspx?NEWSGUID=8b7cd9c1-ee51-493e-ab74-8b9ce3af73bc>> accessed 15 October 2021.

<sup>33</sup> Keoni Everington, ‘Taiwan’s new mask-rationing system kicks in on Thursday’ (*Taiwan News*, 4 February 2020). <<https://www.taiwannews.com.tw/en/news/3870428>> accessed 15 October 2021.

<sup>34</sup> Lee I-chia, Liang Hsiao Tung, and Lin Liang-Sheng, ‘Virus outbreak: NHI cards required to purchase masks’ (*Taipei Times*, 4 February 2020) <<http://www.taipetimes.com/News/front/archives/2020/02/04/2003730320>>-accessed-15-October-2021.

<sup>35</sup> Taiwan Centers for Disease Control, ‘Name-based rationing system for purchases of masks to be launched on February 6; public to buy masks with their (NHI) cards’, (*Taiwan Centers for Disease Control*, 4 February 2020) <<https://>

The government also softened the strict import rules for medical devices, including surgical facemasks and forehead thermometers, owing to supply needs. On 3 February 2020 the Customs Administration temporarily lifted Taiwan's restrictions on surgical mask imports. Before 30 April citizens could import a maximum of 1,000 pieces for self-use, requiring no medical license.<sup>36</sup> This privatisation was extended to the end of June 2020.<sup>37</sup> However, there was no such privilege.

Despite the above measures, citizens waited in lines to purchase quotas at each pharmacy every day or found that the pharmacies had sold out.<sup>38</sup> However, this was a common global scenario. In February 2020, thousands of people were caught on film queuing to buy facemasks in South Korea.<sup>39</sup>

Finally, facemask pricing in late January and early February 2020 draws a focus. As there was no global panic buying, it was unclear why the price under the monopoly scheme increased from 1 to 3 NTD to 8 NTD, before reducing it to 5 NTD per piece.

Thus far, the government has not provided a clear pricing formula.

## 2.4. Facemask Version 2 From 12 March 2020

To distribute facemasks more efficiently and avoid queuing, a new online mask-rationing system began taking pre-orders on 12 March.<sup>40</sup> To use the online ordering system, consumers need access to a card

reader or download the NHIA app.<sup>41</sup> Since 12 March customers have had two options to reserve facemasks online. One way is to pre-order facemasks through the e-Mask website. To do so, one must register first with the NHI card and set a password, and mobile number verification is mandatory. Another option is to download the NHI Express app and complete binding within the device.<sup>42</sup> Those unable to complete the registration process can request support from the NHI Administration.<sup>43</sup>

Those who successfully order facemasks online will receive a payment notification with instructions to complete the payment. Afterwards, customers can pick them up at convenience stores with their NHI card or proof of purchase certificate. Orders that are not picked up within a certain period are cancelled. During the trial period, only adult facemasks were available, with each adult eligible for three facemasks every week. The consumer submitting the order must pay an additional delivery fee for seven NTDs.

Despite the new online purchase methods, consumers prefer to purchase masks in pharmacies. Nearly 1.8 million people in Taiwan ordered online during the first round.<sup>44</sup> This figure seems low for a population of 23 million people. The red tape registration discouraged older and even middle-aged consumers from using the system.<sup>45</sup> Therefore, buyers wait in long lines from March to

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[www.cdc.gov.tw/En/Bulletin/Detail/ZlJrIunqRjM49LIBn8p6eA?typeid=158](http://www.cdc.gov.tw/En/Bulletin/Detail/ZlJrIunqRjM49LIBn8p6eA?typeid=158) accessed 15 October 2021.

<sup>36</sup> Customs Administration, Ministry of Finance. (2020b), 'COVID-19 Custom Regulations' (Customs Administration, 4 June 2020) <<https://web.customs.gov.tw/cp.aspx?n=8FBEOEFF7E281849&s=C60A755346B658C5>> accessed 15 October 2021.

<sup>37</sup> Taiwan CDC, 2020. Extra Information on the Customs Administration, Ministry of Finance is available here: <<https://www.cdc.gov.tw/Category/QAPage/fAjRRRm9w2HwmtbonLjoYA>> accessed 15 October 2021.

<sup>38</sup> W Yen and HY Lee, 'Difficulty buying face masks extends to foreign community' (*Focus Taiwan*, 7 February 2020) <<https://www7.focustaiwan.tw/society/202002070020>> accessed 15 October 2021.

<sup>39</sup> Chris Pleasance, 'Thousands of people queue to buy face masks in astonishing drone footage from South Korea as the country is gripped by coronavirus outbreak' (*Mail Online*, 24 February 2020) <<https://www.dailymail.co.uk/news/article-8037595/Coronavirus-Thousands-queue-buy-face-masks-South-Korea.html>> accessed 15 October 2021.

<sup>40</sup> Keoni Everington, 'Taiwan's online mask-rationing system to take pre-orders

Thursday' (*Taiwan News*, 10 March 2020) <<https://www.taiwannews.com.tw/en/news/3894393>> accessed 15 October 2021.

<sup>41</sup> National Health Insurance Administration-Ministry of Health and Welfare, 'Name-Based Mask Distribution System (Start from 3/12)' (*National Health Insurance Administration- Ministry of Health and Welfare*, 7 April 2020) <[https://www.nhi.gov.tw/english/Content\\_List.aspx?n=022B9D97EF66C076](https://www.nhi.gov.tw/english/Content_List.aspx?n=022B9D97EF66C076)> accessed 15 October 2021.

<sup>42</sup> Vivian Hsiao, 'Taiwan new face masks registration system goes online' (*The China Post*, 11 March 2020) <<https://chinapost.nownews.com/20200311-1092371>> accessed 15 October 2021.

<sup>43</sup> Taiwan Centers for Disease Control, 'Online ordering mechanism to be added to the name-based rationing system for face masks on March 12' (*Taiwan Centers for Disease Control*, 10 March 2020) <[https://www.cdc.gov.tw/En/Bulletin/Detail/IHbdHSeA0j\\_P4rtnJcgT2g?typeid=158](https://www.cdc.gov.tw/En/Bulletin/Detail/IHbdHSeA0j_P4rtnJcgT2g?typeid=158)> accessed 15 October 2021.

<sup>44</sup> WT Chen, C-W Hsu, L. Ko, , 'Second round of online ordering of face masks to begin Wednesday' (*Focus Taiwan*, 23 March 2020) <<https://oia.ncku.edu.tw/p/406-1032-205611,r2888.php?Lang=en>> accessed 15 October 2021.

<sup>45</sup> Taipei Times, 'Mask system has left some behind' (*Taipei Times*, 16 April 2020)

mid-April.<sup>46</sup> The heavy workload on pharmacists, including unpacking and packing facemasks, forced hundreds of pharmacies to withdraw from selling facemasks.<sup>47</sup>

It is important to compare Taiwan's situation with that of the neighbouring countries/regions which did not implement a monopoly scheme and relied on the free market. Unlike the shortage of supply and high prices in neighbouring regions, supply increased in late February, for example, in Hong Kong.<sup>48</sup> Prices were reduced from 2,000 NTD/per 50 pcs in early February to 1,000 NTD/per 50 pcs on 20 February. The price was further reduced to 500 NTD/per 50% in mid-April.<sup>49</sup> China has already faced oversupply in late March.<sup>50</sup> In the first five months of 2020, 70,802 new companies registered in China to make or trade facemasks, a 1,56% increase in 2019, and 7,296 new companies registered to make or trade meltblown fabric, a key component of facemasks, a 2,277% increase from 2019.<sup>51</sup> Therefore, despite the absence of a facemask monopoly scheme such as Taiwan, consumers in Hong Kong and China could already buy boxes of facemasks online, without queuing or rationing.

## 2.5. Facemask Version 3 From 22 April

The third version of the facemasks scheme began on 22 April by adding the important function of completing pre-orders in convenience stores, while still providing previous purchase methods. Consumers could place pre-orders at convenience stores for their bi-weekly rations.<sup>52</sup> Those with NHI cards could bring their cards to the kiosk machine at a convenience store, select the epidemic prevention campaign logo on the screen, insert the card, and fill in their order information. A consumer can buy nine adult or ten children's masks each time.<sup>53</sup> They could then take the printed invoice for payment at the store counter. When ready for collection, consumers can pick their masks from the same store.<sup>54</sup>

The long lines before the pharmacies finally disappeared as it became convenient to order facemasks from kiosk machines. However, despite the relatively stable supply of facemasks, the timeline for lifting the export ban or ending the monopoly scheme remained uncertain. The government announced its original July schedule in mid-May.<sup>55</sup> The schedule was then moved to 1 June 2020.<sup>56</sup> Table 1 illustrates the evolution of the facemask monopoly scheme in Taiwan.

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<<https://www.taipeitimes.com/News/editorials/archive/s/2020/04/16/2003734692>> accessed 15 October 2021.

<sup>46</sup> A Wang, 'People wait in a long line to buy face masks in order to protect themselves from the coronavirus disease (COVID-19), outside a pharmacy in Taipei, Taiwan' (*The Star*, 17 March 2020) <<https://www.thestar.com.my/news/world/2020/03/24/taiwan039s-coronavirus-cases-top-200-for-first-time>> accessed 15 October 2021.

<sup>47</sup> United Daily News, 2020 'No worries about 300 pharmacies opting out' (*UpMedia*, 19 April 2020) <[https://www.upmedia.mg/news\\_info.php?SerialNo=85674](https://www.upmedia.mg/news_info.php?SerialNo=85674)> accessed 15 October 2021.

<sup>48</sup> TOPick, 'Increasing mask supply Declining mask price: Price dropped 50% for 50-mask in-box' (*TOPick*, 20 February 2020) <<https://topick.hket.com/article/2570064/>> accessed 15 October 2021.

<sup>49</sup> Nextmagazine, HKTVMall. 'Oxyair Mask Hong-Kong made mask pre-sell' (*Nextmagazine*, *HKTVMall*, 9 April 2020) <[https://hk.nextmgz.com/article/2\\_72391\\_1\\_0](https://hk.nextmgz.com/article/2_72391_1_0)> accessed 15 October 2021.

<sup>50</sup> CNA, 'The light and thickness of mask Command Center: General medical ones are also available', (*CNA*, 1 March 2020) <<https://www.cna.com.tw/news/firstnews/202003010153.aspx>> accessed 15 October 2021.

<sup>51</sup> C Zhou, 'South China Morning Post. Coronavirus: wheels come off China's mask-making gravy train, as low-end manufacturers count their losses' (*SCMP*, 12

June 2020) <<https://www.scmp.com/economy/china-economy/article/3088810/coronavirus-wheels-come-china-as-mask-making-gravy-train-low>> accessed 15 October 2021.

<sup>52</sup> Global News for New Immigrants, 'Masks can be ordered at Taiwan convenience stores starting today' (*Immigration.gov*, 23 April 2020) <<https://news.immigration.gov.tw/PH/NewsPost.aspx?NEWSGUID=5911aeca-3b55-4269-8c0e-7fc48db1b0de>> accessed 15 October 2021.

<sup>53</sup> Keoni Everington, 'Masks can be ordered at Taiwan convenience stores starting today' (*Taiwan News*, 22 April 2020) <<https://www.taiwannews.com.tw/en/news/3920951>> accessed 15 October 2021.

<sup>54</sup> National Chiao Tung University, 'Name Based Mask Distribution System 3.0' (*National Chiao Tung University*, 8 May 2020) <<https://www.nctu.edu.tw/article/covid/7475>> accessed 15 October 2021.

<sup>55</sup> Sanlih E-Television. 'Loosening mask restriction? Chen: The fastest time to open to selling and export will be before the end of July' (*Sanlih E-Television*, 16 May 2020) <<https://www.setn.com/News.aspx?NewsID=743845>> accessed 15 October 2021.

<sup>56</sup> Broadcasting Corporation of China. 'Lifting ban on mask export on June 1<sup>st</sup> Name-Based System continues' (*BCC*, 26 May 2020) <<http://www.bcc.com.tw/newsView.4216875>> accessed 15 October 2021.

**Table 1: Evolution of facemask monopoly scheme in Taiwan**

	Version 1	Version 2	Version 3
Start date	2 February	12 March	22 April – 31 May
Channels added to buy	<b>Pharmacies, drugstores, district health centers</b>	<b>Pharmacies, drugstores, district health centers</b>	Pharmacies, drugstores, district health centers
		eMask, NHI App	<b>eMask, NHI App</b> <b>Convenience stores (insert NHI card)</b>
Purchase date regulation	Yes	Yes, until 30 March	No
Pre-Order	No	Yes	Yes
Quota	2 masks / 7 days	3 masks / 7 days	9 masks / 14 days
Additional fee	None	NTD 7 each time	NTD 7 each time
Price per mask	NTD 8 → NTD 5	NTD 5	NTD 5

Note: Text in bold indicates the main selling channels.

## 2.6. End of Facemask Monopoly System on 1 June and Version 3.1 of Facemasks Distribution: a Monopoly and Free-market System Combination

With the pandemic coming under control in Taiwan, the government announced that eight million masks a

day would be expropriated starting on 1 June and ending on 30 December 2020.<sup>57</sup> The remaining masks can be sold domestically or exported.<sup>58</sup> Those who want to purchase masks at a controlled price will still be able to do so at participating convenience stores, pharmacies, and supermarkets countrywide, using their NHI cards. The government will continue providing nine masks (per person) every two weeks at five NTDs.<sup>59</sup> After fulfilling the government's requisition quota, mask producers can export facemasks, and citizens can ship masks overseas.<sup>60</sup>

Although the government announced the parallel system on 26 May—less than one week before lifting the official ban on 1 June several sales channels, such as Costco, immediately launched the online pre-order on 26 May.<sup>61</sup> The remaining sales channels, including convenience stores, e-commerce platforms, and pharmacy chains, participated in the competition.<sup>62</sup> All sales channels were prepared well for ban-lifting. It is uncertain whether they manufactured/imported stockpiles before or after 1 June. However, from the perspective of facilitating market supply, lifting the ban boosted supply in the market.

Moreover, the market price for facemasks is competitive. Originally, the public was concerned that lifting rationing and open market sales might prompt retailers to increase prices.<sup>63</sup> Nevertheless, all channels have launched special offers.<sup>64</sup> There seem to be no concerns regarding the increased prices.

The average price of facemasks sold by all selling channels is above 5 NTD. Although the prices of meltblown have fallen,<sup>65</sup> sellers have priced masks slightly higher than 5 NTD under the name-based scheme.<sup>66</sup> When compared with the original prices before Facemask V.1, convenience stores sold them at 2 NTD per piece, or 40 NTD per box of ten pieces.<sup>67</sup> Pharmacy chains sold 50-piece and 100-piece boxes for 150 NTD

<sup>57</sup> Yuqing Cheng, 'Command Center decided to extend mask quota recruiting until the end of the year' (CNYes, 30 June 2020). <<https://news.cnyes.com/news/id/4500761>> accessed 15 October 2021.

<sup>58</sup> Eric Chang, 'Taiwan mask export ban to be lifted on 6/1' (Taiwan News, 6 May 2020). <<https://www.taiwannews.com.tw/en/news/3940506>> accessed 15 October 2021.

<sup>59</sup> Taiwan Today, 'Ban on surgical mask exports, domestic retail sales lifted June 1 in Taiwan' (Taiwan Today, 28 May 2020). <<https://taiwantoday.tw/news.php?unit=2,6,10,15,18&post=178316>> accessed 15 October 2021.

<sup>60</sup> Pan Pacific Agency, 'Mask exports cleared for June, real-name system still in effect in Taiwan' (Pan Pacific Agency, 28 May 2020). <<https://panpacificagency.com/news/china/05/28/mask-exports-cleared-for-june-real-name-system-still-in-effect-in-taiwan/>> accessed 15 October 2021.

<sup>61</sup> China Times, 'Costco goes first to sell mask. The price for one reveals' (China Times, 6 May 2020). <<https://www.chinatimes.com/realtimenews/20200526004191-260405?chdtv>> accessed 15 October 2021.

<sup>62</sup> Yahoo News. (2020), 'Ban on mask selling has lifted See when, where and the cost of mask purchase at once', 1 June 2020. <https://tw.news.yahoo.com/>.

<sup>63</sup> Chang (n 58).

<sup>64</sup> SC Yang and YC Chiang 'Convenience stores in Taiwan begin selling unrationed surgical masks' (Focus Taiwan, 1 June 2020) <<https://focustaiwan.tw/society/202006010014>> accessed 15 October 2021.

<sup>65</sup> Argus Media, 'China's melt-blown PP prices fall on lower mask demand' (Argus Media, 5 June 2020) <<https://www.argusmedia.com/en/news/2111781-chinas-meltblown-pp-prices-fall-on-lower-mask-demand>> accessed 15 October 2021.

<sup>66</sup> Keoni Everington, 'Taiwan's FamilyMart to start selling face masks on Tuesday' (Taiwan News, 1 June 2020) <<https://www.taiwannews.com.tw/en/news/3942739>> accessed 15 October 2021.

<sup>67</sup> Mimi HHS, 'Face mask price drops as government weighs in, factories return to work' (The China Post, 31

and 199 NTD, respectively. This was approximately twice the price before the restrictions. The price under the monopoly scheme became the *price floor* for all selling channels. However, as buying in boxes is more convenient, few consumers have complained about it. Additionally, there have been few discussions about the potential concerted action and anti-competitive behaviours under the Fair Trade Law of Taiwan. However, as Taiwan's facemask monopoly scheme was considered a great success in combating COVID-19 on the governmental website, the competition authority has remained silent about this issue thus far. With market oversupply, the facemask price in Taiwan returned to normal before January 2020 (2021). This problem is fixed to the market.

### 3. Concerns over the facemask monopoly system in Taiwan

#### 3.1. Is it sufficient economic rationale?

Legal monopolies are companies that run as monopolies under government mandates. The government creates legal monopolies to offer a specific product or service to consumers at a regulated price. The main economic rationale for such a legal monopoly scheme lies in either tax purposes or social benefits.<sup>68</sup> Most legal monopolies are utilities and produce socially beneficial products that are necessary for everyday life. Consequently, the government allows producers to become regulated monopolies to ensure that consumers receive an appropriate amount of these products. Additionally, legal monopolies are often subject to economies of scale; therefore, it makes sense to allow only one provider.<sup>69</sup>

The current facemask monopoly differs from a legal monopoly for many reasons. First, unlike a public administration or a company in charge of a utility, alcohol, or tobacco business, no single facemask production company exists. The government expropriated the facemasks manufactured by 66 companies. The government simply played the role of a 'single

buyer/wholesaler' and allowed retail transactions only through government-approved channels. Second, despite using the national budget to buy additional production equipment for private manufacturers, the government did not nationalise private manufacturers. Third, unlike the legal monopoly of alcohol or tobacco-allowing imports, such a facemask monopoly did not allow import competition for four months. Fourth, the coexistence of a partial monopoly and free competition scheme after 1 June 2020 also makes this scheme unique. Finally, such a monopoly failed to secure sufficient facemasks for several months.

What is the main economic rationale for returning to a facemask monopoly? To answer this question, it is necessary to examine the decision-making background. On 29 January 2020 Taiwan's Premier announced that the government was taking action to guarantee the domestic supply of facemasks and urged the public not to hoard masks.<sup>70</sup> The next day, the government began purchasing four million facemasks per day, with the monopoly scheme scheduled to begin on 6 February 2020.<sup>71</sup> However, such strong government action raised public concerns over supply, resulting in panic buying, despite the government's announcement of a sufficient supply.<sup>72</sup>

However, despite panic buying, the supply situation remained relatively stable. For instance, a convenience store chain promoted facemasks between 20 January and 11 February. One 50 pcs box cost only 220 NTD (7 USD), with a buy-one-get-another box for only one NTD offer.<sup>73</sup> The prices did not increase, and they fell.

Was there sufficient justification for moving from a free market, particularly in such a short period? The government merely announced its need to guarantee a domestic supply. However, this was insufficient to introduce a legal monopoly. The government's justification was clear. It expected the pandemic to worsen, and thus, it was necessary to take 'certain' measures to control medical necessities as early as possible.<sup>74</sup> Why then did the government's confident statement about supply security on 22 January change within

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January 2020) <<https://chinapost.nownews.com/20200131-944889>> accessed 15 October 2021.

<sup>68</sup> Robin Room, 'The evolution of alcohol monopolies and their relevance for public health' (1993) 20 CDP 169; Anna Gilmore, Jeff Collin, and Joy Townsend, 'Transnational tobacco company influence on tax policy during privatization of a state monopoly: British American tobacco and Uzbekistan', (2007) 97 AJP 2001.

<sup>69</sup> Eamma Hutchinson, 'Principles of Microeconomics, Topic 8: Imperfect Competition, 8.3 Why Monopolies Persist' (Pressbooks, 2017) <<https://pressbooks.bccampus.ca/uvicecon103/chapter/why-monopolies-persist/>> accessed 15 October 2021.

<sup>70</sup> S-P Yeh, M-H Chang, and M Mazzetta, 'Government taking steps to guarantee surgical face mask supply: Premier' (Focus Taiwan, 29 January 2020) <<https://focustaiwan.tw/society/202001290006>> accessed 15 October 2021.

<sup>71</sup> Mien-Chieh Yang and Jake Chung, 'Virus fears: Government to purchase 4 million masks per day' (Taipei Times, 1 January 2020) <<http://www.taipetimes.com/News/front/archives/2020/01/31/2003730099>> accessed 15 October 2021.

<sup>72</sup> Y-Y Liao and M Mazzetta, 'Face mask supply stable amid Wuhan coronavirus fears: MOEA' (Focus Taiwan, 22 January 2020) <<https://focustaiwan.tw/society/202001220020>> accessed 15 October 2021; Wave-base.com, 'Hi-Life Original medical mask price' (Wave-base, 22 January 2020) <<https://tw.discount.wave-base.com/sale/VDLd0/>> accessed 15 October 2021.

<sup>73</sup> Taiwan Today, 'Taiwan ramps up coronavirus-fighting efforts' (Taiwan Today, 30 January 2020) <<https://taiwan-today.tw/news.php?unit=2,6,10,15,18&post=170123>> accessed 15 October 2021.

<sup>74</sup> Everington (n 32).



one week? It was also unclear if there would be any thoughtful deliberation over such a decision, particularly during the important Lunar New Year holiday for the Taiwanese.

In Taiwan's experience, every time the government announces that a product is not in short supply, consumers panic-buy these products the next day, resulting in a supply shortage. For instance, soon after the 'sufficient facemasks' announcement, the government declared a sufficient stock of toilet paper, but the panic buying of toilet paper began in February.<sup>75</sup> Historically, such panic buying would not last long, and the market would soon return to normal. Therefore, it seems that ironically, the official announcement causes panic buying, providing an economic justification for the government to take 'certain' actions. This is *the first time in Taiwan's history* that panic buying led to a monopolistic buying/export ban system. Are there more lenient approaches than rigid regimes?

Despite possessing the world's third-largest facemask manufacturing capacity, Taiwan's local product capacity—only four million masks a day—was low. Thus, the government scheduled an increase to 10 million masks daily by the end of January.<sup>76</sup> Simply relying on MIT facemasks would be insufficient to tackle supply shortages. Citizens were exempt from special import permits to import 1,000 facemasks for self-use.<sup>77</sup> Originally, under the Pharmaceutical Affairs Act, those wanting to bring masks into the country must apply for a special import permit before doing so, regardless of the quantity.<sup>78</sup> However, arranging transportation and shipments are difficult for everyone.

Besides the lack of economic rationale, such schemes do not help alleviate panic buying or fulfil market needs. The reliance on 'physical' pickups from 6,280 pharmacies has resulted in long queues since February.<sup>79</sup> The launch of Facemask V. 3 ended these long queues in mid-April.<sup>80</sup> Such a monopoly system could combine the following 'original' channels to increase supply, including:

- The government could allow franchised pharmacies under a monopoly scheme to increase imports and sell non-MIT facemasks.
- The government could urge and allow, instead of closing, the original main selling channels (cosmeceuticals, convenience stores, online e-commerce platforms) to increase imports.
- The government could urge and allow the remaining non-original selling channels to sell non-MIT facemasks.

As the primary purpose is to increase the supply, it would be meaningless to discriminate between MIT and non-MIT facemasks. Consumers can buy MIT facemasks at pharmacies; however, why can they import only non-MIT facemasks from unreliable foreign e-commerce platforms? Why has the government temporarily prohibited the original selling channels from importing facemasks? This leads to concerns regarding distribution efficiency issues.

### 3.2. Low distribution efficiency

To buy the quota under Facemask V.1, consumers have to queue and present their NHI cards in person.<sup>81</sup> Owing to the quantity quota for each pharmacy, there is no guarantee of availability. Despite the real-time facemask inventory apps, the long lines continued.

Taiwan's compulsory facemask scheme came quite later than the facemask rationing scheme. In early April 2020 (two months after the launch of the facemask rationing scheme), the local government launched a compulsory facemask wearing scheme.<sup>82</sup> However, citizens' distrust of official claims and the monopoly system led to concerns about supply shortages and continuous queues. Despite introducing online purchases and convenience store/supermarket collection schemes under Facemask V.2, consumers remained stuck with the pharmacy channel until mid-April.

<sup>75</sup> Y-Y Liao and F Huang, 'MOEA plans new lines to roll out 10 million surgical masks a day' (Focus Taiwan, 31 January 2020). <<https://focustaiwan.tw/society/202001310024>> accessed 15 October 2021.

<sup>76</sup> Customs Administration, Ministry of Finance, 'COVID-19 Custom Regulations' (Customs Administration, Ministry of Finance, 4 June 2020) <<https://web.customs.gov.tw/cp.aspx?n=8FBE0EFF7E281849&s=C60A755346B658C5>> accessed 15 October 2021.

<sup>77</sup> T-Y Pan and Y-C Chiang, 'Taiwan loosens restrictions on surgical mask imports' (Focus Taiwan, 3 February 2020) <<https://focustaiwan.tw/society/202002030004>> accessed 15 October 2021.

<sup>78</sup> Taipei Times, 'Long lines to buy face masks, hospital visits down 10 percent' (Taipei Times, 3 February 2020) <<https://www.taipetimes.com/News/lang/archives/2020/02/03/2003730240>> accessed 15 October 2021.

<sup>79</sup> United Daily News, 'The line for mask-purchasing has been gone Pharmacist analyzed' (United Daily News, 21 April 2020) <<https://udn.com/news/story/7266/4508367>> accessed 15 October 2021.

<sup>80</sup> Everington, K. (2020c), 'Taiwan's FamilyMart to start selling face masks on Tuesday', 1 June 2020 <<https://www.taiwannews.com.tw/en/news/3942739>>.

<sup>81</sup> National Health Insurance Administration, 'Name-based Mask Distribution System (Start from 3/12)' (National Health Insurance Administration, 7 April 2020) <[https://www.nhi.gov.tw/english/Content\\_List.aspx?n=022B9D97EF66C076](https://www.nhi.gov.tw/english/Content_List.aspx?n=022B9D97EF66C076)> accessed 15 October 2021.

<sup>82</sup> Taiwan News, 'Wearing a face mask to become compulsory on the Taipei MRT from 4 April' (Taiwan News, 4 April 2020) <<https://www.taiwannews.com.tw/en/news/3909701>> accessed 15 October 2021.

However, this distribution system is extremely problematic. At the start of Facemask Version 1, a person could queue for hours for a maximum of four masks (quota was two in seven days per person, with permission to use two NHI cards per person) and pay 20 NTD every seven days.<sup>83</sup> Unlike queuing for luxuries, such as iPhones, fancy sneakers, and focusing on its reselling value, the 'life/health' value behind queuing for facemasks is unique.<sup>84</sup> As online transactions of facemasks require a government license, citizens cannot exchange or sell them freely. The facemasks had no reselling values. Furthermore, the resell premium from these facemasks is relatively low, not to mention the opportunity cost of queuing. Despite the increase to three pcs by the end of March and nine pcs in two weeks in April, the problem remained.

Interestingly, the online registration and buying system began in mid-March, but consumers seemed to prefer physical queuing. After promotion for weeks, only a small proportion of residents (796,000) ordered facemasks online in early April.<sup>85</sup> Fortunately, such queuing ended after the partial withdrawal of the pharmacies selling facemasks under Facemask V.3. Besides the productivity/opportunity cost/time cost,<sup>86</sup> queuing created crowd-gathering concerns, particularly during the months of acute infection in Taiwan. At different pharmacies, queues would be at least ten people, often 30 or 40, and more in some places. Although the government had already announced social distancing measures, such rules seldom applied to facemask queues for the fear of public outcry.<sup>87</sup>

Ironically, it remains unclear why the government allowed crowds to gather dangerously to buy life-saving facemasks. Furthermore, why did it take over two months to curb these long queues?

Possibly, the *over-reliance on old-fashioned/communism-style physical purchases/collection channels* could be the source of the problem. In the era of information and communications technology (ICT), there are numerous e-commerce transactions and various

ways of delivering goods. Why was the government continuing physical purchases and collection, even under Facemask V 3.0? Why did they not follow the e-commerce model, wherein a consumer can buy the facemask quota online and is free to choose a delivery option? *Why are buying and collecting different?* The shortage of MIT facemasks did not mean having to collect on their own. Similarly, if there is a shortage of water supply, the water company may decide to ration water through random water outages.<sup>88</sup> However, there is no need to wait and collect water from reservoirs. Why did the government not allow pre-ordering online, randomly choose the consumer for the quota, and then distribute it by post? We believe that most individuals would prefer to pay for door options rather than queuing dangerously for hours. However, such a highly developed business-to-customer (B2C) model has no place in Taiwan's facemask monopoly system. Despite the greater convenience of collection from convenience stores, physical collection remains the norm. Consumers can buy facemasks online, without quantity limits, with delivery to the destination of their choice, from China's Taobao,<sup>89</sup> the US Amazon, or Taiwan's Yahoo (before February 2020). Such a B2C model seems to be more efficient and safer for facemask distribution.

### 3.3. Cost effectiveness

#### 3.3.1. Quality concerns

Countries such as North Korea adopt a monopoly system that supplies daily necessities.<sup>90</sup> Such systems usually have concerns regarding sufficiency and quality. Besides long queuing, what is quality control?

Some medical staff complained about the weight and thickness of the facemasks.<sup>91</sup> As the bacteria filter rate of 95% is qualified, fewer filtration materials are used.<sup>92</sup> According to a study of the facemask factory MASgicK, one tone filter material can produce only 1.11 million facemasks with a 25 gsm filter layer, and 1.68

<sup>83</sup> Linda Lisa Maria Turunen, Marie-Cecile Cervellon, and Lindsey Drylie Carey, 'Selling second-hand luxury: Empowerment and enactment of social roles' (2019) 116 JBR 474.

<sup>84</sup> Lux Moritz and Peter Bug, 'Sole value—the sneaker resale market: an explorative analysis of the sneaker resale market', (2020) Reutlingen University; Shelly Yang, '796,000 Taiwan residents ordered face masks online: CECC', (China Post, 9 April 2020). <<https://chinapost.nownews.com/20200409-1138158>> accessed 15 October 2021.

<sup>85</sup> MM Kembe, ES Onah, and S Iorkegh, 'A study of waiting and service costs of a multi-server queuing model in a specialist hospital' (2012) 8 IJSTR 19.

<sup>86</sup> Roy Ngerng, 'Taiwan's digital response to COVID-19: impressive, but is privacy respected?' (The News Lens, 27 March 2020) <<https://international.thenewslens.com/article/133095>> accessed 15 October 2021.

<sup>87</sup> Taiwan Centers for Disease Control, 'CECC announces social distancing measures for COVID-19', (Taiwan Centers for Disease Control, 1 April 2020) <[https://www.cdc.gov.tw/En/Bulletin/Detail/IHbdHSeA0j\\_P4rtnJcgT2g?typeid=158](https://www.cdc.gov.tw/En/Bulletin/Detail/IHbdHSeA0j_P4rtnJcgT2g?typeid=158)> accessed 15 October 2021.

<sup>88</sup> R K Amit and P Ramachandran, 'A fair contract for managing water scarcity' (2010) 24 WRM 1195.

<sup>89</sup> Taobao, 'Supreme Face Mask' (Taobao) <<https://item.taobao.com/auction/noitem.htm?itemid=553184082465&catid=0>> accessed 15 October 2021.

<sup>90</sup> Youn Suk Kim, 'Current North Korean economy: overview and prospects for change', 2008 NKR 16.

<sup>91</sup> CNA, 2020b

<sup>92</sup> Food and Drug Administration, 'Medical mask factors quality management guidelines' (Food and Drug Administration, 20 June 2020) <<https://www.fda.gov.tw/tc/includes/GetFile.ashx?id=f636973161683844034>> accessed 15 October 2021.

million with a 16.5 gsm layer. Thus, it is legal to make the facemasks thinner, but this also slightly reduces the filter function.<sup>93</sup> Recently, the study also identified that the filter rate of the Made in China (MIC) facemasks was much better than that of the MIT monopoly. Recently, two scandals involving Made in China masks were labelled as MIT, have occurred. However, one violator has a certificate that proves that the filter function of MIC masks is 99%, which is much better than that of MIT masks (95%).<sup>94</sup> Such evidence also proves the economic thoughts on the quality concerns of legal monopoly schemes.

Today, facemask factories produce facemasks without indicating their brand name on the product or package and do not need to show the related certificate. This causes moral risks in manufacturing low-quality facemasks. For instance, the government distributed 0.32 million facemasks with very short earlines to customers, resulting in many complaints and eventual recall.<sup>95</sup> In early October 2020, the eighth month of the name-based scheme, the MIT-labeled facemasks were found to have no pivotal layer of melt-blown nonwoven.<sup>96</sup> Furthermore, as the facemasks have only the MIT logo in a standardised paper envelope, it is difficult to determine whether they meet the related standards of the Federal Drug Administration or CE marking. Finally, antibacterial activity was an antibacterial function. Owing to the shortage of facemask packers, the fractional pack process was mainly conducted at over 6,000 pharmacies by hand, diluting the sterilisation process at the manufacturing level.

### 3.3.2. High costs of government-run e-commerce platforms

The Taiwanese government has spent significant sums of money to develop apps and e-commerce platforms to sell facemasks. Why did it not use well-established e-commerce platforms? There are several advantages to existing e-commerce platforms. First, consumers were in the habit of purchasing facemasks and related products before the coronavirus outbreak. Combining the private logistics of these e-commerce platforms with public posts could significantly reduce the need for physical collection, and thereby, queuing and crowds. Second, it would be cost-ineffective for the

government to develop its facemask e-commerce platform to sell *only one* product during this pandemic. The performance of the incumbent platform exceeds that of the government. The incumbents are already experienced in tackling over-purchasing and crash problems. Furthermore, citizens can stay at home and buy everything they need, with a few clicks. E-commerce 'shopping' platforms could play an important role in controlling the quality of facemasks and related products. This was the daily routine of the Taiwanese in past years; however, the government implicitly terminated the facemask sales of 'shopping' platforms for four months.

It may also be *free* to use existing platforms. Similar to the willingness of convenience stores to participate in facemask collection and distribution to facilitate customer visits, it is clear that e-commerce platforms are eager to participate. Adding one government-expropriated facemask item would not be a problem for existing platforms. It is unclear why the government decided to only 'expropriate' the pharmacies and convenience stores and rely on the relatively poor efficiency of the physical collection.

### 3.4. Unique essential necessities in Taiwan's history

The Executive Yuan declared facemasks as 'essential necessities' under the Criminal Act at the end of January 2020.<sup>97</sup> According to Article 251 of the Criminal Act, a person who stocks up on any such items and refrains from selling on the market, without justification and intending to raise the transaction price, shall be sentenced to imprisonment for no more than three years—short-term imprisonment or a fine of no more than 300,000 NTD may be imposed.<sup>98</sup> Originally, this clause was primarily applied to utilities such as basic provisions, agricultural products, or other food and drink consumer essentials; however, now, it also applies to facemasks. It seems the justification for creating such a facemask monopoly is associated with the 'utility' function.

However, it should be noted that before the COVID-19 pandemic, no one had committed this offence under Art. 251 of the Criminal Act since its promulgation on 1 September 1928. The reason for this is uncertain.

<sup>93</sup> China Times, 'Huang sarcasm about masks getting thinner, Netizens laugh' (China Times, 6 April 2020). <<https://www.chinatimes.com/realtimenews/20200406004171-260407?chdtv>> accessed 15 October 2021.

<sup>94</sup> Keoni Everington, 'Taiwan company caught importing Chinese masks for ration program' (Taiwan News, 4 September 2020) <<https://www.taiwannews.com.tw/en/news/4001668>> accessed 18 February 2021.

<sup>95</sup> New Talk, 'Yilan 0.32 million short-earline mask been thrown away' (New Talk, 29 April 2020). <[https://](https://newtalk.tw/news/view/2020-04-29/398834)

[newtalk.tw/news/view/2020-04-29/398834](https://newtalk.tw/news/view/2020-04-29/398834)> accessed 15 October 2021.

<sup>96</sup> TVBS News, 'Taiwan facemask national team screw up again! Facemasks without Meltblown Nonwoven found' (TVBS News, 8 October 2020). <<https://news.tvbs.com.tw/life/1397378>> accessed 15 October 2021.

<sup>97</sup> Ministry of Justice, 'Hoarding or jacking up prices of facemasks will face penalty' (*Ministry of Justice*, 31 January 2020) <<https://www.moj.gov.tw/cp-21-126293-814cb-001.html>> accessed 15 October 2021.

<sup>98</sup> Criminal Code of the Republic of China 2020, s #.

Yet, perhaps it is better to deal with such an issue under the competition law, that is, the Fair Trade Act.<sup>99</sup> In addition, the open designation clause of 3, 'Essential necessities, other than those described in the preceding two paragraphs, as announced by the Executive Yuan, was introduced under the background of panic buying toilet paper in 2018.<sup>100</sup> There was panic buying toilet paper in Taiwan in February 2021.<sup>101</sup> Yet, the first and only items designated by the Executive Yuan so far are facemasks.

As for essential necessity, the first issue is price setting. The justification for a legal monopoly is cheaper, such as cheap water and electricity. However, the facemask price, 8 and 5 NTD, under the monopoly scheme, remained higher than prices before February (NTD 1–3 per piece). The government has never justified the rise in transaction prices for five NTDs.

Under the aforementioned clause, 'stocking up on any such items and refraining from selling on the market' should be avoided. The government prosecuted several factories and suppliers to compel them to release facemasks on the market also allowing a slightly higher price than that of the government. For instance, one pharmacy sold 0.21 million facemasks at 10 NTD per piece purchased at 6 NTD.<sup>102</sup> However, the government allowed sale at tax-free stores at the airport at the price of three masks for 50 NTDs.<sup>103</sup> Such prosecution resulted in *chilling effects* that the stockpile would not be openly released into the market, as suppliers were uncertain of the pricing acceptable to the government. The government did not set a standardised price, only chased cases, and prosecuted them, going against the

priority of increasing supply. The non-release of the stockpile could also explain why millions of facemasks began appearing in sales channels after the partial abolition of the monopoly scheme at the end of May.

The black market existed for these underground stockpiles, as in all monopoly systems.<sup>104</sup> The black market serves those that escape government prosecution.<sup>105</sup> Additionally, as the government allows individuals to import 1,000 facemasks, sales of over-imported ones are more likely. Owing to Taiwan's many small industrial areas mixed with residential areas, it is difficult to identify and follow the manufacturing and sales of facemasks. In addition, a unique transaction system emerged on e-commerce platforms. To bypass government scrutiny, online stores began displaying surgical facemasks as non-surgical facemasks while shipping the former to buyers.

Furthermore, the government began stockpiling such items and refrained from selling on the market. With the global facemask shortage, the monopoly system in Taiwan began stockpiling facemasks for 'diplomatic' purposes.<sup>106</sup> Despite the queues, the government donated 10 million facemasks to the US,<sup>107</sup> 1.3 million to eight EU states in mid-April,<sup>108</sup> and 0.5 million to Canada at the end of April.<sup>109</sup>

These donations are highlighted as 'Mask diplomacy'.<sup>110</sup> Could this be an *unprecedented* governmental action for essential necessities? However, as this relates to Taiwan's global status, the government used this opportunity to win support for WHO or World

<sup>99</sup> Fair Trade Act 2017, s #.

<sup>100</sup> Revision of Criminal Act 2019.

<sup>101</sup> Taipei Times, 'Virus Outbreak: Women sparked panic buying of toilet paper: Officials' (*Taipei Times*, 12 February 2020) <<http://www.taipeitimes.com/News/taiwan/archive/s/2020/02/12/2003730827>> accessed 15 October 2021.

<sup>102</sup> China Times, 'Selling 10 NT with 6 NT buying Kaohsiung pharmacy were illegal selling 0.21 million masks' (*China Times*, 16 March 2020) <<https://www.chinatimes.com/realtimenews/20200316004077-260402?chdtv>> accessed 15 October 2021.

<sup>103</sup> Taiwan Centers for Disease Control, '50 NTD for Three Facemasks at the airport' (*Taiwan Centers for Disease Control*, 20 March 2020) <[https://www.cdc.gov.tw/Bulletin/Detail/\\_1hVJCbMAV\\_JQ4CkiCZolQ?typeid=9](https://www.cdc.gov.tw/Bulletin/Detail/_1hVJCbMAV_JQ4CkiCZolQ?typeid=9)> accessed 15 October 2021.

<sup>104</sup> SY Oh, 'Shortage in the North Korean economy: characteristics, sources, and prospects' (1995) KJNU.

<sup>105</sup> Liberty Times Net, 'Mask black market selling Police asked not to make money from disaster' (*Liberty Times*, 11 March 2020) <<https://news.ltn.com.tw/news/life/paper/1357896>> accessed 15 October 2021.

<sup>106</sup> Ministry of Foreign Affairs, 'MOFA announces donation of 10 million face masks to the US, Europe, diplomatic allies to extend humanitarian assistance in wake of COVID-19' (*Ministry of Foreign Affairs*, 1 April 2020) <[https://www.mofa.gov.tw/en/News\\_Content.aspx?n=1EA](https://www.mofa.gov.tw/en/News_Content.aspx?n=1EA)

DDCFD4C6EC567&s=2A434037CB463FEE> accessed 15 October 2021; Ministry of Foreign Affairs, 'Taiwan can help, and Taiwan is helping!' (*Ministry of Foreign Affairs*, 1 April 2020) <<https://www.mofa.gov.tw/cp.aspx?n=3FCC7ED69E5E3E5D>> accessed 15 October 2021.

<sup>107</sup> Ministry of Foreign Affairs, 'MOFA announces donation of 10 million face masks to the US, Europe, diplomatic allies to extend humanitarian assistance in wake of COVID-19' (*Ministry of Foreign Affairs*, 1 April 2020) <[https://www.mofa.gov.tw/en/News\\_Content.aspx?n=1EA](https://www.mofa.gov.tw/en/News_Content.aspx?n=1EA) DDCF4C6EC567&s=2A434037CB463FEE> accessed 15 October 2021.

<sup>108</sup> C-N Lin, 'Taiwan to donate 1.3 million masks to eight EU states' (*Taipei Times*, 15 April 2020) <<https://www.taipeitimes.com/News/taiwan/archives/2020/04/15/2003734654>> accessed 15 October 2021.

<sup>109</sup> K Chan, 'Taiwan donates 500,000 surgical masks to Canada' (*Daily Hive News*, 28 April 2020) <<https://dailyhive.com/vancouver/taiwan-canada-mask-donation>> accessed 15 October 2021.

<sup>110</sup> S Chase, 'Mask diplomacy: Taiwan donates half a million masks to Canada with appeal for closer ties' (*The Globe and Mail*, 28 April 2020) <<https://www.theglobeandmail.com/canada/article-mask-diplomacy-taiwan-donates-half-a-million-masks-to-canada-with/>> accessed 15 October 2021.

Health Assembly (WHA) membership under the Chinese (PRC) threat.<sup>111</sup> Taiwan hopes that its facemask gifts and related COVID-19 essential necessities to help other countries will help it to win approval, especially because these masks are 'MIT-labelled'. However, the WHO did not invite Taiwan to the 71<sup>st</sup> WHA.<sup>112</sup> Such tension could be why the government discouraged retailers from importing MIC facemasks despite Chinese factories boosting production since March.<sup>113</sup> Taiwan's government would rather allow citizens to obtain sufficient supply and let them queue on the streets for diplomatic purposes than import MIC facemasks. Again, facemasks as 'essential necessities' are a unique proposition.

Finally, why did Taiwan not import at the time of shortage and when the world was already importing facemasks from China? Why did it continue its facemask monopoly scheme? The answer lies in the importance of facemasks in *industrial development* policies. The Ministry of Foreign Affairs released a promotional video for the National Team of Mask Production.<sup>114</sup> The message was to be proud of Taiwan becoming the second-largest producer of surgical masks.<sup>115</sup> To provide stable support for such a national team, a facemask monopoly system refraining from cheap MIC products could be crucial. However, because of the reference price effects of 5 NTD under the monopoly scheme, the MIC facemasks could be sold on the market at a higher price than before.

Thus, Taiwanese citizens may oversubsidize both the MIT and MIC facemasks. Additionally, non-national team facemasks are now sold on the market at a price of over five NTDs. Such a strategy may not be helpful for MIT facemasks to compete with cheap MIC ones in the international market.

Given that such a facemask monopoly scheme is like a utility business, transparency is necessary. It is necessary to emphasise that the real and precise daily production number under such a monopoly system is unclear.

The system lacks transparency. For instance, the MPs asked the government to provide exact numbers; however, government officers denied this request.<sup>116</sup> The production capacity has broken new records.<sup>117</sup> In early April, one MP found that at least 760 million facemasks were missing.<sup>118</sup> Under the utility regulation norm, transparency is important for citizens to supervise such a monopoly system.<sup>119</sup> Besides this unprecedented opacity, it is perhaps the *most profitable utility* business in Taiwan's history, as the government purchased all facemasks at 2.4 NTD (before August) and 3.1 (after August) NTD but sold them at 5 NTD. Without public information, the public cannot scrutinise these measures.

Finally, the high price of 5 NTD also creates an incentive for *arbitrage* under current monopoly and free-market coexistence situations. The Carry Mask was apprehended by the national facemask team for import MIC facemasks for the facemask monopoly scheme and sell their MIT facemasks on the free-market.<sup>120</sup>

As the expropriation price is 2.4 NTD (original price for MIT facemasks), selling MIT facemasks at a price higher than 5 NTD (MIC masks are unavailable at this price), Carry Mask could maximise its profit in both markets. Another example is Medtecs, which sold facemasks made in the Philippines under the name-based scheme in September.<sup>121</sup> Such arbitrage features made such 'essential' necessity of facemasks unique once again.

<sup>111</sup> Keoni Everington, 'Tedros ducks question about Taiwan's membership in WHA' (*Taiwan News*, 7 May 2020) <<https://www.taiwannews.com.tw/en/news/3929535>> accessed 15 October 2021.

<sup>112</sup> Ministry of Foreign Affairs, 'MOFA expresses regret at World Health Organization's failure to invite Taiwan to 71st World Health Assembly' (*Ministry of Foreign Affairs*, 8 May 2020) <[https://www.mofa.gov.tw/en/News\\_Content.aspx?n=0E7B91A8FBEC4A94&sms=220E98D761D34A9A&s=3F3763162BF9EF7B](https://www.mofa.gov.tw/en/News_Content.aspx?n=0E7B91A8FBEC4A94&sms=220E98D761D34A9A&s=3F3763162BF9EF7B)> accessed 15 October 2021.

<sup>113</sup> D Ren, 'China boosts face mask production capacity by 450 per cent in a month, threatening a glut scenario' (*South China Morning Post*, 16 March 2020) <<https://www.scmp.com/business/companies/article/3075289/china-boosts-face-mask-production-capacity-450-cent-month>> accessed 15 October 2021.

<sup>114</sup> Ministry of Economic Affairs. (2020), 'National mask production and supply are being ensured so that people can celebrate New Year's without fear or stockpile masks' (Ministry of Economic Affairs, 22 January 2020) <[https://www.moea.gov.tw/MNS/populace/news/News.aspx?kind=1&menu\\_id=40&news\\_id=88545](https://www.moea.gov.tw/MNS/populace/news/News.aspx?kind=1&menu_id=40&news_id=88545)> accessed 15 October 2021.

<sup>115</sup> *Ibidem*.

<sup>116</sup> Apple Daily, 'The data of mask were gone for two weeks Members of Legislative Yuan criticized on Administrative Yuan' (*Apple Daily*, 7 April 2020) <[https://hk.appledaily.com/member/twdaily/article/1\\_1728807\\_1](https://hk.appledaily.com/member/twdaily/article/1_1728807_1)> accessed 15 October 2021.

<sup>117</sup> P-W Wu, Y-H Chen, W-T Chen, and K Lin, 'Taiwan could boost daily mask output to 19 million by mid-May' (*Focus Taiwan*, 28 April 2020) <<https://focustaiwan.tw/business/202004280022>> accessed 15 October 2021.

<sup>118</sup> Storm Media, 'Where is the production capacity? SARS made factories coming back to Taiwan for expansion COVID-19 period happens masks shortage again' (*Storm Media*, 7 February 2020) <<https://www.storm.mg/article/2260945>> accessed 15 October 2021.

<sup>119</sup> Al MM Afghani, 'The transparency agenda in water utilities regulation and the role of freedom of information: England and Jakarta case studies' (2009) 20 *JWL* 129.

<sup>120</sup> Keoni Everington, 'Taiwan News, Taiwan company caught importing Chinese masks for ration program' (*Taiwan News*, 09 April 2020) <<https://www.taiwannews.com.tw/en/news/4001668>> accessed 15 October 2021.

<sup>121</sup> CNA, 'China mask economy burst over-supply problems remain' (*CAN*, 25 March 2020) <<https://www.cna>>

### 3.5. Privacy Intrusion

Taiwan introduced a name-based rationing system in February 2020.<sup>122</sup> To purchase their weekly quotas, citizens must show and insert their NHI cards at pharmacies. Individuals can buy facemasks for others by presenting their NHI cards. Such measures raise concerns about privacy intrusion or violations of personal data protection or related rules.<sup>123</sup> According to Article 16 of the National Health Insurance Act, the NHI card may not store any information not used for medical care or those unrelated to the insured receiving insurance medical services. Facemask transaction information is not considered as the medical care information.

Moreover, there could be further problems with purchase convenience. For instance, individuals may give their NHI cards to others for purchase, increasing the risk of fraudulent use. Furthermore, some buyers who are close friends or clients of the pharmacies may leave their cards in the pharmacy, leading to problems of fairness in such a name-based system and concerns of fraudulent use.

Despite such concerns and complaints, the name-based system continues to rely on the NHI card. After Facemask Version 3 in May, convenience stores/supermarket chains took over the role of pharmacies. Citizens can order by inserting their cards into the machines of convenience stores.<sup>124</sup> This is perhaps the first time Taiwan has had such wide used NHI cards in private non-pharmacy locations. Another concern is card cracking during insertion, stores using personal data for further promotion purposes, and so on.

### 3.6. Rule of law and proportionate principle

Apart from the controversial designation of facemasks as essential necessities under the Criminal Act, and the wide use of NHI cards under the National Health Insurance Act and related data protection law (Personal Data Protection Act), a more fundamental question is the legal basis of expropriation and the creation of such a rationing regime.

The legal basis of expropriating facemasks lies in Article 54 of the Communicable Disease Control Act

(Communicable Disease Control Act, Laws and Regulations). This indicates that during the period when the central epidemic command centre is in existence, government organisations at various levels, following instructions of the commanding officer, may *expropriate* or requisite private land, products, buildings, devices, facilities, pharmaceuticals, and medical devices for disease control practices, facilities to treat contamination, transportation means, and other designated disease control resources announced by the central competent authority, and adequate compensation shall be made to appropriate parties. Therefore, facemasks were 'products...for disease control', and could be subject to expropriation and compensation.

However, several issues remain. First, although the law allows such expropriation, it does not mean that the government can develop a monopoly supply system. Under the original meaning, facemask manufacturers must provide certain quantities to the government, and the government compensates for them. This serves as mandatory 'emergency procurement' and was the practice during the SARS period as well. As noted before, it focuses on N95 facemasks, but now applies to all surgical facemasks.

However, such a weak expropriation clause became the legal basis of the current facemask monopoly scheme and went even further. Compared with the ordinary legal monopoly scheme, which allowed the sale of imported products, the government restricted business freedom under its legal monopoly scheme until the end of May. Notably, this is the first time that the government has expropriated private property and does not distribute products in Taiwan.

Compared with the former monopoly system in Taiwan, the rule of law in the facemask monopoly remains weak. As a Japanese colony, the Monopoly Bureau of the Taiwan Governor's Office was responsible for all liquor and tobacco products in Taiwan, including opium, salt, and camphor.<sup>125</sup> In 1945, after World War II beer production was assigned to the Taiwan Provincial Monopoly Bureau. The following year, Taiwanese beer and tobacco production was assigned to the Taiwan Tobacco and Wine Monopoly Bureau.<sup>126</sup> Owing to colonial rule and martial law since the forties,

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com.tw/news/acn/202003250215.aspx> accessed 15 October 2021, <<https://focustaiwan.tw/society/202003230019>> accessed 15 October 2021.

<sup>122</sup>Everington K. (2020e), 'Taiwan's new mask-rationing system kicks in on Thursday' (*Taiwan News*, 4 February 2020) <<https://www.taiwannews.com.tw/en/news/3870428>> accessed 15 October 2021.

<sup>123</sup> Cite Media Holding Group, 'From name-based system to personal data protection: The line between technology and privacy is debatable' (*NetAdmin*, 2020) <<http://www.netadmin.com.tw/netadmin/zhtw/viewpoint/390168BA249B45E7947BF13F5BC6E2EE>> accessed 15 October 2021.

netadmin.com.tw/netadmin/zhtw/viewpoint/390168BA249B45E7947BF13F5BC6E2EE> accessed 15 October 2021.

<sup>124</sup> *Ibidem*.

<sup>125</sup> Taiwan Tobacco & Liquor Corporation, 'History' <[https://www.ttl.com.tw/en/about/about\\_06.aspx](https://www.ttl.com.tw/en/about/about_06.aspx)> accessed 15 October 2021.

<sup>126</sup> Taiwan Today, 'The Taiwan Tobacco and Wine Monopoly Bureau' (*Taiwan Today*, 1 July 1956) <<https://taiwantoday.tw/news.php?unit=8,8,29,29,32,32,45&post=14072>> accessed 15 October 2021.

there was no need for laws to implement such a monopoly system. Although the establishment of a monopoly bureau signifies compliance with the rule of law, the legal basis of a comprehensive law is necessary for the legal monopoly in the utility sector, such as the electricity and water sectors (Laws and Regulations Database of the Republic of China).

In February 2020, the inability to predict the future development of facemask supplies due to a lack of information could justify an expropriation scheme. To fulfil the proportionality principle, it is necessary to observe the market development of facemasks. As the world's largest producer and exporter of facemasks, China began to mass-produce facemasks in March. Therefore, the justification for such a monopoly system has already diminished. Furthermore, such a monopoly scheme could not prevent long queues, as relying on MIT facemasks could not alleviate problems. Simultaneously, the market supply of facemasks in neighbouring countries stabilised (e.g. Singapore, South Korea, Japan, and Hong Kong), with no facemask monopoly schemes. Thus, it seemed less *proportionate* to continue such a scheme after mid-March. Perhaps the primary reason why the monopoly scheme partially ended in May is not so much about fulfilling the needs of citizens, but national protectionism under the industry policy. The Taiwanese government appeared to worry about price competition from MIC facemasks. However, this worry proved to be unfounded after 1 June as all facemask prices were above the government price of 5 NTD, and citizens preferred buying MIT facemasks, despite such masks not having a better filter function.

Recently, to avoid the surrender of all facemasks and to maximise profits, the second large facemask manufacturer was caught illegally selling 22 product lines without permission and fined in September.<sup>127</sup> This shows that even the second-largest manufacturer of facemasks in Taiwan would risk its reputation to sell more facemasks on the free market at a much higher price (over 5 NTD).

#### 4. Conclusion

Basic economic knowledge on increasing supply to tackle shortages dictates the following: (1) increase imports and local production as much as possible, (2) release stockpiles, and (3) ban exports of certain products. In Taiwan, the facemask monopoly focuses only on increasing local supply and banning exports, while most countries focus on all three aspects. The rigid monopoly system in Taiwan forced the stockpile into the black market or only released it after 1 June, while

the implicit 'import ban' on the original facemask selling channels relied on limited MIT facemasks to tackle the sudden increase in demand. The facemask monopoly scheme failed to provide sufficient supply for several months.

During a pandemic, it is necessary to consider both supply sufficiency and efficient and safe distribution methods. Unfortunately, the Taiwanese had to rely on the physical collection of facemasks and long queues for two months, increasing fear of COVID-19 transmission. By 7 April 2021 only 498,329 cases were tested.<sup>128</sup> The government could not know the number of infected people, including those infected while waiting in long queues for facemasks. However, lessons from other countries are also helpful. E-commerce platforms (Amazon in the US, T-mall, or Taobao in mainland China) already provide daily necessities and medical products, reflected in their stock market prices or windfall revenues. Moreover, take-away food platforms have experienced significant profits. Irreplaceable door-to-door logistics services are essential for preventing crowds and reducing physical contact. However, the Taiwanese government excluded such important e-commerce platforms from providing government-expropriated facemasks and slowly developed its single-product e-commerce platform.

Taiwan is perhaps the only country to introduce such *extreme* measures to create a legal monopoly scheme for facemasks during the coronavirus outbreak. When compared with other legal monopolies, such as tobacco, alcohol, and utilities, it seems to be the first of its kind in Taiwan's history. Certain rationing measures, such as emergency expropriation by the government, price ceiling, and purchase quotas, are sufficient to tackle the supply crisis, considering Taiwan's SARS experience or that of neighbouring countries, such as South Korea, Hong Kong, and Singapore. Moreover, from the experience of the tobacco or alcohol monopoly scheme, sudden factual freezing of the import license of the already-established selling channels of facemasks would be contrary to increasing the supply in the market.

Even an unprecedented humanitarian crisis, such as the COVID-19 pandemic, seems unable to justify the creation of a legal monopoly scheme. Countries without such schemes and relying on a combination of free markets and certain rationing measures faced only short-term supply shortages and price hikes. However, ironically, the shortage in Taiwan, as the world's second-largest exporter of facemasks, lasted longer than countries relying on imports. Therefore, a legal monopoly may not be very helpful in providing the right price signal to the market. The government's interven-

<sup>127</sup> UDN News, 'Kaohsiung municipal health bureau fined Jingxin 2 million NTD for illegally setting up twenty-two production lines' (*UDN News*, 25 September 2020)

<<https://udn.com/news/story/121646/4887501>> accessed 18 February 2021.

<sup>128</sup> Taiwan Centers for Disease Control (n 8).

tion in the free market leads to longer supply shortages than in neighbouring countries. The scheme also suffers from the main disadvantages of a monopoly, such as higher prices of 8–5 NTD and high costs of creating an e-commerce platform, poor quality and service, potential limitations to innovation, and consumer exploitation and bullying, despite high outputs from government investment machines.

The pandemic persists, and a second or third wave is highly likely. Despite Taiwan's significant experience in fighting COVID-19, this study does not recommend that the rest of the world follow Taiwan's legal monopoly scheme for facemasks. Perhaps a lighter rationing intervention, such as the Taiwanese government's emergency procurement of facemasks and distributing them to needy sectors during the SARS outbreak is sufficient for handling any shortage risks. A legal monopoly creation is costly, has poor efficiency, and is prone to government abuse as a diplomacy machine, not to mention the precondition of being the second-largest producer of facemasks worldwide.