Supplementary file 1

Table S1. Selected Policy Contents of the Selected Countries in Relation to Governance (up to April 15, 2020) a

	Border Control	Inter-sectoral Collaboration	Supporting Population Economy b	Suspending Tax Payment
China	Strict control of foreign passengers to prevent the entry of new items from abroad	No data, except two hospitals built by the army	 Increasing liquidity, supporting debt and equity financing, and reducing fees and taxes Extending loans or rollover debts without penalty or negative credit reporting Cutting the one-year medium-term lending facility rate Cutting interest rates on the seven-day repo agreements Giving forbearance on mortgage and other personal loans Deferring loan payments deadline Reducing loan size restrictions for online loans Supporting bond issuance by financial institutions to finance SMEs lending Increasing fiscal support for credit guarantees Deferred tax payments for SMEs, reducing rent, waiving of administrative fees, and subsidizing R&D costs for SMEs. 	 Extending deadline for tax filing Simplifying tax filing processes and accelerating the refund process for export enterprises VAT exemptions on a wide range of customer services for an unlimited period and for small-scaled taxpayers An individual income tax exemption on health-related income recipients Deferring corporate income tax payment for small enterprises and self-employed businesses Tax exemptions for the import of products used in the control and prevention of disease Reducing VAT rates for companies in the Hubei Province
Japan	 Entry restrictions 14 days quarantine and visa restrictions Undergoing PCR tests for all determined nationals within 14 	Cooperation between several ministries, agencies, universities and industry to consider COVID-19.	 Allocating nearly \$1,500 to each citizen Budget allocation to micro- and SMEs and to individual business owners 	 Extension of tax return deadline Extending deadline of filing or paying a tax return for who gets infected by COVID-19 Deferment of the payments of national taxes and social security premiums without collateral and penalties

	days prior to their application for landing Suspension of visa validity & exemption measures			 Extending the filing and payment due dates for individual income tax by one month The possibility of up to one-year payment deferral in cases of financial difficulties
S. Korea	Entry restrictions Passengers body temperature measurements at entry points 14-days support centers for who had recently traveled to China or affected areas in S. Korea Automatic tracking and quarantine all incoming passengers	 The presence of the KCDC headquarters as the command center of the prevention and control efforts The vice head 1 & 2 of the CDSCH respectively assists the KCDC headquarters and provides coordination between the central and local governments 	 Extraordinary financial assistance for protecting SMEs from bankruptcy Special Loan guarantee program to enable small and micro-businesses to rollover debts and defer interest payments Receiving full guarantees on bank for small business owners 	 Extension of the company's tax and VAT filing due dates for nine months Extra one-month postponement of these two deadlines for the jobs of the designated disaster areas For some tax cases, a maximum of 2-year extension is allowed upon request Renewal for taxpayers who are quarantined due to the COVID-19 virus
USA	 Entry restrictions Avoid unnecessary trips Health assessment and 14-day quarantine of passengers upon arrival Closure of some flight lines Suspension of visa issuance 	 FBI cooperation to reduce domestic violence and sexual harassment Army cooperation with the Department of HHS Bilateral cooperation of state health officials with CDC and Covid-19 committee 	 Government loans and financial assistance to business owners A monthly donation of \$2,000 for each adult and \$1,000 for each child A refundable payroll tax credit for 50% of "qualified wages" Direct appropriations for Small Business Administration loan guarantees Subsidize loans with 4% interest rate Allocating \$500 billion to the Treasury's ESF for loans, loan guarantees, and other investments Up to \$600 billion in loans to SMEs \$2.4 trillion in aid 	 Deferring tax cases Extension of the deadline for filing income tax returns Extending the due date for filing federal income tax return, the federal gift and generation-skipping transfer tax return Deferring the due date for depositing employer payroll taxes and 50% of self-employment taxes related to social security and railroad retirement for taxes on wages paid during 2020

Singapore	 Entry restrictions Passengers body temperature measurements at entry points Extending border control measures to land and sea Getting entry approval was mandatory for all long-term pass holders 	Stablishing a multi-ministry taskforce	 Budget allocation for self-employed persons for the next nine months Increasing the percentage of co-funding of wages from 8% to 25%. "Resilience Budget" to maintain capabilities and hone skills for recovery "Solidarity Budget" to deal with disruptions caused by the one-month Circuit Breaker measures 	 Considering tax rebates for any kind of business Expanding the deferment of tax payments for three months without any penalties Expanding filing deadlines Suspending any debt recovery action against the qualifying groups
Germany	 Entry restrictions Blocking all flights to Italy Strict rules for travelers from highrisk countries Quarantine all suspected passengers 	 Cooperation with the RKI Cooperation of several ministries in resolving the Corona crisis Providing some services by the army 	 Expanding liquidity assistance programs for companies to access cheap loans Extending some kinds of loans to large enterprises with no limit regarding turnover Limited individual credits to investments or purchases of operating material within Germany Doubling guarantee limit for small enterprises 	 Reducing tax prepayments if a taxpayer's income in the current year is expected to be lower than in the previous year Waving enforcement measures and late-payment penalties if the debtor is directly affected by the COVID-19
UK	 Entry restrictions Passengers body temperature measurements Blocking all flights to and from Wuhan Mandatory use of masks 	Inter-sectoral cooperation between the MoH, Ministry Education and other ministries	 Allocating about \$409 billion of government loans and guarantees A plan to support liquidity for larger firms through new loan facilities A cash grants for jobs that do not have insurance A cash grant for 7,000 of the UK's smallest businesses Paying up to 80% of the salary to those workers kept on by employers. 	 3-months automatic deferral of VAT payment without any late payment penalties or interest ATP facilities for businesses that have missed their next tax payments due to COVID-19 Extending payment deadline for registered importers who pay cash and are facing financial difficulties as a direct result of Covid-19 Extending the payment time for taxpayers to pay off accumulated debts during the deferral period Expanding income tax payments deadline for self-employed without any late payment penalties

Spain	Entry restrictions	 Supporting the MoH by the MoD in service delivery Establishment the basis of collaboration between the national and regional health authorities 	 A minimum income scheme was approved to help vulnerable families Getting one-month unemployment benefits for workers who temporarily suspended Granted an extraordinary benefit for temporary workers Reinforce the protection of people who are assisted through social services Allocating the price for the unitary surgical mask and hydro alcoholic gels Affording 75% of taxable income to workers who are on sick leave by social security funds 	 Extending deadlines for the submission of tax returns and self-assessments and related payments for taxpayers with the volume of transactions less than \$672,990 in 2019 Six months deferral tax payments for SMEs and self-employed persons with less than \$6.73 million turnovers without interest
Italy	 Airport controls for citizens coming from Wuhan Passengers body temperature measurements Blocking all flights to and from China Completing a self-declaration form upon arrival 	No data	 Allocating \$7.2 billion for affected businesses The issuance of a "liquidity order" such as some targeted tax relief to help businesses Paying 80% salary to employees Suspension of long-term loan repayments for self-employed workers The last-resort income support fund (\$337 million) for self-employed workers \$675 grant allowance for autonomous and seasonal workers 	 Suspending and extending all tax fulfilments due date without penalties Deferring and withholding VAT payments for businesses with a turnover not exceeding \$2.24 million in the previous fiscal year, and for businesses that have been closed down due to coronavirus Suspending the launch of new debt recovery activities Postponing the payment deferral for those recovery activities that have already been initiated.
Iran	Blocking flights to China	 Establishing a multi ministerial COVID-19 headquarter Cooperation between the army, the Basij and the Revolutionary Guards Cooperation of all guilds and organizations Collaboration with banks and private centers to provide online services 	 Facility allocation for businesses affected by Corona More than \$357 million in aid to the Unemployment Insurance Fund Cash transfer to 3 million low-income households Subsidize loans with 4% interest rate for 4 million businesses affected by Corona and not fired any laborer. 	 Suspending all tax cases Extension of filing the tax returns due date Accepting cash and non-cash donations to the healthcare sector to deal with the coronavirus as an acceptable tax expense Exemption of penalty relievable tax Extension of VAT payment deadline

^a Abbreviations: ATP, Additional Time to Pay; CDC, centers for disease control and prevention; CDSCH, central disaster and safety countermeasures headquarters; ESF, exchange stabilization fund; FBI, federal bureau of investigation; HHS, health & human services; MoD, ministry of defense; MoH, ministry of health; RKI, Robert Koch Institute, SME, small and medium-sized enterprise; VAT, value-added tax

^bOne notable issue with regard to "Supporting Population Economy" is that China did not make the same direct cash infusions to workers.

Table S2. Selected Policy Contents of Selected Countries in Relation to Service Delivery (up to April 15, 2020)

	China	Japan	S. Korea	USA	Singapore	Germany	UK	Spain	Italy	Iran
Testing strategy	Suspicious cases	Initially at the discretion of doctors	Widespread open public testing	Initially, symptomatic patients at the discretion of the doctor	 All pneumoni a patients Symptom atic patients who hospitaliz ed in ICU All Suspiciou s cases 	Suspicious cases	 All travelers A contact of a confirm ed case As of March 12, only sympto matic people 	Symptoma tic patients	Symptomati c patients	Initially symptomatic patients
Drive-Thru Test Centers	No	Yes	Yes	Yes	No	Yes	Yes	Yes (mobile labs)	Yes (mobile labs)	No
PHC first contact	Yes (fever clinics)	No data	Yes	Partially (Both referring system and going directly to the hospitals)	Yes	No data	Yes	No data	Yes	Partially (Both referring system and going directly to the hospitals)
Telemedici ne	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hospitaliza tion	No data	Patients who suffer from severe respirator y symptom s	Severe cases in equipped hospitals, mild cases in regular hospitals	Patients who suffer from severe respiratory systems or vulnerable groups	Symptomatic contacts	Patients who suffer from severe respiratory systems	Patients with severe symptoms	Patients who suffer from severe respiratory symptoms	Patients who suffer from severe respiratory symptoms	Patients who suffer from severe respiratory systems or vulnerable groups

Contact tracing (15 April)	Comprehen sive tracing (AliPay, WeChat and other apps)	Limited tracing	Comprehen sive contact tracing (security camera footage, credit card records, even GPS data from their cars and cellphones)	Limited tracing	Comprehensi ve contact tracing (having close (within 2 m) and prolonged (generally ≥30 minutes) contact with the COVID-19 patient using TraceTogeth er mobile app)	Limited tracing (Close contacts in the previous 48 hrs.)	No tracing	Limited tracing (people who were closer than 2 m and for more than 15 min to suspected or confirmed cases, in the two days before symptoms onset or positive testing)	Comprehens ive contact tracing (Close contacts in the previous 48 hrs)	No tracing
Recovery definition	Afebrile >72 hrs, Eliminating symptoms AND two negative consecutive PCR at ≥24 hrs. interval	No data	Eliminating symptoms AND two negative consecutive tests at 24 hrs. interval	Eliminating symptoms AND two negative nasopharyn geal swabs at ≥24 hrs. interval	Afebrile >24 hrs. AND two negative respiratory samples by PCR in ≥24 hrs.	Eliminatin g symptoms AND two negative consecutive tests at 24 hrs. interval	Eliminatin g symptoms AND two negative consecutive tests at 24 hrs. interval	Negative laboratory result	Eliminating symptoms AND two negative consecutive tests at 24 hrs. interval	Afebrile >72 hrs., AND SPO2>93% without ventilator in normal condition, AND improved respiratory/ vital clinical symptoms
National treatment protocols	Yes	Yes	Yes	Yes	Yes	No data	Yes	Yes	No	Yes
Private sector engagemen t	No data	Strengthe n the testing system by utilizing	Private companies' involvemen t and participatio	Allocation of \$1 billion to the private sector to	No data	Significant cooperatio n of private sector	Increase testing capacity and add extra	Admitting patients from either non-COVID-19	Access to all private hospital services	\$3 million donation by private sector to

		local and private institutes	n in mass production of kits	fight coronavirus		laboratorie s and the policlinics capacity	hospital beds, ventilators and health workers by using private health sector	patients or public hospitals by private hospitals based on public tariffs.	Admitting non-COVID-19 patients by accredited private hospitals	fight Corona.
Travelers test	Yes	Yes	No data	Yes	Yes	Yes	No data	No data	No data	No
Testing for front-line workers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No data	Yes
Suspension of non- urgent elective cases	Yes	Partially (at least one-third of designate d hospitals have been forced to suspend part of their services)	Yes	Yes	Yes	Yes	Yes	Yes (elective surgery could start if admitted COVID-19 patients are less than 5% of the total hospital capacity)	Yes (Doing surgical activity underwent a radical restriction)	Yes
Enhanced access to mental health services	Yes (psychologi cal hotlines/ free electronic copies of several books/ artificial intelligence programs)	No data	No data	Yes (an online website providing advice, telephone counseling and emergency code)	Yes (the 24-hrs hotline)	Yes (the telephone support and counseling services were provided)	No data	Yes (three phone numbers were activated)	No	Yes (two free psychologic al telephone counseling line)
Strategies to protect	Yes	Yes	Yes	Yes (restrictions	Yes (developing	Yes (reduce	Yes (developin	Yes (confirmed	Yes (implementi	Yes (providing

elderly in				on traffic to	"Support	contact and	g the	cases and	ng structural	guidelines
nursing				and	Measures for	visit the	"Managing	all close	requirements	for the
homes				monitoring of nursing homes, identifying the positives/ introducing "respondin g to Coronaviru s (COVID- 19) in nursing homes)	Seniors During Covid-19")	elderly, coronaviru s testing)	the COVID-19 pandemic in care homes for older people")	contacts will be isolated and quarantine d, and doing PCR tested)		prevention and control of Covid-19 in long- term care facilities and nursing homes/ developing environmen tal control guide in welfare centers and nursing homes)
Temporary New Hospitals/ Recovery Centers	Yes (setting-up two massive temporary hospitals)	Yes (hotels for the treatment of patients/installing large tents and prefabrica ted buildings and setting-up local outpatient or testing centers)	Partially (transformi ng dormitories into new clinical centers/ establishing the temporary COVID-19 testing center)	Yes (hospitals in a Convention Center and Central Park/ converting a Tennis Center, hotels, dormitories and large open space into a hospital)	Yes (a temporary hospital in an exhibition center/ preparing holiday chalets and university hotels as quarantine centers)	Yes (using Hall 26 at the Berlin Expo Center and the exhibition grounds of Mess Berlin as a temporary hospital)	Yes (temporary hospitals in the London ExCel convention Center, and in the Glasgow Conferenc e and Exhibition Hall in Scotland/ establishin g more critical care units)	Yes (constructi on of temporary hospital in a sports center near main hospitals)	Yes (allocation FieraMilano City and an exhibition as a temporary hospital)	Yes (equip indoor stadiums, hotels, Iran Mall, and Tehran exhibitions as the temporary hospitals)

Table S3. Selected Policy Contents of the Selected Countries in Relation to Information (up to April 15, 2020) a

	Public Data Availability	Public Health Information & Education (Health Communication)	Health Workers Training	Hotline Call/ Consultation Centers	Launching a Dedicated Website for COVID19
China	Regular updates regarding epidemiological statistics on MoH website	Educational programs through video conferencing, student education, television, mass media and the MoH website	Training medical staff at three levels regarding personal protection	Yes	Yes
Japan	Providing key information about the COVID-19 outbreak via the MHLW website	 Encourage calm response through multiple measures such as the website of the MHLW Key information including ways to prevent infection through the websites 	No data	Yes	Yes
S. Korea	Provide daily statistics of patients through the website and media	 Extensive educational public health messaging through media, websites and smartphone apps, television broadcasts Installing banners at subway stations 	Increasing the training courses for the health and medical staff	Yes	Yes
USA	Regular updates regarding epidemiological statistics on CDC website	General Guidelines on CDC website	No data	Yes	Yes
Singapore	Regular updates regarding epidemiological statistics on MoH website	 Regular messages on public health education and information Issuing advice to stay home through WhatsApp by the government 	Creating instant- messaging groups between frontline clinicians and the MoH senior officials	Yes	Yes
Germany	 Regular updates regarding epidemiological statistics and chronicle of measures available in the MoH website The RKI provides briefings about monitoring of the pandemic 	Official recommendations regarding personal hygiene and health education on social media	16-hours education courses for nurses	Yes	Yes
UK	Provide daily statistics of patients through the MoH website and media	 Extensive public health information through websites and media Install banners at metro stations Establishing a website to explain the scientific evidence about COVID-19 	Temporary and short training	Yes	Yes
Spain	Sharing documents through the MoH website	Provide health recommendations for different groups	No data	No data	Yes

	Launching a campaign by MoT informing about compulsory measures regarding physical distancing	launching a communication campaign in social media providing recommendations when using public transportation launching a Chatbot operating through WhatsApp			
Italy	 Regular updates regarding epidemiological statistics on several publicly available websites An information campaign to inform citizens about the measures adopted by the government Daily press conference of the civil protection to update the national community 	Extensive information through three main websites Promoting the educational campaign through the main social media networks (Facebook and Instagram) and TV	Providing a short training program if required	Yes	Yes
Iran	Provide and update epidemiological statistics on the epidemiologic committee of COVID-19 website as daily reports and approvals	 Install public health educational billboards Health education via social media Providing required instructions for different stakeholders on the MoHME website 	Provide instructions for health workers	Yes	Yes

^a Abbreviations: Ab, antibody; CDC, centers for disease control and prevention; MHLW, ministry of health, labor and welfare; MoH, ministry of health; MoT, Ministry of Transport; RKI, Robert Koch Institute

Table S4. Selected Policy Contents of the Selected Countries in Relation to Medical Products, Vaccines and Technology (up to April 15, 2020)

	Reinforce Physical Infrastructure (Hospital Beds and Spaces for Diagnostics and Treatments)	Access to PPE	Reinforce Supplies of Diagnostic Tests, PPE, Ventilators, Essential Medicines	Research & Development	Tele- medicine
China	No data	No data	 Launching the mask production line by some Chinese car factories Increase the production of diagnostic kits and equipment Possibility of access to loans for frontline companies manufacturing supplies Corporate Income Tax and VAT incentives for companies producing medical supplies, used in relation with COVID-19 	 Support for faster vaccine detection Developing new diagnostic kits Evaluation of the effect of herbal medicines 	Yes
Japan	Secure more than 5,000 hospital beds for emergencies	Limited	 Purchasing and distributing 20 million fabric masks and 5 million surgical masks by the government Providing supports for installation of equipment such as ventilators Providing further support to mask manufacturers for increasing production 	 Supporting clinical research to develop treatments by the Japan Agency Supporting researches on the prevalence of Ab Supporting development of immediate diagnostic kits Supporting R&D projects on several topics about COVID-19 	Yes
S. Korea	Equipping hospitals for COVID-19 patients with ventilation and negative pressure	Unlimited	 Supporting domestic mask manufacturers Increasing production of ventilators for patient care rooms 	 Provide the necessary data to identify potential drugs to control and treat the disease Competition of 15 South Korean firms to develop vaccines and treatments for COVID-19 Efforts to prepare and develop diagnosis kits for home use 	Yes
NSA	 Increasing the number of hospital beds Equipping hospitals with a sufficient number of ventilators & PPE Transferring patients in need of ICU to other regions by the army ships 	Severe shortage	 Allocate a specific budget for more production Purchase from other producing countries 	 Simultaneous testing on more than 100 drugs and vaccines Supporting studies related to COVID- 19 	Yes

Singapore	No data	No data	Singapore biotech company Veredus launched a COVID-19 test kit for invitro diagnosis	 Efforts to develop a vaccine Supporting for several human clinical trials on a potential treatment for COCIV-19 Efforts to develop a test kit that could detect coronavirus Ab in an hour 	Yes
Germany	 Increasing ICU beds from 12,000 to about 40,000 30,000 of the 40,000 ICU beds are equipped with ventilators 	Limited	 Creating a national reserve of protective equipment Prohibition of exporting medical equipment to other countries Pharmacists were allowed to manufacture hand sanitizer Centralizing procurement of PPE for regions 	Allocating funds for faster detection of coronavirus vaccine	Yes
UK	 Releasing 8,000 beds and 1,100 ventilators Using 20,000 beds in private sector facilities Freeing up 30,000 beds by discharging patients who were well enough 	Severe shortage	Increasing the number of ventilators	 Planning for preparation and development vaccines and treatment for COVID-19 Providing several clinical trials for vaccine production 	Yes
Spain	 Increasing ICU's bed capacity in public hospitals Availability of all ICU beds from private hospitals Three speed trains have been converted to transfer out up to 24 critical patients to ICU based in autonomous communities with lower ICU beds occupation 	Limited	A technological platform to enabling centralized purchasing of medicines, health products, and PPE Increasing surgical masks and protective gowns production Manufacturers and authorized distribution agents have to guarantee the supply of a number of drugs Issuing commercialization of PPE without the CE marking	 Launching 32 clinical trials to treat more than 26,000 patients in hospitals Launching a placebo clinical trial (named "EPICOS") for preventing COVID-19 infection in health professionals. 	Yes

Italy	 Military camp hospitals with additional ICU or semi-ICU beds and lower intensity care beds for those in recovery Increasing ICU beds by 50% Increasing number of beds in pneumology and infectious diseases wards by 100% Transferring patients in need of ICU to other regions by the army helicopter and airplane 	Limited	 Releasing subsidized loans and non-refundable aid to companies converting their products to fast-track production of medical devices and PPE The government has launched a project managed by three ministries to increase the number of ventilators by a total of 5,000 Banning PPE exportation 	 Invite different type of institutes to collaborate in a project on COVID-19 jointly managed by three ministries Promote controlled clinical trials of off-label drugs Promote R&D or access to experimental drugs by the Italian Medicines Agency 	No
Iran	 Equipping ambulances and emergency centers Equipping medical centers and outpatient clinics 	Partially limited	 Sending several tones of essential medical items and PPE to Iran by international organizations Increasing domestic production capacity Supporting the change of production line of some professions to provide the required essential items and PPEs Providing loans and removing the legal barriers to manufacture of PPE and sanitizer 	 Supporting cooperation of knowledge-based companies Dedicated funding to medical universities to conduct research on various aspects of Covid-19 Implementation of 1,200 research projects in the Coronavirus area 	Partially