U.S.-China Economic and Security Review Commission
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Highlights of This Month's Edition

- **Bilateral trade:** Chinese exports to the United States fell to $22.8 billion in February 2020 from $33.2 billion in February 2019, a drop of 31.3 percent, the largest fall since the Census' earliest reported data in the 1990s.
- **Bilateral policy issues:** Beijing exploits COVID-19's spread for a new soft power offensive; global investors are discussing whether China could emerge as the next safe haven for financial assets, but market data do not suggest a change in their attitude.
- **Policy trends in China's economy:** Chinese financial regulators are taking steps to help diversify and professionalize China's asset management industry and strengthen its ability to resolve nonperforming loans; China's three major telecom operators have pledged substantial increases in 5G base station construction as part of China's economic recovery strategy; property sales fall by an estimated 38 percent year-on-year in February as measures to contain COVID-19 force developer sales centers to close.
- **In Focus – Personal Protective Equipment:** The global shortage of face masks and other medical products amid the COVID-19 pandemic highlights the world's critical dependence on China as a source of personal protective equipment.

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This issue of the Economics and Trade Bulletin *was prepared by Nargiza Salidjanova, Virgil Bisio, Charles Horne, Kaj Malden, Leyton Nelson, and Suzanna Stephens. You may reach us at* contact@uscc.gov.

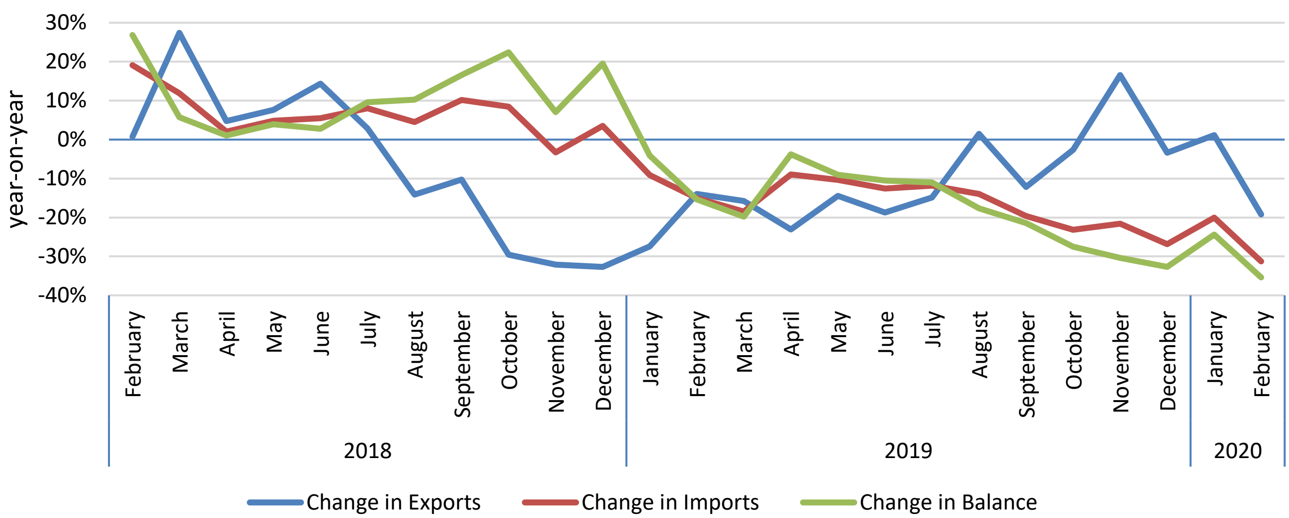
Bilateral Trade

COVID-19 Shock Extends Drop in Chinese Goods Exports to the United States

In February 2020, U.S. goods imports from China totaled $22.8 billion, a 31.3 percent drop relative to $33.2 billion in February 2019.[1] While U.S. imports from China weakened throughout 2019, February 2020 saw the largest year-on-year monthly fall since the Census' earliest reported data in the 1990s.[2] The outbreak of the novel coronavirus COVID-19 led to a supply shock in China as policies to minimize the spread of illness brought economic activity to a halt. The China General Administration of Customs reported that all Chinese exports fell by 17.2 percent in January and February 2020 over the same period in 2019.[3]

The last quarter of 2019 has been particularly weak for U.S. goods imports from China (see Figure 1). Brad Setser, economist at the Council on Foreign Relations, argues this fall in goods imports from China in late 2019 was not offset by growing goods imports from other U.S. trading partners, showing lower overall U.S. demand for imported goods.[4] While several factors could have contributed to the 2019 decline in U.S. imports—including a downturn in U.S. manufacturing,[5] falling U.S. business investment, higher import tariffs, and greater business uncertainty[6]—it is clear the economic impact of COVID-19 has extended the sharp drop in U.S. imports, and is set to continue.

Figure 1: U.S. Exports, Imports, and the Trade Balance with China, February 2018—February 2020



Source: U.S. Census Bureau, *Trade in Goods with China*, April 2, 2020. *https://www.census.gov/foreign-trade/balance/c5700.html*.

Bilateral Policy Issues

Beijing Exploits Global Spread of COVID-19 to Advance Propaganda

As countries scramble to respond to the global outbreak of COVID-19, the Chinese Communist Party (CCP) perceives a strategic opportunity to project global leadership, reinforce the message that democracies are in decline, and sow disinformation to downplay its culpability in the virus' spread.[7] The Chinese government is buttressing this propaganda offensive by sending critical supplies to countries where it seeks to deepen its political and economic clout, leveraging its outsized role in the global production of medical personal protective equipment (PPE) to do so. According to analysis by Chad Bown at the Peterson Institute for International Economics, in 2018 China provided nearly half of the world's imports of PPE, such as face shields, protective garments, mouth-nose protection equipment, gloves, and goggles.[8] An editorial published in CCP mouthpiece *People's Daily* asserts that China can supply such products to "relevant countries" to strengthen its international influence.[9] The Chinese government has since announced it would provide medical personnel and supplies to 82 countries,[10] and has pledged $62 million in aid to international organizations.[*]

Following its belated recognition of the virus' severity in late January, the Chinese government mobilized thousands of firms in disparate industries to produce PPE and other medical equipment.[11] The subsequent ramping up in production has left China with surplus inventory, which Beijing is now using to deepen global political influence. These efforts have been most apparent in Italy, the second-most-afflicted country globally by number of infections as of April 1.[12] Though Italy initially requested medical equipment from other EU member countries through the EU Civil Protection Mechanism,[†] the EU was unable to respond amid strained supply chains and fears of shortages.[13] Beijing proceeded to dispatch masks, respirators, and medical staff to Italy,[14] with General Secretary of the CCP Xi Jinping later telling Italian Prime Minister Giuseppe Conte that Beijing was willing to build a "health silk road."[15] Beijing's quick support to Italy and allusion to the Belt and Road Initiative—to which Italy became the first G7 signatory—suggest a strategy to display to other countries the benefit of aligning with China's policy interests. Chinese aid to other countries in the region is contributing to European disunity and reinforcing Beijing's propaganda push to frame democracies as unable to adequately respond to the outbreak. Serbian President Aleksandr Vucic, for example, described European cooperation on combatting COVID-19 as a "fairytale" after receiving shipments of medical supplies from China.[16]

Commercial entities close to the Chinese government are also distributing face masks and medical supplies in countries where they seek to build new markets. Huawei, for example, donated 800,000 face masks to the Netherlands in mid-March,[17] despite the number of confirmed cases in the Netherlands being smaller than elsewhere.[‡] The Netherlands is slated to auction its 5G network buildout in 2020,[18] suggesting Huawei's efforts are politically motivated. Huawei is deploying similar tactics in Lithuania, where bids to build 5G networks are under review.[19] Separately, the Jack Ma Foundation—founded by the former executive chairman of the e-commerce giant Alibaba—promised to send 20,000 test kits, 100,000 masks, and 1,000 medical suits to all 54 African nations.[20]

Reports about the faulty quality of Chinese medical equipment may dent China's soft power push. For example, according to an official at the Guangdong Medical Devices Management Agency, the number of defective face masks had more than doubled since the start of 2020.[21] The exponential uptick in global demand for face masks is pushing producers to shorten testing procedures, sacrificing quality.[22] Testing kits have also been found to be inaccurate, with the Slovak government stating that 1.2 million Chinese antibody tests bought for $16 million from Chinese suppliers are unable to detect COVID-19 in its early stages.[23] Officials in Spain separately indicated that testing kits purchased from China provide inaccurate results 70 percent of the time.[24]

No Red Haven: Investors Not Rushing to China Despite Global Market Turmoil

As millions of Americans stay at home due to the COVID-19 pandemic, the Chinese government claims to have brought the spread of the virus under control.[§25] This has led some investors to view Chinese assets as a potential new safe haven amid global market turmoil.[26] For example, while the S&P 500 has fallen 673.3 points since the beginning of 2020, the Shanghai Composite Index has fallen a comparatively modest 335.9 points.[27] Meanwhile,

[*] Chinese contributions to international organizations pale in comparison to those made by United States. The United States contributed $400 million to the World Health Organization, compared to China's $44 million; $700 million to UN Children's Fund, compared to China's $16 million; and $1.7 billion to the UN High Commissioner for Refugees, compared to China's $1.9 million. U.S. Department of State, *The U.S. Role in International Organizations' Response to COVID-19*, March 31, 2020. *https://www.state.gov/the-u-s-role-in-international-organizations-response-to-covid-19/*.

[†] The EU Civil Protection Mechanism is an emergency response tool established to strengthen cooperation between EU member states in prevention, preparedness, and response to disasters. A country can request assistance via the mechanism when the scale of an emergency overwhelms its response capabilities. European Commission, "EU Civil Protection Mechanism." *https://ec.europa.eu/echo/what/civil-protection/mechanism_en*.

[‡] As of April 1, 2020, the Netherlands had 13,696 confirmed COVID-19 cases, the 11th highest globally. Johns Hopkins University Center for Systems Science and Engineering, "Coronavirus COVID-19 Global Cases," updated March 31, 2020. *https://coronavirus.jhu.edu/map.html*.

[§] According to a Bloomberg report, the U.S. intelligence community concluded in a classified report that China has underreported the extend of the outbreak within its borders. Nick Wadhams and Jennifer Jacobs, "China Concealed Extent of Virus Outbreak, U.S. Intelligence Says," Bloomberg, April 1, 2020. *https://www.bloomberg.com/news/articles/2020-04-01/china-concealed-extent-of-virus-outbreak-u-s-intelligence-says?sref=FlHD1WjR*.

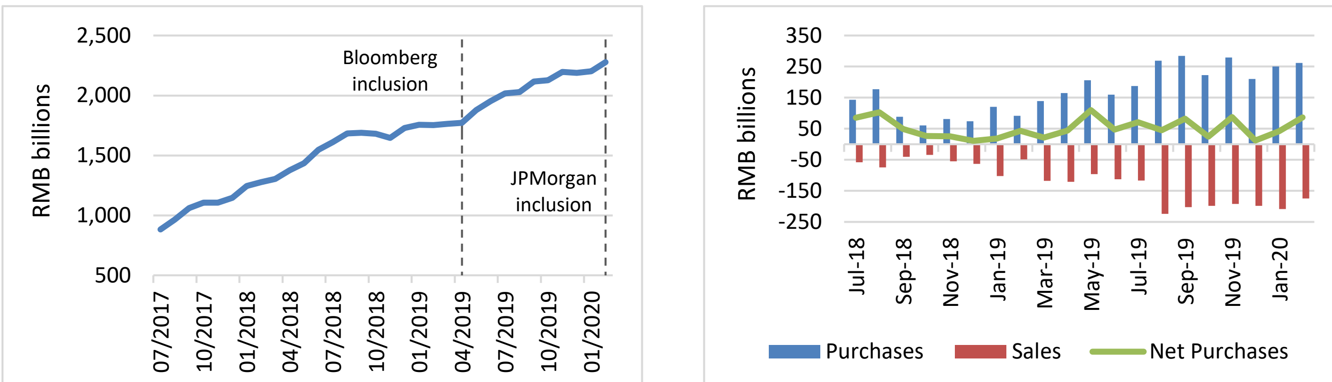
the 10-year spread between Chinese government bonds and U.S. treasuries reached a seven-year high in March.[28] Despite such opportunities, there is little indication that global investors are fleeing to the safety of Chinese assets.

Recent media coverage has highlighted a February uptick in foreign investor purchases of Chinese bonds that brought foreign ownership through the bond connect program to a new high.[29] Although some fixed income investors doubtless do regard Chinese bonds as a form of security against falling yields in developed markets, the data do not suggest a sea change in the way global investors broadly view China's financial market. Instead, the data point to an ongoing rebalancing of portfolios by fund managers that was well underway before the outbreak of COVID-19. Foreign investors had already taken a growing interest in Chinese bonds following regulatory improvements to the operation of the bond connect and the inclusion of Chinese bonds into global indexes (see Figure 2, Panel 1).[*] Although net foreign purchases of Chinese bonds reached a three-month high in February, they fit a broader trend toward greater trading volumes through the bond connect program launched in July 2017 (see Figure 2, Panel 2).[30]

Figure 2: Foreign Investments in Onshore Chinese Bonds

Panel 1: Foreign Ownership of Onshore Chinese Bonds, July 2017–February 2020

Panel 2: Purchases and Sales of Chinese Bonds by Foreign Investors, July 2018–March 2020



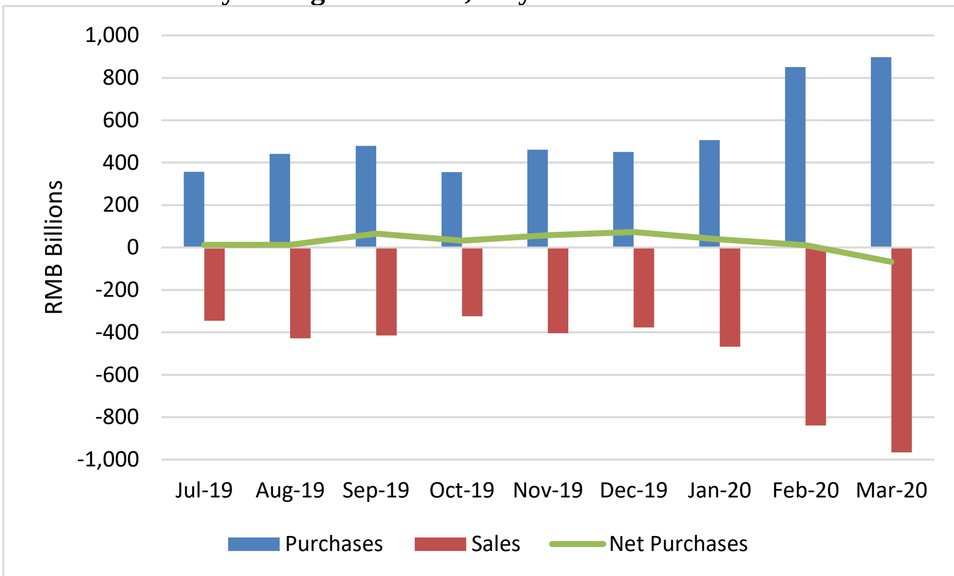
Note: These figures only include data for China's interbank bond market, where 89 percent of all bonds were traded as of 2018. Panel 2 is based on data from the China Central Depository and Clearing Company only.
Source: China Central Depository and Clearing Company and Shanghai Clearing House.

Recent upticks in foreign investors' bond holdings have coincided with the inclusion of Chinese government and policy bank bonds into widely tracked global indexes. This suggests the increase in bond purchases in February may be partially driven by the kickoff of the JPMorgan Government Bond Index inclusion in addition to global market volatility due to COVID-19.

Equities market data similarly do not indicate any significant shift in attitude among global investors. In fact, as COVID-19 battered China's economy in the first quarter of 2020, net stock sales by foreign investors increased, and in March sales outstripped purchases (see Figure 3).[31] Far from pointing to the emergence of a new safe haven, these data suggest growing apprehension among global investors about China's equities markets.

[*] In April 2019, the Bloomberg Barclays Global Aggregate Index began a 20-month inclusion process for Chinese sovereign and policy bank bonds. In February 2020, the JP Morgan Government Bond-Emerging Markets Index began a 10-month inclusion process for Chinese sovereign bonds, but in March announced it would delay the remainder of the implementation due to the outbreak of COVID-19. For a detailed discussion of these topics, see Noah Sin, "Market Rout Disrupts China's Expansion in JPMorgan, FTSE Russell Indexes," *Reuters*, March 26, 2020. *https://www.reuters.com/article/health-coronavirus-china-markets/market-rout-disrupts-chinas-expansion-in-jpmorgan-ftse-russell-indexes-idUSL4N2BJ160?feedType=RSS&feedName=companyNews&utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+reuters%2FcompanyNews+%28News+%2F+US+%2F+Company+News%29*; U.S.-China Economic and Security Review Commission, "Index Inclusions Increase Foreign Holdings of Chinese Securities," in *Economics and Trade Bulletin*, January 7, 2020.

Figure 3: Monthly Purchases and Sales of Onshore Chinese Equities by Foreign Investors, July 2019–March 2020



Source: Hong Kong Exchanges and Clearing via CEIC database.

Although market data have yet to signal that global investors view China as a safe haven, it could potentially become one as loss in economic activity worsens around the world. Meanwhile, preliminary data suggest China's domestic economy is moving toward recovery. For example, China's March Manufacturing Purchasing Manager's Index (PMI) reading rebounded to 52.0 (a reading above 50 indicates expansion) after falling to a historic low of 35.7 in February.[32] Economic and political consulting firm Trivium China also estimates that as of April 1, China's economic capacity utilization had returned to 77.7 percent of its pre-COVID-19 level.[33]

Nevertheless, China becoming a safe haven is contingent upon its ability to continue controlling the spread of the virus and to put a floor under global growth.[34] There are risks to both. First, though China's draconian social distancing measures seem to have brought community transmission under control, the risk of a second wave of infections as people return to work or from reimported cases remains high.[35] As of March 31, the number of confirmed cases imported from abroad reached 691, up from 474 a week earlier.[36] Second, if there are mass bankruptcies among small private companies, then they will be unable to underwrite a recovery in domestic demand.[37] Finally, even if China's domestic economy recovers quickly, it will continue to face external pressure as the global spread of the virus and related lockdowns reduce demand for China's exports.[38]

Policy Trends in China's Economy

Beijing Bolsters Struggling Asset Management Sector

China's financial regulators have approved several measures in recent weeks to bolster the country's asset management sector. On March 17, the China Banking and Insurance Regulatory Commission (CBIRC) approved the creation of a new national asset management company (AMC) for the first time since China's major state-owned banks offloaded large portfolios of bad assets more than 20 years ago.[39] After a six-month transition period, China Galaxy Asset Management (formerly called Jiantou Citic Asset Management) will become the country's fifth national AMC, joining the ranks of China Huarong Asset Management, China Orient Asset Management, China Cinda Asset Management, and Great Wall Asset Management, the combined assets of which equal about $700 billion (renminbi [RMB] 5 trillion).[40] Less than two weeks later, Caixin, a Chinese business and financial media company, reported that the CBIRC plans to establish a holding company to oversee the national AMCs—all of which are state owned.[41]

China is also opening up its provincial nonperforming loan (NPL) markets to foreign distressed asset managers after pledging to do so in the U.S.-China Phase One trade agreement. In February, Los Angeles-based Oaktree Capital became the first foreign distressed asset investor to establish a wholly foreign owned AMC in China.[42] All of these changes appear aimed at professionalizing the AMC sector and strengthening its ability to dispose of NPLs.

The creation of a holding company to manage the national AMCs likely indicates that Beijing intends to exercise closer oversight over the companies, especially as the Ministry of Finance—their majority shareholder—has traditionally adopted a hands-off approach.[43] Similarly, Beijing may aim to use the creation of a fifth national AMC as an opportunity to shake up the AMC sector and encourage the original four to improve their core business capabilities and avoid unrelated business entanglements. Between 2013 and 2018, China's four AMCs expanded beyond their core mandate of NPL disposal to offer a variety of other financial services, including banking, leasing, securities, futures, and trust services. They also joined the ranks of other nonbank financial institutions engaged in shadow credit intermediation.[44] To extend more shadow loans, the AMCs borrowed heavily from banks.[45] Although regulators have curtailed this practice to some extent following the 2018 investigation of former Huarong chairman Lai Xiaomin on corruption charges, it had a lasting impact on the national AMCs' ability to acquire and dispose of NPLs.[46]

Although the four national AMCs operated with no competition for the first decade and a half of their existence, China began piloting regional AMCs in 2013 to help dispose of NPLs. The regional AMCs quickly became major players in the NPL disposal business and proliferated from an initial batch of five to a total of 61 companies by the end of 2018 as provinces clamored to establish their own bad banks.[47] But after several years of ramping up NPL purchases, regional AMCs are also struggling.[48] According to a report from the *21st Century Business Herald*, a Chinese business and financial publication, regional AMCs have also turned to the types of shadow banking activities more typical of trust companies and securities brokerages.[49] In some cases, such activities account for as much as 80 percent of regional AMCs' business.[50] This is partly because regional AMCs are primarily funded by provincial and city governments, whose fiscal resources are scarcer than Beijing's, and have struggled to raise sufficient capital to acquire NPLs on the scale at which banks are seeking to unload them.[51] Moreover, since 2018 regulators have required AMCs to maintain a capital adequacy ratio of 12.5 percent—higher than that of commercial banks.[52] Additionally, a collapse in NPL prices in 2018 largely removed regional AMCs' ability to quickly resell portfolios acquired from banks for a profit—a capital-light strategy they had pursued up to that point.[53]

A recent bond issuance by Hebei Asset Management Co.* illustrates the predicament of China's regional AMCs. On March 22, 2020, Hebei Asset Management received CBIRC approval to move forward with its first-ever public bond issuance, worth $77.5 million (RMB 550 million).[54] According to the bond prospectus, the proceeds will be used to pay back bank loans and increase liquidity for the company's existing NPL portfolio. In essence, the company needs the money to refinance its existing debt obligations and to effectively resolve NPLs it has already acquired—it will not use the money to buy new NPLs.[55]

The challenges facing regional AMCs help explain the CBIRC's recent enthusiasm for allowing foreign distressed debt investors to set up shop in China and may account for Oaktree Capital's speedy registration.[56] Despite the proliferation of local AMCs, there has been no slowdown in the volume of NPLs banks are seeking to offload. Banks doubled their annual NPL disposals from $140 billion (RMB 1 trillion) to $280 billion (RMB 2 trillion) between 2016 and 2019 without making a dent in their acknowledged† outstanding NPL stock—in fact, it increased from $210 billion (RMB 1.5 trillion) to $340 billion (RMB 2.4 trillion) over the same period (see Table 1).

* Hebei Asset Management is a provincial state-owned enterprise but was included in the fourth tranche of companies slated to undergo mixed ownership reforms in June 2019. See Hebei Asset Management Co., "Company Milestones" (大事记). Translation. *http://www.hebamc.com/index.php/Cn/About/lists.html*.

† China's banks are widely recognized to hold NPL portfolios far in excess of those they officially disclose. See U.S.-China Economic and Security Review Commission, *Hearing on China's Quest for Capital: Motivations, Methods, and Implications*, written testimony of Dinny McMahon, January 23, 2020, 2.

Table 1: Annual NPL Disposal Numbers Compared to Acknowledged Outstanding NPL Stock, 2016–2019

Year	Recognized NPL Stock (US$ billions)	NPL Disposals (US$ billions)
2016	210	140
2017	240	200
2018	280	280
2019	340	280

Note: Figures are those recorded at the end of each listed year.
Source: Various.[57]

In addition to providing a fresh batch of NPL buyers, the introduction of foreign competition to the asset management industry is broadly in line with Beijing's effort to professionalize China's financial services sector by allowing more foreign companies to participate in its domestic financial markets. Efforts to diversify and professionalize the sector are a positive step, although the scale of China's NPL problem will continue to pose a challenge for China's financial system for the foreseeable future.

China Pushes 5G to Bolster Economic Recovery

While the Chinese government postponed its annual legislative meeting in early March due to COVID-19, constructing 5G networks remains a policy priority too urgent to delay for China's state planners.[58] On March 6, the Ministry of Industry and Information Technology (MIIT) hosted a conference with the heads of China's three major telecom operators—China Mobile, China Unicom, and China Telecom—to plan accelerated 5G network construction.[59] At the meeting, the telecom operators all announced substantial planned increases in expenditures on 5G network infrastructure for 2020, with planned network coverage to extend to close to 300 cities, up from just over 50 at the end of 2019.[*] [60] Later in March, MIIT unveiled plans to develop 5G applications geared toward economic recovery and increased digital service provision.[61] Redoubled efforts to build out China's 5G infrastructure serve both to spur economic recovery and to minimize the impact of COVID-19 on the Chinese government's ambition to lead the world in 5G.

China's three major telecom operators have earmarked $25.5 billion (RMB 180.3 billion) toward 5G network construction in 2020.[62] The largest operator, China Mobile, has pledged to spend $14.1 billion (RMB 100 billion) on 5G infrastructure, more than a fourfold increase from the $3.4 billion (RMB 24 billion) it spent in 2020.[63] China

[*] For a recent comparison of network coverage in China versus the United States, see U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin*, December 5, 2019, 8–12. *https://www.uscc.gov/trade-bulletins/december-2019-trade-bulletin*.

Unicom and China Telecom indicated they would spend $6.4 billion (RMB 45.3 billion) and $4.9 billion (RMB 35 billion), respectively, on a 5G network the two operators share.[*][64]

China's sharp increase in capital expenditure will fund installation of about 600,000 total base stations by the end of 2020, nearly a fourfold increase from the 164,000 base stations in China at the end of February 2020.[65] China Mobile announced results of its second tranche of construction, to include 250,000 new base stations, on March 31, 2020.[66] China Mobile's planned network will encompass all 293 prefecture-level cities in China by the end of 2020, up from 50 cities at the end of 2019.[67] China Unicom and China Telecom are also expected to announce a second tranche of base stations soon, with 250,000 total expected to be in operation on their shared network by September 2020, and 300,000 by the end of the year.[68]

China's ambitions to quadruple the number of 5G base stations by the end of 2020 follow telecom operators' launch of 5G networks across 57 major cities in late 2019.[69] Originally policymakers had targeted a launch in 2020.[70] The accelerated pace signals Chinese leaders' prioritization of key industrial policy targets, in spite of COVID-19 bringing the country to a near standstill during February and early March. At a press conference on March 25, 2020, Han Xia, director of MIIT's Information and Communications Administration, revealed telecom operators built 63,000 new 4G and 5G base stations even while most of the country was on lockdown in response to the outbreak.[71]

Beyond striving for global leadership in 5G, the government sees the technology as a policy tool to spur economic recovery following the COVID-19 outbreak. Policymakers' approach bears hallmarks of Chinese industrial policy in recruiting state-owned or state-influenced enterprises to provide supply while at the same time fostering consumer demand. On the supply side, accelerated digital infrastructure construction is part of a fiscal stimulus strategy to pump money into the economy through capital-intensive projects.[72] Huawei is reportedly reorienting its business away from handsets to accommodate the state-directed surge in infrastructure spending.[73] It won an even larger share of contracts for China Mobile's second tranche of base station construction (57.3 percent) than it won in two network tenders concluded in June 2019 (49 percent and 54 percent for two types of equipment used to upgrade the existing network to 5G capabilities).[74] Notably, where Chinese telecom equipment maker ZTE only won 3 and 5 percent of contracts in the June 2019 tenders, it won 28.7 percent of contracts announced on March 31, 2020, displacing foreign suppliers Ericsson and Nokia.[75]

On the demand side, MIIT is encouraging telecom operators to offer service packages and installment plans with 5G devices, despite operators seeking to end the practice of subsidizing handset purchases.[76] Officials also hope 5G's fast speeds and high bandwidth will enable online shopping to resume even where continued social distancing measures prohibit brick and mortar retailers from reopening.[77] MIIT spokesperson Xie Shaofeng boasted that nearly 100 stores are using virtual and augmented reality powered by 5G to create remote shopping experiences.[78]

Property Markets Hit by Plunge in Sales, Lower Starts

Property sales fell dramatically during the COVID-19 outbreak as sales offices closed across China,[79] causing property developers to slash prices on new homes and some banks to lower borrowing requirements for buyers.[80]

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[*] The three largest U.S. telecom operators project about $44 billion in total capital expenditure for 2020, although this includes T-Mobile's projection prior to its merger with Sprint. Within this amount, it is not clear how much is earmarked for 5G versus 4G, fiber, and network maintenance. Even if projections were available, U.S. operators' expenditure on 5G would likely have to be substantially higher than Chinese operators' to achieve the same output in base station construction and connectivity. 5G capital expenditure for U.S. operators includes ongoing purchases of spectrum, or bands of radio wavelength on which networks transmit signal, while Chinese operators were assigned spectrum to conduct prelaunch trials in 2018. Moreover, U.S. labor costs and regulatory fees are substantially higher, although China's larger population and lower degree of urbanization requires a large network to achieve a comparable degree of coverage. Normalizing for these factors, a widely cited Deloitte report from August 2018 estimated U.S. operators were underspending their Chinese counterparts by about 16 percent of their total capital expenditure. *Reuters*, "Verizon Raises 2020 Capital Expenditure in 5G Push," March 12, 2020. *https://www.reuters.com/article/us-verizon-capex/verizon-raises-2020-capital-expenditure-in-5g-push-idUSKBN20Z394*; Linda Hardesty, "Where's the Beef? 2020 Capex of Major U.S. Wireless Carriers," *Fierce Wireless*, February 24, 2020. *https://www.fiercewireless.com/operators/where-s-beef-2020-capex-major-u-s-wireless-carriers*; John Eggerton, "FCC Prods Bidding in 5G Spectrum Auction," *Multichannel News*, January 10, 2020. *https://www.multichannel.com/news/fcc-prods-bidding-in-5g-spectrum-auction*; Carolyn Bartholomew, "China and 5G," *Issues in Science and Technology* 36:2 (Winter 2020). *https://issues.org/china-and-5g/*; Deloitte, "5G: The Chance to Lead for a Decade," August 2018, 4–5. *https://www2.deloitte.com/content/dam/Deloitte/us/Documents/technology-media-telecommunications/us-tmt-5g-deployment-imperative.pdf*.

Real estate demand had already been slowing through 2019 as price growth for preexisting homes slowed or decreased, reducing incentives to buy new properties.[81] The COVID-19 outbreak then stalled sales as property developers closed showrooms, where real estate transactions typically occur.[82] Data provider China Real Estate Information Corporation (CRIC) estimated property developers' sales fell by 38 percent in February 2020 over 2019, based on sales averages from China's 100 largest developers.[83] Evergrande, the only company among the largest 20 developers to see an increase in sales in February, had offered price discounts of up to 25 percent.[84] Weak sales have continued into March; for example, the real estate internet portal Soufun reported a further sales decline of 24 percent year-on-year across 17 large cities.[85] Rhodium's Allen Feng and Logan Wright argue property sales may not regain their pre-virus level given likely unemployment and economic weakness.[86] New housing starts also fell by 44.9 percent in the beginning of the year, which implies a lower level of new sales going forward.[87]

This drop adds to a continuing struggle for property developers: since Beijing began a crackdown to control credit growth in China's economy, developers have increasingly relied on housing starts and presales to raise funding. About half of developers' new financing in 2019 came from sales.[88] *Bloomberg News* reported that in January and February, 105 real estate firms filed for bankruptcy across China.[89] Central and local government interests may diverge on how much support to provide the ailing sector. Beijing has repeatedly stated it will not loosen credit for developers. In its mid-February monetary policy review, the People's Bank of China reiterated that "houses are for living, not for speculation."[90] Many local governments, however, rely on property markets in the form of land sales to property developers and may be affected by this weakness. According to Centaline Property, a property agency, more than 60 cities have pushed through measures to support property developers and boost sales.[91]

In Focus: PPE Shortage Highlights Critical Dependence on China

The worldwide outbreak of COVID-19 has led to severe shortages of PPE most of which is manufactured in China. Demand for such equipment, which includes helmets, face shields, goggles, face masks, and N95 respirators,* has surged since the beginning of the year. While U.S. hospitals and health systems typically purchase 22 million N95 respirators annually, demand in 2020 has increased 400 percent in January and 585 percent in February.[92] The U.S. Department of Health and Human Services estimates that the United States could require up to 3.5 billion N95 respirators this year; the U.S. Strategic National Stockpile contains just over 1 percent of that amount.[93] Amid these shortages, healthcare workers have been forced to ration their PPE, reuse single-use products, or even improvise with homemade PPE alternatives.[94]

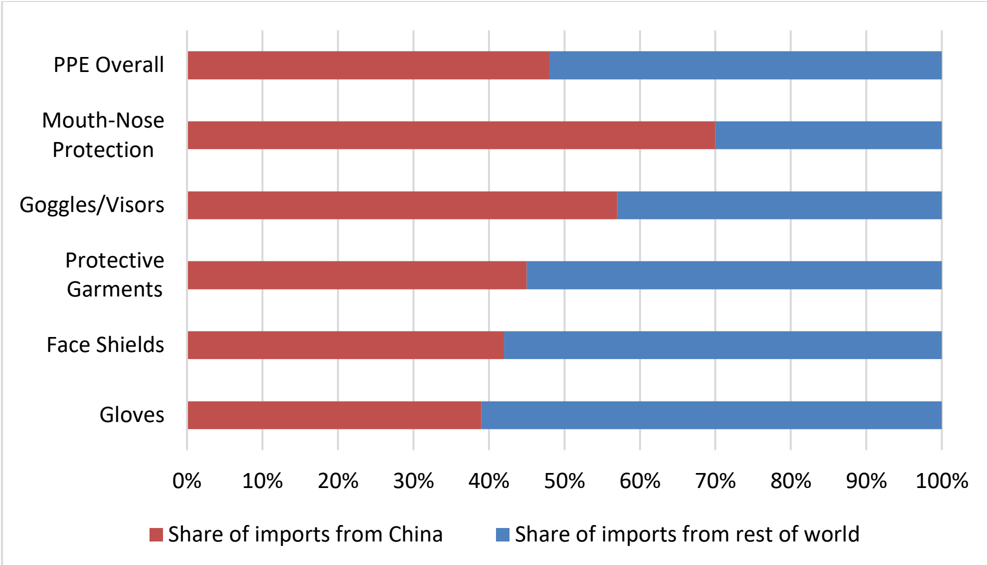
Compared with other goods, the United States is particularly reliant on China for PPE imports. According to the Department of Health and Human Services, 95 percent of surgical masks and 70 percent of respirators such as the N95 respirator are manufactured abroad.[95] Of this output, a high percentage comes from China, which manufactured approximately half of the world's face masks before the beginning of the COVID-19 pandemic.[96] The United States depends heavily on Chinese imports: according to analysis by the Peterson Institute of International Economics, Chinese imports account for 48 percent of all PPE imported by the United States (see Figure 4). The reliance on Chinese face mask imports is even higher, with 70 percent of all imported face masks coming from China. By comparison, only 21 percent of overall imports to the United States come from China.[97]

Twenty years ago, the majority of U.S. hospital products were manufactured in the United States.[98] Since then, however, domestic manufacturers either ceased PPE manufacturing or shifted operations to China, where production costs were far lower. Other factors, such as the relative simplicity of manufacturing products such as face masks and the ease of shipment to the United States, made PPE particularly prone for outsourcing to China.[99]

* N95 respirators are tight-fitting face masks that are more effective than regular face masks.

In addition to outsourcing, an increased emphasis on "just in time" delivery has led businesses to keep lower stocks of goods, with many companies only keeping 15 to 30 days' worth of stock on hand.[100]

Figure 4: U.S. PPE Imports from China vs. the Rest of the World



Source: Adapted from Chad P. Bown, "COVID-19: China's Exports of Medical Supplies Provide a Ray of Hope," *Peterson Institute of International Economics*, March 26, 2020. *https://www.piie.com/blogs/trade-and-investment-policy-watch/covid-19-chinas-exports-medical-supplies-provide-ray-hope*.

As COVID-19 wreaked havoc on China's population and economy, its manufacturing activity experienced a sharp slowdown, an effect exacerbated by seasonal fluctuations around the Lunar New Year. Prior to the outbreak, China produced an average of 20 million face masks a day.[101] By early February, China was only producing 10 million face masks a day—not enough to satisfy even China's own demand.[102] Since then, China has increased its production to 116 million masks a day.[103] According to official data, almost one-fifth of the factories currently making masks in China began operations after January, attracted by incentives offered by the government, including subsidies, lower taxes, and interest-free loans.[104]

Even as Chinese factories have ramped up production, however, U.S. consumers have encountered difficulty importing masks produced in China. As the COVID-19 outbreak led to increased demand for masks, China reportedly prohibited exports of domestically produced face masks.[105] This prohibition even applied to masks produced by U.S. companies in China. In February, Peter Navarro, a trade advisor to President Donald J. Trump, said that China had "nationalize[d] effectively 3M" by taking masks produced in 3M's China factories.[*106] Medicom, a Canadian manufacturer, also reported that it was not allowed to export its face masks.[107] Chinese government officials denied a policy of prohibiting face mask exports, and by mid-March, when official Chinese data showed a sharp slowdown in domestic COVID-19 cases, Chinese mask producers were reportedly able to export masks again.[108]

In the longer run, the inability of U.S. hospitals to procure adequate amounts of PPE during the COVID-19 pandemic may lead to a broader reexamination of PPE supply chains. Already, the shortage of PPE has prompted observers and policymakers to call for a greater emphasis on a stable domestic supply of PPE. For example, on March 25, Senator Sherrod Brown unveiled a plan to address PPE availability concerns that included proposals to improve supply chain mapping and to strengthen domestic preferences for PPE purchases by the U.S. Department of Defense.[109]

[*] According to 3M, however, the majority of N95 respirators produced in 3M's factories in China had been sold in China before the COVID-19 outbreak. Keith Bradsher and Liz Alderman, "The World Needs Masks. China Makes Them—but Has Been Hoarding Them," *New York Times*, March 16, 2020. *https://www.nytimes.com/2020/03/13/business/masks-china-coronavirus.html*.

In the short run, U.S. policymakers have taken steps to alleviate this supply crunch. In early March, the Office of the U.S. Trade Representative gave 27 companies exclusions from import tariffs for face masks and other medical equipment imported from China.[110] Additionally, on March 18 President Trump signed a bill allowing manufacturers to sell standard N95 respirators to hospitals.[*] U.S. companies have also increased their production of PPE: Honeywell and 3M have said that they will increase their capacity to produce millions of extra respirators in the United States, and companies that do not normally manufacture PPE, such as General Motors, have temporarily retooled assembly lines to manufacture face masks.[111]

Endnotes

[1] Staff calculations; U.S. Census Bureau, *Trade in Goods with China*, April 2, 2020. *https://www.census.gov/foreign-trade/balance/c5700.html*.

[2] Staff calculations; U.S. Census Bureau, *Trade in Goods with China*, April 2, 2020. *https://www.census.gov/foreign-trade/balance/c5700.html*.

[3] *Bloomberg News*, "China's Exports Slump as Coronavirus Forces Shutdowns," March 6, 2020. *https://www.bloomberg.com/news/articles/2020-03-07/china-s-jan-feb-exports-fall-17-2-y-y-in-dollars-est-16-2?sref=FlHD1WjR*.

[4] Brad Setser, "The U.S. Shock to Global Demand in Q4 (Before the Coronavirus)," *Council on Foreign Relations*, February 26, 2020. *https://www.cfr.org/blog/us-shock-global-demand-q4-coronavirus*.

[5] Heather Long and Andrew Van Dam, "U.S. Manufacturing Was in a Mild Recession during 2019, a Sore Spot for the Economy," *Washington Post*, January 17, 2020. *https://www.washingtonpost.com/business/2020/01/17/us-manufacturing-was-mild-recession-during-2019-sore-spot-economy/*.

[6] Brad Setser, "The U.S. Shock to Global Demand in Q4 (Before the Coronavirus)," *Council on Foreign Relations*, February 26, 2020. *https://www.cfr.org/blog/us-shock-global-demand-q4-coronavirus*.

[7] Jessica Brandt and Bret Schafer, "Five Things to Know about Beijing's Disinformation Approach," *Alliance for Securing Democracy*, March 30, 2020. *https://securingdemocracy.gmfus.org/five-things-to-know-about-beijings-disinformation-approach/*.

[8] Chad Bown, "COVID-19: China's Exports of Medical Supplies Provide a Ray of Hope," *Peterson Institute for international Economics*, March 26, 2020. *https://www.piie.com/blogs/trade-and-investment-policy-watch/covid-19-chinas-exports-medical-supplies-provide-ray-hope*.

[9] Song Zhiping, "Song Zhiping: Keep an Eye on the New Shape of Epidemic Prevention and Control and Pursue Industrial Adjustment (緊盯疫情防控新形勢 下好產業調整先手棋)," *People's Daily*, March 12, 2020. Translation. *http://ccnews.people.com.cn/BIG5/n1/2020/0312/c431620-31628993.html.*

[10] China's Ministry of Foreign Affairs, "MFA: China Has Announced Assistance to 82 Countries, WHO and African Union to Fight COVID-19," March 20, 2020. *https://www.fmprc.gov.cn/mfa_eng/topics_665678/kjgzbdfyyq/t1759145.shtml*.

[*] Standard N95 respirators are typically used in industrial settings. Unlike surgical N95 respirators, standard N95 respirators are not cleared for medical use by the Food and Drug Administration. The new law protects manufacturers selling standard N95 respirators to healthcare workers if those masks do not prevent the spread of COVID-19. Jeanne Whalen, "Change in U.S. Law Will Make Millions More Masks Available to Doctors and Nurses, White House Says," *Washington Post*, March 20, 2020. *https://www.washingtonpost.com/business/2020/03/19/change-us-law-will-make-millions-more-masks-available-doctors-nurses-white-house-says/*.

[11] *Economist*, "Chinese Companies Rush to Produce Anti-Covid Kit," March 14, 2020. *https://www.economist.com/business/2020/03/14/chinese-companies-rush-to-produce-anti-covid-kit*.
[12] Johns Hopkins University Center for Systems Science and Engineering, "Coronavirus COVID-19 Global Cases," updated March 31, 2020. *https://coronavirus.jhu.edu/map.html*.
[13] David Herszenhorn, Carmen Paun, and Jillian Deutsch, "Europe Fails to Help Italy in Coronavirus Fight," *Politico*, March 7, 2020. *https://www.politico.eu/article/eu-aims-better-control-coronavirus-responses/*.
[14] *Reuters*, "China Sends Medical Supplies, Experts to Help Italy Battle Coronavirus," March 13, 2020. *https://www.reuters.com/article/us-health-coronavirus-italy-respirators/china-sends-medical-supplies-experts-to-help-italy-battle-coronavirus-idUSKBN2101IM*.
[15] James Kynge and Hudson Lockett, "From Cover-Up to Global Donor: China's Soft Power Play," *Financial Times*, March 24, 2020. *https://www.ft.com/content/efdec278-6d01-11ea-9bca-bf503995cd6f*.
[16] Alex Linder, "Serbian President Kisses Chinese Flag after Experts and Equipment Arrive from China," *Shanghaiist*, March 25, 2020. *https://shanghaiist.com/2020/03/25/serbian-president-kisses-chinese-flag-after-experts-and-equipment-arriving-from-china/*.
[17] Laurens Cerulus, "Huawei Joins China's Big Tech Donation Spree in Europe," *Politico*, March 27, 2020. *https://www.politico.eu/article/huawei-joins-chinas-big-tech-donation-spree-in-europe/*.
[18] David Hutt, "China's 'Mask Diplomacy' in Pandemic-Hit Europe Stirs Unease," *Nikkei Asian Review*, March 25, 2020. *https://asia.nikkei.com/Spotlight/Coronavirus/China-s-mask-diplomacy-in-pandemic-hit-Europe-stirs-unease*.
[19] Linas Jegelevicius, "Coronavirus: China's Huawei Helps Provide Face Masks to Lithuania, Where It's Eyed 5G," *South China Morning Post*, March 29, 2020. *https://www.scmp.com/news/world/europe/article/3077453/coronavirus-chinas-huawei-helps-provide-face-masks-lithuania*.
[20] Jack Ma Foundation (@foundation_ma), "Africa can be one step ahead of the coronavirus. To each of the 54 African countries, we will donate 20,000 test kits, 100,000 masks and 1,000 medical use protective suits and face shields. Thank you @PMEthiopia @AbiyAhmedAli for your support," Twitter, March 16, 2020, 11:57 a.m. *https://twitter.com/foundation_ma/status/1239581500791599105*.
[21] Sun Yu, "Chinese Mask Makers Use Loopholes to Speed Up Regulatory Approval," *Financial Times*, March 31, 2020. *https://www.ft.com/content/09e13687-f7e1-485e-ba90-355959449c71*.
[22] Sun Yu, "Chinese Mask Makers Use Loopholes to Speed Up Regulatory Approval," *Financial Times*, March 31, 2020. *https://www.ft.com/content/09e13687-f7e1-485e-ba90-355959449c71*.
[23] Andrea Dudik and Radoslav Tomek, "Faulty Virus Tests Cloud China's European Outreach over Covid-19," *Bloomberg*, March 31, 2020. *https://www.bloomberg.com/news/articles/2020-04-01/faulty-virus-tests-cloud-china-s-european-outreach-over-covid-19?sref=FlHD1WjR*.
[24] Alexandra Stevenson and Tiffany May, "China Pushes to Churn Out Coronavirus Gear, Yet Struggles to Police It," *New York Times*, March 27, 2020. *https://www.nytimes.com/2020/03/27/business/china-coronavirus-masks-tests.html*.
[25] Sarah Mervosh, Denise Lu, and Vanessa Swales, "See Which States and Cities Have Told Residents to Stay Home," *New York Times*, March 31, 2020. *https://www.nytimes.com/interactive/2020/us/coronavirus-stay-at-home-order.html*; Andy Rothman, "Is China a Safe Haven?" *Matthews Asia Sinology*, March 19, 2020. *https://us.matthewsasia.com/perspectives-on-asia/sinology/default.fs*.
[26] Hudson Lockett, "Global Investors Seeking Coronavirus Refuge Turn to China," *Financial Times*, March 12, 2020. *https://www.ft.com/content/cc62942e-644f-11ea-a6cd-df28cc3c6a68*; Evelyn Cheng, "Not Unreasonable for China's Economy to Shrink 10% in the First Quarter, Independent Survey Shows," *CNBC*, March 24, 2020. *https://www.cnbc.com/2020/03/24/china-beige-book-q1-contraction-in-chinas-economy-from-coronavirus.html*.
[27] *Wall Street Journal*, "Market Data."
[28] Logan Wright, "China: How Safe a Haven?" *Rhodium Group China Markets Research*, March 13, 2020.
[29] Hudson Lockett, "Global Investors Seeking Coronavirus Refuge Turn to China," *Financial Times*, March 12, 2020. *https://www.ft.com/content/cc62942e-644f-11ea-a6cd-df28cc3c6a68*; Karen Yeung, "Coronavirus: China Could Become New Investment Safe Haven as Stocks, Yuan Rally while Global Markets Suffer," *South China Morning Post*, March 5, 2020. *https://www.scmp.com/economy/china-economy/article/3065159/coronavirus-china-could-become-new-investment-safe-haven*.
[30] China Central Depository and Clearing Company and Shanghai Clearing House.
[31] Hong Kong Exchanges and Clearing Limited via CEIC database.
[32] *Bloomberg*, "China's March Factory Output Jumps as Global Threat Looms," March 30, 2020. *https://www.bloomberg.com/news/articles/2020-03-31/china-s-factory-outlook-rebounds-strongly-despite-global-threat?sref=FlHD1WjR*.
[33] TriviumChina, "Getting China Back to Work," April 1, 2020. *https://triviumchina.com/2020/03/07/coronavirus-getting-china-back-to-work/*.
[34] Andy Rothman, "Is China a Safe Haven?" *Matthews Asia Sinology*, March 19, 2020. *https://us.matthewsasia.com/perspectives-on-asia/sinology/default.fs*.
[35] Andy Rothman, "Is China a Safe Haven?" *Matthews Asia Sinology*, March 19, 2020. *https://us.matthewsasia.com/perspectives-on-asia/sinology/default.fs*.
[36] China National Health Commission, *Update on the Novel Coronavirus Pneumonia Epidemic as of March 31* (截至 3 月 31 日 24 时新型冠状病毒肺炎疫情最新情况), April 1, 2020. Translation. *http://www.nhc.gov.cn/yjb/s7860/202004/28668f987f3a4e58b1a2a75db60d8cf2.shtml*; China National Health Commission, *Update on the Novel Coronavirus Pneumonia Epidemic as of March 24* (截至 3 月 24 日 24 时新型冠状病毒肺炎疫情最新情况), March 25, 2020. Translation. *http://www.nhc.gov.cn/yjb/s7860/202003/b882c06edf184fbf800d4c7957e02dad.shtml*.

[37] Andy Rothman, "Is China a Safe Haven?" *Matthews Asia Sinology*, March 19, 2020. *https://us.matthewsasia.com/perspectives-on-asia/sinology/default.fs*.
[38] Don Weinland and Xinning Liu, "Chinese Economy Suffers Record Blow from Coronavirus," *Financial Times*, March 16, 2020. *https://www.ft.com/content/318ae26c-6733-11ea-800d-da70cff6e4d3*.
[39] Hu Yue and Timmy Shen, "China Oks First National Bad-Debt Manager in Two Decades," *Caixin Global*, March 17, 2020. *https://www.caixinglobal.com/2020-03-17/china-oks-first-national-bad-debt-manager-in-two-decades-101529854.html*.
[40] China Cinda Asset Management, "2019 Annual Report" (2019 年年度业绩公告), March 31, 2020, 10. Translation. *http://www.cinda.com.cn/resource/830/846/863/1801/160195/160386/1366218/15856549278271425425361.pdf*; Hu Yue and Timmy Shen, "China Oks First National Bad-Debt Manager in Two Decades," *Caixin Global*, March 17, 2020. *https://www.caixinglobal.com/2020-03-17/china-oks-first-national-bad-debt-manager-in-two-decades-101529854.html*; China Huarong Asset Management, "2019 Interim Report" (2019 年中期业绩发布), August 2019, 7. Translation. *http://www.chamc.com.cn/images/tzzgx/yjfb/2019/08/30/BD35B97F465F91CDB4D58470F31CF293.pdf*; Sina, "China Orient Asset Management: The Group Realized a Net Profit of RMB 4.8 Billion at the End of June" (东方资产：截至 6 月末集团实现净利润 48.09 亿元), July 25, 2019. Translation. *https://finance.sina.com.cn/am/amc/2019-07-25/doc-ihytcerm6239253.shtml*; China Lianhe Credit Rating, "2019 Q2 Great Wall Asset Management Co. Financial Bond (Bond Connect) Credit Rating Report" (2019 年第二期中国长城资产管理股份有限公司金融债券(债券通)信用评级报告), April 11, 2019, 1. Translation. *http://www.lhratings.com/reports/A0111-P44028-2019.pdf*.
[41] Quan Yue and Guo Yingzhe, "Exclusive: China to Reform National Bad Debt Managers," *Caixin Global*, March 25, 2020. *https://www.caixinglobal.com/2020-03-25/exclusive-china-to-reform-national-bad-debt-managers-101533971.html*.
[42] *Reuters*, "U.S. Distressed Debt Giant Oaktree Sets up Wholly Owned Unit in Beijing," February 18, 2020. *https://www.reuters.com/article/china-financial-oaktree-cap-grp/us-distressed-debt-giant-oaktree-sets-up-wholly-owned-unit-in-beijing-idUSL4N2AI1H1*; Office of the U.S. Trade Representative, *Economic and Trade Agreement between the Government of the United States of America and the Government of the People's Republic of China*, January 15, 2020, 7–4. *https://ustr.gov/sites/default/files/files/agreements/phase%20one%20agreement/Economic_And_Trade_Agreement_Between_The_United_States_And_China_Text.pdf*.
[43] Trivium China "China to Set up A New Holding Company for AMCs," in *The Tip Sheet* Newsletter, March 25.
[44] Jason Bedford and May Yan, "Is the China Distressed Debt Market in Distress?" *UBS Global Research*, January 21, 2019, 6.
[45] Jason Bedford and May Yan, "Is the China Distressed Debt Market in Distress?" *UBS Global Research*, January 21, 2019, 8.
[46] Dinny McMahon, "China's Major Banks Turn Inward to Deal with Bad Loans," *MacroPolo*, May 21, 2019. *https://macropolo.org/china-bad-loans-amc-write-offs/*; Jason Bedford and May Yan, "Is the China Distressed Debt Market in Distress?" *UBS Global Research*, January 21, 2019, 6–8; Dong Jing et al., "Update: China Huarong Chairman Falls under Graft Probe," *Caixin Global*, April 17, 2020. *https://www.caixinglobal.com/2018-04-17/china-huarong-chairman-falls-under-graft-probe-101235776.html*.
[47] Fang Haiping, "Insight into the Tide of Local AMC Expansion: Credit-Like Business Takes the Lead while NPL Disposal Earnings Are Low" (透视地方 AMC 扩容潮： 类信贷业务打头阵 不良处置收益低), March 27, 2020. Translation. *https://m.21jingji.com/article/20200327/51e7d0a1c30591dab4ae8b15cfb6dc96.html*; Jason Bedford and May Yan, "Is the China Distressed Debt Market in Distress?" *UBS Global Research*, January 21, 2019, 9.
[48] Fang Haiping, "Insight into the Tide of Local AMC Expansion: Credit-Like Business Takes the Lead while NPL Disposal Earnings Are Low" (透视地方 AMC 扩容潮： 类信贷业务打头阵 不良处置收益低), March 27, 2020. Translation. *https://m.21jingji.com/article/20200327/51e7d0a1c30591dab4ae8b15cfb6dc96.html*; Jason Bedford and May Yan, "Is the China Distressed Debt Market in Distress?" *UBS Global Research*, January 21, 2019, 9–10.
[49] Fang Haiping, "Insight into the Tide of Local AMC Expansion: Credit-Like Business Takes the Lead while NPL Disposal Earnings Are Low" (透视地方 AMC 扩容潮： 类信贷业务打头阵 不良处置收益低), March 27, 2020. Translation. *https://m.21jingji.com/article/20200327/51e7d0a1c30591dab4ae8b15cfb6dc96.html*.
[50] Fang Haiping, "Insight into the Tide of Local AMC Expansion: Credit-Like Business Takes the Lead while NPL Disposal Earnings Are Low" (透视地方 AMC 扩容潮： 类信贷业务打头阵 不良处置收益低), March 27, 2020. Translation. *https://m.21jingji.com/article/20200327/51e7d0a1c30591dab4ae8b15cfb6dc96.html*.
[51] Dinny McMahon, "China's Local AMCs: Making a Mark—but Bending the Rules," *MacroPolo*, March 12, 2018. *https://macropolo.org/analysis/chinas-local-amcs-making-a-mark-but-bending-the-rules/*.
[52] Trivium China, "'Bout to go HAM(C)' in *The Tip Sheet* Newsletter," March 24; *The Paper*, "S&P: The Four Major AMCs' Market Share May Fall to 80-90% in the Next 2-3 Years" (标普：未来 2-3 年四大 AMC 市场份额或降至 80%-90%), February 18, 2020. Translation. *https://m.thepaper.cn/yidian_promDetail.jsp?contid=6042004&from=yidian*.
[53] Jason Bedford and May Yan, "Is the China Distressed Debt Market in Distress?" *UBS Global Research*, January 21, 2019, 1–2; Dinny McMahon, "The End of the Nonperforming Loan Bubble–More Supply, Less Credit," *MacroPolo*, November 28, 2018; Dinny

McMahon, "China's Local AMCs: Making a Mark—but Bending the Rules," *MacroPolo*, March 12, 2018. *https://macropolo.org/analysis/chinas-local-amcs-making-a-mark-but-bending-the-rules/*.

[54] Zhang Xiaoyu, "Hebei Asset Management Successfully Issues RMB 550 Million Worth of Corporate Bonds" (河北资管成功发行 5.5 亿元公司债 系全国地方资产管理公司首单), *Securities Daily*, March 22, 2020. Translation. *http://www.zqrb.cn/gscy/gongsi/2020-03-22/A1584882469458.html?mc_cid=aa50eba8b7&mc_eid=5add0e7e13*.

[55] Hebei Asset Management Co., "Hebei Provincial Asset Management Co., Ltd. Publicly Issues Corporate Bonds in 2020" (河北省资产管理有限公司 2020 年公开发行公司债券), *EastMoney*, March 16, 2020, 134–136. Translation. *https://notice.eastmoney.com/pdffile/web/H2_AN202003161376297540_1.pdf*.

[56] Li Yumin, "CBIRC's Xiao Yuanqi: Foreign and Joint Venture AMCs Will Be Successively Established" (银保监会肖远企：外资、合资 AMC 也会陆续落地), *21st Century Business Herald*, March 17, 2020. Translation. *https://m.21jingji.com/article/20200317/herald/e327b7b42cff9ac3f3cc9c5814b9a050.html?mc_cid=0d3e889d1a&mc_eid=5add0e7e13*.

[57] U.S.-China Economic and Security Review Commission, *Hearing on China's Quest for Capital: Motivations Methods, and Implications*, written testimony of Dinny McMahon, January 23, 2020, 2; China State Council, *News Office Holds a Press Conference on Banking and Insurance Operations, Servicing the Real Economy and Preventing and Resolving Risks* (新闻办就银行保险业运行、服务实体经济和防范化解风险情况举行新闻发布会), January 13, 2020. Translation. *http://www.gov.cn/xinwen/2020-01/13/content_5468710.htm*; *Financial News*, "NPL Ratio Increases Slightly, Asset Quality Remains Stable" (不良率微增 资产质量保持稳定), November 14, 2019. Translation. *http://www.financialnews.com.cn/pl/zj/201911/t20191114_171382.html*; *Xinhua*, "Commercial Banks Write Down RMB 98.8 Billion Worth of NPLs in 2018, RMB 25.9 Billion More than Last Year" (2018 年商业银行核销不良贷款 9880 亿元 较上年多核销 2590 亿元), January 25, 2019. Translation. *http://www.xinhuanet.com/fortune/2019-01/25/c_1124039220.htm*; China Banking and Insurance Regulatory Commission via CEIC database.

[58] Josephine Ma and Kimmy Chung, "China Postpones Top Annual Political Meetings amid Coronavirus Epidemic," *South China Morning Post*, February 25, 2020. *https://www.scmp.com/news/china/politics/article/3052161/china-postpones-top-annual-political-meetings-amid-coronavirus*.

[59] Zheng Jieyao, "Increasing New Infrastructure Construction, Three Major Carriers Throw out Tenders for Nearly 50,000 Base Stations" (加码"新基建"，三大运营商抛出近 50 万 5G 基站采购订单)" *Jiemian*, March 12, 2020. Translation. *https://m.com/article/4103573.html*.

[60] Zheng Jieyao, "Increasing New Infrastructure Construction, Three Major Carriers Throw out Tenders for Nearly 50,000 Base Stations' (加码"新基建"，三大运营商抛出近 50 万 5G 基站采购订单), *Jiemian*, March 12, 2020. Translation. *https://m.com/article/4103573.html*.

[61] Ministry of Industry and Information Technology of the People's Republic of China, *MIIT Notice on Pushing Forward Accelerated 5G Development* (工业和信息化部关于推动 5G 加快发展的通知), March 24, 2020. Translation. *http://www.gov.cn/zhengce/zhengceku/2020-03/25/content_5495201.htm*.

[62] Isabelle Li and Liu Yuanfei, "China's Mobile Carriers Double Down on 5G," *Caixin*, March 24, 2020. *https://www.caixinglobal.com/2020-03-24/chinas-mobile-carriers-double-down-on-5g-101533420.html*.

[63] China Mobile Limited, "2019 Annual Results" *(2019 年度业绩)*, March 19, 2020, 9. Translation. *https://www.chinamobileltd.com/sc/ir/webcasts/pre200319.pdf*.

[64] Isabelle Li and Liu Yuanfei, "China's Mobile Carriers Double Down on 5G," *Caixin*, March 24, 2020. *https://www.caixinglobal.com/2020-03-24/chinas-mobile-carriers-double-down-on-5g-101533420.html*.

[65] *National Business Daily*, "Every 5 PM" (每经 17 点), March 31, 2020. Translation. *https://m.nbd.com.cn/articles/2020-03-31/1421679.html*.

[66] He Xiaowu, "China Mobile 5G Base Station Tender Results: Huawei Takes More than Half" (中国移动 5G 基站集采开标 华为获得超过一半份额), *Jiemian*, March 31, 2020. Translation. *https://finance.sina.cn/2020-03-31/detail-iimxyqwa4291663.d.html*.

[67] He Xiaowu, "China Mobile 5G Base Station Tender Results: Huawei Takes More than Half" (中国移动 5G 基站集采开标 华为获得超过一半份额), *Jiemian*, March 31, 2020. Translation. *https://finance.sina.cn/2020-03-31/detail-iimxyqwa4291663.d.html*; U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin*, December 5, 2019, 8, 11–12. *https://www.uscc.gov/trade-bulletins/december-2019-trade-bulletin*.

[68] He Xiaowu, "China Mobile 5G Base Station Tender Results: Huawei Takes More than Half" (中国移动 5G 基站集采开标 华为获得超过一半份额), *Jiemian*, March 31, 2020. Translation. *https://finance.sina.cn/2020-03-31/detail-iimxyqwa4291663.d.html*.

[69] U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin*, December 5, 2019, 11–12. *https://www.uscc.gov/trade-bulletins/december-2019-trade-bulletin*.

[70] U.S.-China Economic and Security Review Commission, *Economics and Trade Bulletin*, December 5, 2019, 8-9. *https://www.uscc.gov/trade-bulletins/december-2019-trade-bulletin*.

[71] Joint Prevention and Control Mechanism of the State Council, "Press Conference on Introducing the New Generation of Information Technology to Help Prevent and Control the Epidemic and Resuming Work, Production, and the Development of SMEs" (新一代信息技术助力疫情防控、复工复产和中小企业发展有关情况发布会), *National Health Commission of the People's Republic of China*, March 25, 2020. Translation. *https://zhuanlan.zhihu.com/p/117253882*.
[72] Cheng Ting-fang and Lauly Li, "Huawei Tilts Telecom Business as Beijing Prepares Big 5G Push," *Nikkei Asian Review*, March 24, 2020. *https://asia.nikkei.com/Spotlight/Coronavirus/Huawei-tilts-to-telecom-business-as-Beijing-prepares-big-5G-push*.
[73] Cheng Ting-fang and Lauly Li, "Huawei Tilts Telecom Business as Beijing Prepares Big 5G Push," *Nikkei Asian Review*, March 24, 2020. *https://asia.nikkei.com/Spotlight/Coronavirus/Huawei-tilts-to-telecom-business-as-Beijing-prepares-big-5G-push*.
[74] He Xiaowu, "China Mobile 5G Base Station Tender Results: Huawei Takes More than Half" (中国移动 5G 基站集采开标 华为获得超过一半份额), *Jiemian*, March 31, 2020. Translation. *https://finance.sina.cn/2020-03-31/detail-iimxyqwa4291663.d.html*; Joseph Waring, "Huawei Wins Big in China Mobile 5G Tender," *Mobile World Live*, June 18, 2019. *https://www.mobileworldlive.com/asia/asia-news/huawei-wins-big-in-china-mobile-5g-tender/*.
[75] He Xiaowu, "China Mobile 5G Base Station Tender Results: Huawei Takes More than Half" (中国移动 5G 基站集采开标 华为获得超过一半份额), *Jiemian*, March 31, 2020. Translation. *https://finance.sina.cn/2020-03-31/detail-iimxyqwa4291663.d.html*.
[76] Trivium China, "Telecoms Get Squeezed -- China Tip Sheet March 25, 2020," March 25, 2020. *https://mailchi.mp/11360c4adb61/telecoms-get-squeezed-china-tip-sheet-march-25-2020?e=e0817d5cde*; Ministry of Industry and Information Technology of the People's Republic of China, *MIIT Notice on Pushing Forward Accelerated 5G Development* (工业和信息化部关于推动 5G 加快发展的通知), March 24, 2020. Translation. *http://www.gov.cn/zhengce/zhengceku/2020-03/25/content_5495201.htm*.
[77] Joint Prevention and Control Mechanism of the State Council, "Press Conference on Introducing the New Generation of Information Technology to Help Prevent and Control the Epidemic and Resuming Work, Production, and the Development of SMEs" (新一代信息技术助力疫情防控、复工复产和中小企业发展有关情况发布会), *National Health Commission of the People's Republic of China*, March 25, 2020. Translation. *https://zhuanlan.zhihu.com/p/117253882*.
[78] Joint Prevention and Control Mechanism of the State Council, "Press Conference on Introducing the New Generation of Information Technology to Help Prevent and Control the Epidemic and Resuming Work, Production, and the Development of SMEs" (新一代信息技术助力疫情防控、复工复产和中小企业发展有关情况发布会), *National Health Commission of the People's Republic of China*, March 25, 2020. Translation. *https://zhuanlan.zhihu.com/p/117253882*.
[79] Wang Jing, Qu Hui, and Timmy Shen, "In Depth: China's Property Market Grinds to a Halt amid Coronavirus Curbs," *Caixin*, February 21, 2020. *https://www.caixinglobal.com/2020-02-21/in-depth-chinas-property-market-grinds-to-a-halt-amid-coronavirus-curbs-101518828.html*.
[80] Wang Jing and Tang Ziyi, "Banks Take Tentative Steps to Help China's Battered Property Market," *Caixin*, March 27, 2020. *https://www.caixinglobal.com/2020-03-27/banks-take-tentative-steps-to-help-chinas-battered-property-market-101535106.html*.
[81] Logan Wright, Allen Feng, and Matt Mingey, "Property Market Chartbook, March 2020," *Rhodium Group*, March 19, 2020, 6.
[82] *Wall Street Journal*, "China's Real-Estate Market Is Coronavirus Latest Victim," February 18, 2020. *https://www.wsj.com/articles/chinas-real-estate-market-is-coronavirus-latest-victim-11582046484?mod=article_inline*.
[83] Yang Ge, "Covid-19 Sends Chill through Property Market," *Caixin*, March 3, 2020. *https://www.caixinglobal.com/2020-03-03/covid-19-sends-chill-through-property-market-101523342.html*.
[84] Pearl Liu, "China Evergrande Slashes Prices of New Flats by a Quarter as Coronavirus Leaves Developers Struggling with Plunging House Sales," *South China Morning Post*, February 17, 2020. *https://www.scmp.com/business/china-business/article/3050930/china-evergrande-slashes-prices-all-new-flats-quarter*.
[85] Allen Feng and Logan Wright, "Property Developers' Dollar Bonds: Dancing in a Minefield," *Rhodium Group*, April 2, 2020, 1.
[86] Allen Feng and Logan Wright, "Property Developers' Dollar Bonds: Dancing in a Minefield," *Rhodium Group*, April 2, 2020, 1.
[87] Allen Feng and Logan Wright, "Property Developers' Dollar Bonds: Dancing in a Minefield," *Rhodium Group*, April 2, 2020, 6.
[88] Allen Feng and Logan Wright, "Property Developers' Dollar Bonds: Dancing in a Minefield," *Rhodium Group*, April 2, 2020, 1.
[89] *Bloomberg News*, "Over 100 Builders Go Bust in China as Virus Strains Deepen," March 10, 2020. *https://www.bloomberg.com/news/articles/2020-03-10/over-100-homebuilders-go-bust-in-china-as-virus-strains-deepen?sref=FlHD1WjR*.
[90] *China Banking News*, "Chinese Central Bank Says Property Will Not Be Used for Short-Term Economic Stimulus during Coronavirus Outbreak," February 20, 2020. *http://www.chinabankingnews.com/2020/02/20/chinese-central-bank-says-property-will-not-be-used-for-short-term-economic-stimulus-during-coronavirus-outbreak/*.

[91] Iris Ouyang, "Chinese Cities Introduce Record Number of Measures to Support Developers Crumbling under Weight of Coronavirus," *South China Morning Post*, March 10, 2020. *https://www.scmp.com/business/article/3074034/chinese-cities-introduce-record-number-measures-support-developers*.
[92] Frank Diamond, "Survey: U.S. Hospitals Brace for Severe PPE Shortage," *Infection Control Today*, March 6, 2020. *https://www.infectioncontroltoday.com/mask-respirators/survey-us-hospitals-brace-severe-ppe-shortage*.
[93] Berkeley Lovelace Jr., "HHS Clarifies U.S. Has about 1% of Face Masks Needed for 'Full-blown' Coronavirus Pandemic," *CNBC*, March 4, 2020. *https://www.cnbc.com/2020/03/04/hhs-clarifies-us-has-about-1percent-of-face-masks-needed-for-full-blown-pandemic.html*.
[94] Rebecca Jennings, "Americans Are Sewing Homemade Masks to Fight Coronavirus," *Vox*, March 30, 2020. *https://www.vox.com/the-goods/2020/3/30/21199785/homemade-coronavirus-masks-n95-ppe*.
[95] Tom Simonite, "How Decades of Offshoring Led to a Mask Shortage in a Pandemic," *Wired*, March 29, 2020. *https://www.wired.com/story/decades-offshoring-led-mask-shortage-pandemic/*.
[96] Keith Bradsher and Liz Alderman, "The World Needs Masks. China Makes Them—but Has Been Hoarding Them," *New York Times*, March 16, 2020. *https://www.nytimes.com/2020/03/13/business/masks-china-coronavirus.html*.
[97] Chad P. Bown, "COVID-19: China's Experts of Medical Supplies Provide a Ray of Hope," *Peterson Institute of International Economics*, March 26, 2020. *https://www.piie.com/blogs/trade-and-investment-policy-watch/covid-19-chinas-exports-medical-supplies-provide-ray-hope*.
[98] Farhad Manjoo, "How the World's Richest Country Ran Out of a 75-Cent Face Mask," *New York Times*, March 25, 2020. *https://www.nytimes.com/2020/03/25/opinion/coronavirus-face-mask.html*.
[99] Tom Simonite, "How Decades of Offshoring Led to a Mask Shortage in a Pandemic," *Wired*, March 29, 2020. *https://www.wired.com/story/decades-offshoring-led-mask-shortage-pandemic/*.
[100] Lizzie O'Leary, "The Modern Supply Chain Is Snapping," *Atlantic*, March 19, 2020. *https://www.theatlantic.com/ideas/archive/2020/03/supply-chains-and-coronavirus/608329/*.
[101] *BBC News*, "Coronavirus: Does China Have Enough Face Masks to Meet Its Needs?" February 6, 2020. *https://www.bbc.com/news/world-asia-china-51363132*.
[102] *BBC News*, "Coronavirus: Does China Have Enough Face Masks to Meet Its Needs?" February 6, 2020. *https://www.bbc.com/news/world-asia-china-51363132*.
[103] Keith Bradsher and Ana Swanson, "The U.S. Needs China's Masks, as Acrimony Grows," *New York Times*, March 23, 2020. *https://www.nytimes.com/2020/03/23/business/coronavirus-china-masks.html*.
[104] Sun Yu, "Chinese Mask Makers Use Loopholes to Speed Up Regulatory Approval," *Financial Times*, March 31, 2020. *https://www.ft.com/content/09e13687-f7e1-485e-ba90-355959449c71*; DeArbea Walker, "Amid Coronavirus, China Becomes Face Mask-Making Juggernaut," *Fox Business*, March 12, 2020. *https://www.foxbusiness.com/lifestyle/china-facemask-juggernaut-coronavirus*.
[105] Keith Bradsher and Liz Alderman, "The World Needs Masks. China Makes Them—but Has Been Hoarding Them," *New York Times*, March 16, 2020. *https://www.nytimes.com/2020/03/13/business/masks-china-coronavirus.html*; James D. Walsh, "'The Only Way We Can Get Out of This Situation Is with China,'" *New York Magazine*, March 18, 2020. *https://nymag.com/intelligencer/2020/03/distributors-are-racing-to-import-n95-masks-from-china.html*; John Xie, "World Depends on China for Face Masks but Can Country Deliver?" *Voice of America News*, March 19, 2020. *https://www.voanews.com/science-health/coronavirus-outbreak/world-depends-china-face-masks-can-country-deliver*.
[106] Keith Bradsher and Liz Alderman, "The World Needs Masks. China Makes Them—but Has Been Hoarding Them," *New York Times*, March 16, 2020. *https://www.nytimes.com/2020/03/13/business/masks-china-coronavirus.html*.
[107] Keith Bradsher and Liz Alderman, "The World Needs Masks. China Makes Them—but Has Been Hoarding Them," *New York Times*, March 16, 2020. *https://www.nytimes.com/2020/03/13/business/masks-china-coronavirus.html*.
[108] Keith Bradsher and Liz Alderman, "The World Needs Masks. China Makes Them—but Has Been Hoarding Them," *New York Times*, March 16, 2020. *https://www.nytimes.com/2020/03/13/business/masks-china-coronavirus.html*; Sun Yu, "Chinese Mask Makers Use Loopholes to Speed Up Regulatory Approval," *Financial Times*, March 31, 2020. *https://www.ft.com/content/09e13687-f7e1-485e-ba90-355959449c71*; John Xie, "World Depends on China for Face Masks but Can Country Deliver?" *Voice of America News*, March 19, 2020. *https://www.voanews.com/science-health/coronavirus-outbreak/world-depends-china-face-masks-can-country-deliver*.
[109] Sherrod Brown, "Brown Pushing Plan to Address Shortage of Personal Protective Equipment and Other Critical Medical Supplies," March 25, 2020. *https://www.brown.senate.gov/newsroom/press/release/brown-pushing-plan-to-address-shortage-of-personal-protective-equipment-and-other-critical-medical-supplies*.
[110] Anthony DeBarros and Josh Zumbrun, "U.S. Trade Officials Grant Tariff Relief for Face Masks, Medical Equipment," *Wall Street Journal*, March 6, 2020. *https://www.wsj.com/articles/u-s-trade-officials-grant-tariff-relief-for-facemasks-medical-equipment-11583516931*.
[111] Chris Newmaker, "Honeywell, 3M to Ramp Up N95 Face Mask Production," *Massdevice*, March 23, 2020. *https://www.massdevice.com/honeywell-3m-ramp-up-n95-face-masks-production/*; Jamie J. LaReau, "GM Turns Shuttered Warren Plant into Face Mask Supplier," *USA Today*, March 31, 2020. *https://www.usatoday.com/story/money/2020/03/31/gm-face-masks-ventec-warren/5097793002/*.