

COVID-19 and Trade Policy: Why Turning Inward Won't Work

Edited by Richard E. Baldwin
and Simon J. Evenett



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A VoxEU.org Book

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Foreword

Gordon Brown

United Nations Special Envoy for Global Education and former Prime Minister of the United Kingdom

“Resolved to be irresolute, adamant for drift, all powerful for fluidity and all powerful for impotence”. These words from Winston Churchill condemning the protectionist leaders of the 1930s – words that I reminded the G20 summit of in 2009 – challenge us today to avoid a descent into protectionism.

Looking into the abyss in the dark days of 2009, and learning the lessons of the 1930s, the 2009 summit vowed to prevent such a downward spiral. And while we were not wholly successful – some trade barriers did increase – our immediate response to the crisis was to attempt to reopen trade quickly and to keep the global supply chain working.

In the years since, international cooperation has not been so effective. Defensive nationalism – closing borders, building walls, imposing tariffs, and cutting back on migration – was a defining feature of the last decade as countries retreated into their national silos. In 2012, for example, export bans drove up world food prices and magnified short-term shortages. More recently the aggressive unilateral us-versus-them nationalism of ‘America first’ has gone global, and now we have ‘China first’, ‘India first’, and ‘Russia first’ – an international coalition of anti-internationalists impeding global cooperation and intent on blaming anyone but themselves when things go wrong.

Export bans are already being applied by some countries on medical equipment, personal protective equipment, and pharmaceuticals. Indeed as countries respond to the immediate crisis, there is wild talk of vaccine nationalism, health piracy – merchant navies seizing goods in mid ocean – and medical protectionism and of a further retreat from global supply chains and from free and fair trade across the world. Such policies will exacerbate shortages, the opposite of their intended effect, and once trade is restricted in some areas by some countries, the history of protectionism is that other countries join in.

One of the greatest false dichotomies of our age is that international trade undermines national strength and capabilities.

Instead of trying to reopen trade as in 2009, a more nationalist group of leaders are arguing that supply chains are too vulnerable to disruption and not sufficiently resilient. Instead of launching globally coordinated initiatives to increase our capacity to supply the medical goods that we need, countries are engaging in cutthroat competition and outbidding each other in the race for the limited supply there is. Yet by failing to develop a global plan to coordinate the mass production of medical supplies, many governments are writing off globalisation – and the benefits of putting all the world’s resources to use – before they give it a chance.

Worse, as the authors in this eBook show, there is a risk that the impending collapse in world trade will tempt policymakers to abandon our open world trading system. In successive chapters, writers in this eBook discuss the protectionist policies being pursued in the great lockdown, the cuts in foreign direct investment, the import and export restrictions we are seeing, the interruption to the global supply chains, and the threat to food supplies. But as the conclusions of their contributions make clear, theirs is not simply a critique of protectionism: alternative policy initiatives are proposed. Chapter by chapter the authors highlight how groups of nations – if not every nation – can cooperate in meaningful ways.

Policymakers may have stumbled at the start but, as they say about marathoners, the person who starts the race is not the same person who ends it. This is not the time to retreat into isolationist silos; it is the time to rediscover the logic of international cooperation.

Introduction

Richard Baldwin and Simon J. Evenett

Graduate Institute, Geneva and CEPR; University of St. Gallen and CEPR

The COVID-19 pandemic has sparked broad-based resort to export restrictions on medical supplies and food. This eBook asks: Should governments react to the health, economic, and trade crises by turning inward? The authors provide an unequivocal answer: No. Turning inward won't help today's fight against COVID-19. National trade barriers in a world of internationalised manufacturing processes will make it harder for every nation to produce vital medical supplies. Trade is not the problem; it is part of the solution. Insular policies will also fail to foster economic recovery, and they are a threat to the collaborative spirit that the human race will need to defeat this threat.

On 26 April 2020, as we wrapped up this eBook, the world had suffered over three million confirmed cases of COVID-19 and over 200,000 deaths. Those are frightening numbers. But what is even more disturbing is the growth rate; today's death toll is twice what it was two weeks ago (Roser et al. 2020).¹ This sort of explosive growth has led to emergency policy reactions.

To slow the spread of the disease, governments around the world have imposed draconian containment policies – what the IMF has called “The Great Lockdown”. Restrictions on our economic, personal, and social lives – strictures that would have been absolutely unthinkable just three months ago – are viewed as normal and necessary. Quite simply, the pandemic has changed the world faster than most expected and in ways few anticipated.

One of the least anticipated aspects has been the trade effects and policy responses – that is what this eBook is about: COVID-19, trade, and trade policy. It addresses a simple question.

¹ For the latest data, see “Statistics and Research: Coronavirus Disease (COVID-19)”, <https://ourworldindata.org/coronavirus>.

Should governments react to sharp falls in national income and the prospect of a second global wave of COVID-19 by turning inward and further weakening cross-border commercial ties? This eBook provides an unequivocal answer: No. Turning inward won't work – it won't help here and now in the fight against COVID-19 and it won't foster economic recovery.

Should governments react to sharp falls in national income, collapsing world trade, and the prospect of a second global wave of COVID-19 by turning inward and further weakening cross-border commercial ties? This eBook provides an unequivocal answer: No. Turning inward won't work – it won't help here and now in the fight against COVID-19 and it won't foster economic recovery.

The contributions to this volume make their case by assessing the trade and investment policy changes taken by governments so far during this global pandemic, by taking account of commercial realities on the ground including international supply chains, by drawing upon relevant precedents and analysis, and by considering alternative policy responses to protectionism.

A recurring finding is that many governments urgently need a shift in mindset. They need to understand that international trade is not a problem in this crisis; it is a core element of the solution. They need to realise that in the 21st century, open trade routes and international supply chains are critical to controlling and defeating the pandemic. The foundation of greater domestic policy effectiveness is undertaking inter-governmental cooperation on a number of fronts. Cooperation would yield great benefits.

On the positive side, the world's manufacturing can be used to produce vital medical supplies and critical medicines, and – eventually – to produce a few billion doses of the vaccine that will finally put the COVID-19 crisis behind us. On the negative side, a 1929-style vortex of short-sighted, nationalistic retaliations could hobble productive capacities for the whole world. If ever there was a time for world leaders to come together and cooperate in a common cause, it's now. The time for go-it-alone approaches is over. Quite literally, international cooperation is a matter of life and death.

To get historical perspective on today's policy reactions, we quickly review previous trade collapses and protectionist responses, starting with the 2008-2009 breakdown.

The coming world trade collapse: Bigger than 2008-09?

The fourth quarter of 2008 witnessed a sudden, severe, and synchronised collapse of world trade. It was called the ‘Great Trade Collapse’ for good reason.² It was the steepest drop of trade in recorded history, and the deepest fall since the Great Depression. It touched every nation on the planet and almost every category of goods and services.

In 2008, fears immediately arose that this terrible trade collapse would be made more terrible by a spiral of protectionist tariff hikes rivalling that of 1929. That didn’t happen.

Having learned the lessons of the Great Depression, world leaders immediately committed to keeping trade and investment open. On 15 November 2008, G20 leaders declared: “We underscore the critical importance of rejecting protectionism and not turning inward ... within the next 12 months, we will refrain from raising new barriers to investment or to trade in goods and services, imposing new export restrictions, or implementing World Trade Organization (WTO) inconsistent measures to stimulate exports.”³

Having learned the lessons of the Great Depression ... G20 leaders declared: “We underscore the critical importance of rejecting protectionism and not turning inward ... within the next 12 months, we will refrain from raising new barriers to investment or to trade in goods and services, imposing new export restrictions, or implementing World Trade Organization (WTO) inconsistent measures to stimulate exports.”

Some trade barriers went up despite the leaders’ words, but there was no public tit-for-tat protectionist spiral.⁴ The barriers that did go up were “murky protectionism”, as we called it in our 2009 eBook (Baldwin and Evenett 2009).

If the 2008-2009 event deserved the label of the “Great Trade Collapse”, today’s experience should be called the “Greater Trade Collapse”. WTO simulations (Figure 1) suggest that trade in 2020 will plunge by -13% or -32% under an optimistic and pessimistic scenario, respectively (WTO 2020). Either is substantially larger than the hit in 2008-2009, and in the pessimistic scenario, it rivals that of the Great Depression. The estimates, which were made in early April 2020, suggest the fall could be short and sharp if world income growth resumes rapidly, but in the pessimistic forecast scenario,

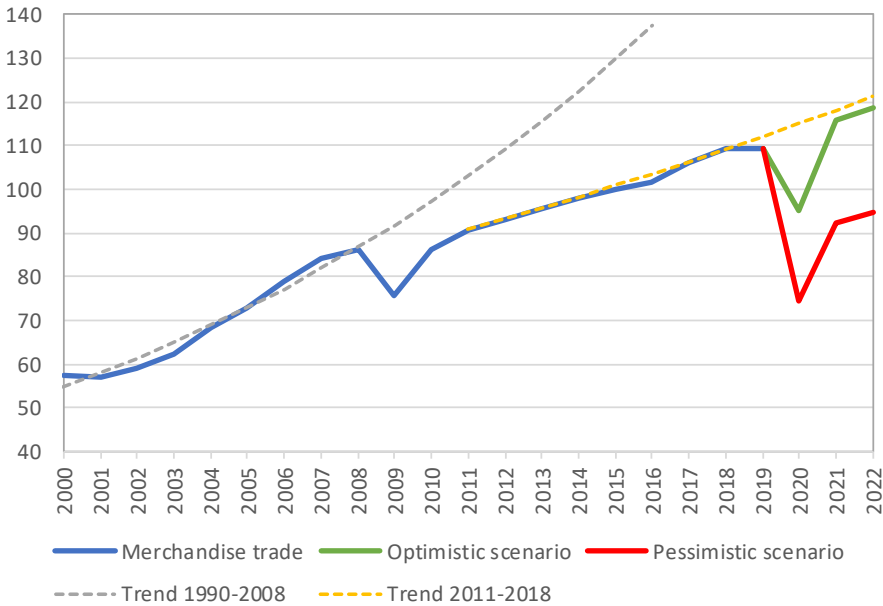
2 See Baldwin (2009) for extensive documentation of this drop.

3 See the full text at <https://www.nytimes.com/2008/11/16/washington/summit-text.html>.

4 For precise measures, see the Global Trade Alert Reports at <https://www.globaltradealert.org/reports>.

the trade drop does not fully recover by 2022. These figures are in line with World Bank estimates that world trade is already down by 5.7% this February compared to February 2019.

Figure 1 WTO forecast: The Greater Trade Collapse of 2020 (2015 = 100)



Source: WTO (2020). Notes: Trade volumes are an average of exports and imports; Figures for 2020 and 2021 are projections.

Why is today's trade collapse projected to be so much bigger? There are two clear reasons (Baldwin 2020):

- While the point-of-impact of the 2008 financial crisis was the US and the UK, today's crisis hit all the world's largest trading nations within a few months.

The US, China, Japan, Germany, Britain, France, and Italy – all of which were hit hard by the virus in the first quarter – account for 60% of world supply and demand (GDP), 65% of world manufacturing, and almost as much of world manufacturing exports.

- While the Great Trade Collapse was primarily caused by a collapse in demand, today's "Great Lockdown", as the IMF is calling it, is a serious supply-side disruption that is affecting all sectors in all of the largest economies in the world.

As in 2008, today's trade shock has been accompanied by rising concerns about a return to protectionism. What of such concerns?

The protectionist temptation and fears for the liberal trading system

Conventional wisdom has it that economic recessions are the handmaiden of protectionism. As mentioned, the experience of the early 1930s is a compelling historical example. The consequences were grim. Leading economic historians Barry Eichengreen and Douglas Irwin have argued: “While many aspects of the Great Depression continue to be debated, there is all-but-universal agreement that the adoption of restrictive trade policies was destructive and counterproductive” (Eichengreen and Irwin 2009).

Today, as in 2008, many global leaders are alert to the dangers of failing to heed the lessons of the past. The President of the World Bank, David Malpass, noted recently “I think countries need to step forward and say, we’re not going to use the crisis as a reason to close our markets or to block our markets” (Malpass 2020). The IMF’s chief economist, Professor Gita Gopinath, put the protectionist threat in perspective: “It is very important that this does not become a future where we reverse all the gains that we’ve got from globalisation.”⁵ But not all leaders see it this way.

Protectionism doesn’t drop from the sky – it needs advocates who capitalise on tough times. Of course, advocates don’t frame their proposals in terms of turning inward, they put forward other claims such as assuring security of supply. Noting likely shortages in medical supplies, in February 2020, Peter Navarro, a senior adviser to President Trump, argued:⁶

“This is a wake-up call for an issue that has been latent for many years but is critical to US economic and national security...If we have learned anything from the coronavirus and swine flu H1N1 epidemic of 2009, it is that we cannot necessarily depend on other countries, even close allies, to supply us with needed items, from face masks to vaccines.”

... a senior adviser to President Trump, argued: “...If we have learned anything from the coronavirus and swine flu H1N1 epidemic of 2009, it is that we cannot necessarily depend on other countries, even close allies, to supply us with needed items, from face masks to vaccines.”

5 Quoted in Rappeport and Smialek (2020).

6 Quoted in Politi (2020).

Milder sentiments have been expressed by other officials not typically associated with economic nationalism. The European Commissioner for Health, Stella Kyriakides, put the matter this way: “The issue of dependency of the EU vis-à-vis China, and other countries . . . was on the table before Covid-19” and “[The crisis] has highlighted this problem and we need to look at it, we need to ensure that we reduce our dependency on other countries.”⁷ Her colleague, the European Commissioner for the Internal Market, Thierry Breton, whose responsibilities include industrial policy, has opined that “globalisation has gone too far” and stated that “I am convinced that our relationship with the world after this crisis will be different”.⁸

To date, no specific proposals for new industrial policies, trade discrimination and the like have been made. But it is easy to see an anti-trade localism gaining momentum – as the chief economist of the European Bank for Reconstruction and Development (EBRD), Professor Beata Javorcik, points out in her chapter in this eBook.

Different shocks, different protectionisms

The protectionist temptation can manifest itself in many ways. Given that ‘protectionism’ is such a charged word and is often solely associated with import restrictions, a better approach is to focus on the gamut of ways in which government actions discriminate against foreign commercial interests.⁹ Those interests include importers and exporters, manufacturers, foreign investors, foreign owners of intellectual property, foreign workers, and owners of foreign data.

In the Great Depression, protectionism was mostly anti-imports. Trade protection took the form of tariffs since the goal was to shift demand toward domestic producers. Tariffs were supposed to do that by making imports more expensive, but it backfired. The supposed demand boost came by taking demand away from foreign producers, but foreigners retaliated with own tariffs and the result was a protectionist spiral. By short-sightedly trying to boost demand, nations collectively pursued a path that ultimately destroyed aggregate demand for every nation.

In the wake of the global financial crisis of 2008-9, protectionism tended more towards amping up exports than shutting off imports (Evenett 2019). As Figure 2 shows, trade affected by tariff increases rose steadily during and (especially) after the Great Trade Collapse, but nothing like the Great Depression’s protectionist spiral to place. The

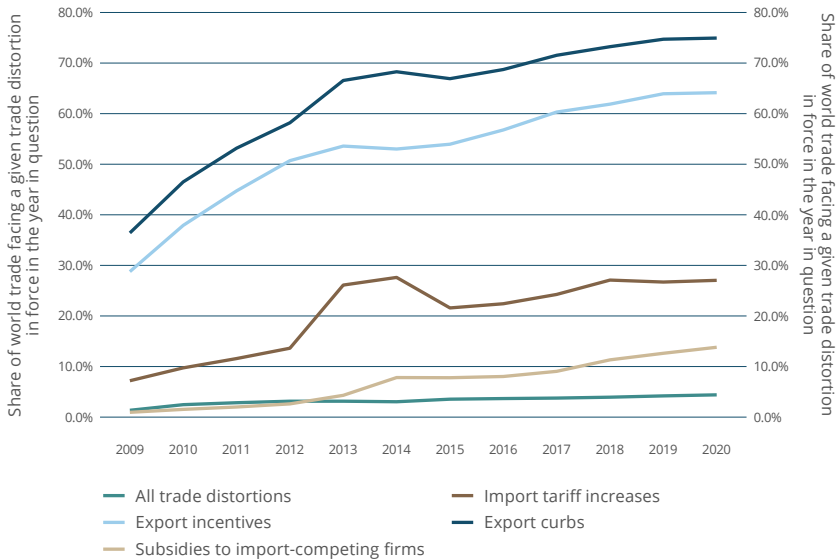
7 <https://www.ft.com/content/c30eb13a-f49e-4d42-b2a8-1c6f70bb4d55>

8 <https://www.lefigaro.fr/flash-eco/thierry-breton-estime-necessaire-l-emission-d-obligations-pour-faire-face-a-la-crise-20200402>

9 Notice the emphasis is on action, not words. Talk is cheap and government intent is hard to infer.

biggest and fastest rise in trade measures involved export incentives. Importantly, this episode taught us that 21st century trade discrimination is alive and kicking, but it often ‘flies under the radar’ – taking many varied, murky forms. As the chart shows, the role of tariffs has seen a rival since the Trump administration began its “war on trade”.¹⁰

Figure 2 Shares of world trade covered by different trade distortions, 2009 – 2020.



Source: Policy interventions extracted from the Global Trade Alert database <https://www.globaltradealert.org/>. Trade data are from the UN COMTRADE database.

The protectionist policies related to the COVID crisis have been mostly anti-export. This sharp change in the form of intervention (compared to those of the 1930s and 2000s) is easy to understand. Today’s problem is a lack of local supply – not a lack of demand as in the 1930, or a surplus of local production in the 2000s. These measures, however, are equally short sighted. Just as the 1930s tariffs triggered demand-crushing tariff retaliation, today’s export strictures risk triggering a retaliatory spiral that ultimately destroys supply. This is great folly.

¹⁰ Starting in 2018, the US unilaterally imposing tariffs on steel and aluminium from all of its major trading partners, and most retaliated. Taxes on imports continued to rise substantially as the Trump administration imposed substantial tariffs on China’s exports and China retaliated.

WHO (2020) estimated that output of personal protective equipment (PPE) needs to rise 40% globally to equip medical staff with the kit they need to care for COVID-19 patients. The numbers are enormous; per month, 89 million masks, 76 million examination gloves, and 1.6 million goggles are needed globally. Trade is a critical aspect of in this sector (Table 1).

Total trade in PPE amounted to \$80 billion in 2017 (latest available year for all nations), and in this market – as in most – the biggest economies accounted for the lion's share of the imports. The first two columns of Table 1 show the five largest importers of PPE overall are the US, the EU, China, Mexico, and Japan. The next pair of columns shows that the US is also the largest importer from China; America bought \$6.4 billion from China. The final pair of columns shows that China imported \$1.4 billion from the US.

This is the crux of the interdependence point at an aggregate level. The US is heavily dependent on imports of PPE while simultaneously being a major exporter of PPE. And the same is true of China. Indeed, the US is China's number one customer and China is the US's number four customer. Plainly, a tit-for-tat retaliation between the US and China on PPE would hinder the supply of PPE in both nations.

Judging from 2017 data, if China cut off exports to the US the way the US has cut off exports to China, US hospitals would find it even harder to find the PPE they need to care for the flood of COVID patients.

Judging from 2017 data, if China cut off exports to the US the way the US has cut off exports to China, US hospitals would find it even harder to find the PPE they need to care for the flood of COVID patients. This is a critical point, since the number of US COVID cases – and thus ultimately the number of COVID hospitalisations – has been rising rapidly.

These aggregate numbers alert us to the folly of nations thinking they can 'go it alone' during the pandemic. But the real devil is in the detail; it is the detailed, product-level analysis of international supply-chain trade in vital medical products that really drives the point home.

Table 1 Top five importers of personal protective equipment from the world, China and US, 2017 (\$ billion)

In 2017, the top five importers of personal protective equipment from:					
Importer	From the world	Importer:	From China	Importer	From US
US	15.0	US	6.4	Mexico	3.4
EU	11.7	EU	5.1	Canada	2.6
China	9.7	Japan	2.7	EU	2.0
Mexico	5.9	Hong Kong, China	1.3	China	1.4
Japan	5.1	Mexico	1.0	Japan	0.6

Source: Authors' elaboration of online WTO data; https://www.wto.org/english/tratop_e/covid19_e/covid19_e.htm

Turning inward won't work

One of the most important messages found in the chapters of this eBook is that protectionism – or, if you prefer, government acts that favour domestic over foreign interests – isn't working during the COVID-19 pandemic. Not only does such protectionism harm foreign victims of COVID-19 and reduce the effectiveness of public health interventions abroad, it does little to advance the fight against the pandemic at home.

This critique of protectionism, therefore, is largely pandemic-specific. It differs from the traditional economic critique of trade discrimination on the grounds of resource misallocation and diminished incentives to cut costs, to innovate, and to increase productivity. We are not picking a bone with the latter arguments – rather, at a time when policymakers are rightly focused on public health concerns, many of the chapters in this eBook show that discriminatory trade policies have little to contribute.

Protectionism has such meagre purchase because it does not directly address the root causes of the challenges facing policymakers during the COVID-19 pandemic. Almost always there is a more effective public policy tool that does not impede trade or gum up supply routes. The right question is not “can this trade policy instrument help?” but “which available policy instrument has the greatest positive impact?” Protectionist trade policy typically fails this test.

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Take, for example, the shortages in medical kit that have arisen in nations whose governments prepared poorly for the pandemic, failed to implement their pandemic plans, or ignored until too late the signals of developments in China, where COVID-19 broke out. Those shortages reflect a surge in demand for medical supplies, medical equipment, and medicines, not a collapse in domestic supply.

In this context, banning the export of medical products will make available some additional medical supplies manufactured inside the jurisdiction in question, much of which may have been sold to local buyers anyway. Such bans do nothing to incentivise additional production or the entry of new manufacturers. If production subsidies are not available (perhaps because it is politically unattractive for some of the subsidised product to be shipped abroad), then guaranteeing high minimum prices for firms selling medical supplies to the government is a more direct way to address shortages than export bans.

Export bans also disrupt business plans, frustrating the distribution of products and calling for changes in transshipment patterns. Matteo Fiorini, Bernard Hoekman and Aydın Yildirim, in one of their contributions to this eBook, use telling case studies of multinational firms to demonstrate these points (Box 1). The complexities of modern business operations need to be taken into account when designing pandemic responses.

The authors note that, even for those pieces of personal protective equipment that tend to be produced in a given nation for that nation’s buyers, the option of securing additional supplies from production facilities abroad is valuable from time to time. Exercising that option is impossible if the government where the facilities are located abroad implements an export ban.

The propensity for protectionism to spread to other sectors and policy instruments is well known and has been confirmed since the onset of the COVID-19 pandemic. Fears about security of supply of agricultural products and food have already led some 35 governments to curb exports despite the patchy track record of such restrictions in the past. On the latter, Will Martin and Joe Glauber recount the ineffectiveness and, in some cases, counterproductive nature of food export curbs in the aftermath of the commodity price spikes of 2006-2008.

In other areas, discrimination against foreign commercial interests reinforces trends towards more restrictive policy evident before the COVID-19 pandemic. Przemek Kowalski recounts the steps numerous governments have taken this year to enhance screening of cross-border acquisitions of national firms and other asset purchases. Kowalski argues that the absence of any multilateral rule book for foreign investment screening increases the risk that these policies could be deployed in an unpredictable and discriminatory manner.

As noted in the previous section, some have sought to capitalise on the pandemic to advocate repatriating supply chains. In their chapter, Anna Stellingner, Ingrid Berglund, and Henrik Isakson remark that concentrating production in a single country is hardly risk-free, given the potential for environmental upsets like floods, earthquakes, and the like.

Moreover, in his chapter, Sébastien Miroudot argues that geographically concentrating production also erodes the resilience and robustness of supply chains. Still, as Beata Javorcik argues, there will be greater emphasis on supply chain resilience in the years to come. What policy intervention is needed to enhance resilience, however, deserves much more thought. It will be important to identify what market failure public policy needs to fix.

By allowing buyers to tap supplies produced in many national markets, individual supplier-specific and country-specific risks will be reduced. An open trading system offers risk sharing possibilities not found when production takes place exclusively at home – and this is an important and undervalued benefit of globalisation. Bad luck happens at home too, and smart buyers of medical kit and medicines can mitigate this risk by developing relationships with suppliers located abroad, but only if the governments involved do not impede them.

Given that governments have run into the limits of what unilateral measures can accomplish, however unfashionable it may seem to some, there still remain alternatives that involve some form of cooperation between governments. Here the non-discrimination principles of the world trading system provide a useful guiding principle in devising collective responses. Replacing discrimination at the national level with favouritism at the international level is indefensible when the products in question are needed to save the lives of patients suffering from the COVID-19 pandemic and to safeguard the health of the frontline medical professionals that treat them.

Indeed, on the harm to others, Chad Bown presents evidence on the dependence of developing countries on shipments of medical supplies from the EU and the US – which have now been compromised by both of the latter two's export restrictions. Failure to stamp out COVID-19 in the Southern hemisphere increases the likelihood of another wave of infection in the North. This is another example of how the perils of protectionism differ during a pandemic.

Box 1 Export restrictions backfire

3M is global manufacturer of respirators with plants in Europe, Asia, Latin America and the United States. As of January 2020, following the COVID-19 outbreak, 3M doubled its capacity to 1.1 billion N95 respirators per year. In the US, 3M aims to increase production by 40%, producing 50 million N95 respirators per month by June 2020.

On 2 April 2020, the Trump administration invoked the 1950 Defense Production Act to direct output of US companies in the national interest. On 3 April, a Presidential memorandum was enacted allowing Federal authorities to allocate medical resources to domestic use. These two orders meant an export ban of N95 respirators. On 3 April, 3M responded to Trump's export ban, pointing to the humanitarian implications of ending respirator supplies to populations in Canada and Latin America. 3M argued that "ceasing export of respirators produced in the United States would likely lead to retaliation by other countries which would decrease the net number of respirators being made available to the United States".

Proponents of open trade argue that the benefits are not conditional on global value chain production. For example, 3M follows a regionalisation strategy with close-proximity suppliers and importers, serving nearby customers through local sourcing. Therefore, even though supply chains are less of a factor for open trade on protective masks, open trade is still an important source of additional supply when needed.

Production efforts in curbing the shortage of PPE can be evident among US apparel makers such as Hanesbrands, as they expect to make more than 320 million masks. In France companies such as Chargeurs have converted textile fibre production to supply over one million masks per week. These new production initiatives illustrate the importance of access to information on production standards and ability to source inputs, including from foreign suppliers. Standards and certification of products are critical for safety, but the regulatory enforcement processes can be a constraint in responding to an emergency.

The risks of not having international cooperation on product standards is illustrated by China's decision to impose export license requirements in early April 2020. As a result, companies accredited by buyers in the US or EU were blocked from exporting due to lack of new certification in China. This evidence shows the importance of governments' role in fostering international regulatory cooperation and mutual recognition on accepted standards for medical equipment, and manufacturing plants both at home and in other countries in order to increase supply of medical and protective equipment. This would help prevent the rigid enforcement of national standards that restrict trade, especially during a time of crisis where unilateral action can have very high humanitarian costs.

Source: Drawn from the chapter by Fiorini et al. in this eBook.

Globalisation's potential contribution is magnified when governments cooperate

For some, international trade, production migration, and globalisation in general handicap national health initiatives to overcome the COVID-19 pandemic. Typically, this conclusion is drawn if go-it-alone national policy options are the only ones considered. But history shows that international cooperation is critical to rapid expansion of production. That's how it worked in manufacturing efforts in WWII.

Ethan Ilzetzki and Hugo Reichardt draw out three lessons for how government should react to COVID production needs from US munition production in WWII (Ilzetzki and Reichardt 2020). They find that, first, ramping up production takes time, particularly for non-specialist producers; second, international cooperation is needed to share knowledge on production technology and supply chains; and third, direct public investment in plant expansions should be part of the strategy.

Many of the contributors to this eBook frame the challenge in similar light – asking how international trade and a liberal trading regime could contribute more to tackling COVID-19. As Bernard Hoekman, Matteo Fiorini, and Aydin Yildirim observe in their chapter on international cooperation, given that so many medical products are produced using supply chains stretching across multiple national borders, the capacity of a nation's producers of these goods to scale up production as the pandemic spreads is contingent on being able to source enough parts, components, and raw materials from their supply chain. Doing so is optimised if every trading partner along the supply chain does not impede or delay the exportation of intermediate goods.

A related argument yields another implication. As Evenett and Winters (2020) have recently observed, the benefits that a nation derives from lowering import barriers on medical products and medicines during this pandemic are reduced if there is little available to buy at affordable prices as a result of the export bans imposed by trading partners. This matters now, for if the Global Trade Alert's information is to correct, over 80 governments have taken steps this year to reduce or eliminate import tariffs on medical supplies and medicines.

Seen in terms of the amount of medical kit sourced internationally, outcomes will fall short of expectations if exporting nations curb shipments abroad or if manufacturers shun sales abroad because they fear disrupted deliveries and non-payment brought about by such curbs. Turning this argument around, the benefits of foreign sourcing are increased if trading partners agree to forgo, or at least qualify, the use of export restrictions.

Surely the better alternative is to maximise the size of the pie and negotiate the division of the pie based on BATNA.

Another implication for trade policymaking is that the logic of reciprocal deal making in trade policy in such essential goods is not as straightforward as zero-for-zero tariff elimination. Such insights highlight the value of the initiative orchestrated by New Zealand and Singapore to remove at the same time trade impediments and eschew export restrictions on medical products.¹¹ Such initiatives are needed for, as Joost Pauwelyn shows in his chapter, there are few existing multilateral disciplines on the resort to export restrictions.

As manufacturers, exporters, and importers, and the transportation firms that service them, must plan then uncertainty over any relevant trade policies can crimp cross-border supplies and attenuate the benefits of a liberal trading system. To that end, it is important the governments follow best practices in transparency, including the prompt and complete notification of their actions to the World Trade Organization. In his contribution to this eBook, Robert Wolfe shows the degree to which governments are currently notifying COVID-19-related trade measures and the steps that can be taken to enhance the global public good of trade policy transparency during this pandemic and after.

¹¹ <https://www.beehive.govt.nz/release/nz-and-singapore-commit-keeping-supply-and-trade-links-open-including-essential-goods-and>

International transportation networks have been severely disrupted by government-imposed lockdowns on economies. This disruption has been exacerbated by pandemic-era rules limiting the cross-border movement of seamen and women, which in turn prevent changeovers in ship crews. In their chapter, Inga Heiland and Karen Helene Ulltveit-Moe provide evidence of the impact of such regulations on the routes supplied by Norwegian shipping lines. They call for bans on crew changeovers to be replaced with measures that involve more screening (testing of crew). They endorse the International Maritime Organization's recommendation to governments to take steps that facilitate crew changes, which would allow for more cross-border supply of medical products and medicines now and, more generally, encourage a faster recovery of world trade.

In sum, during this pandemic there are many steps that governments can take together to enhance trade policy's contribution to the fight against COVID-19. The tragedy is that so few of them have come to pass. Rather than globalisation holding governments back, the reality is that globalisation has not been given a chance to demonstrate its potential in surmounting this global pandemic. Governments have the opportunity to redress this when preparing for a second wave of COVID-19 infection.

Concluding remarks

In his acclaimed history of the origins of WWI, titled *The Sleepwalkers*, Christopher Clark demonstrated that miscommunication and misunderstandings led largely well-meaning policymakers to declare war and upend a continent. As far as the world trading system is concerned, there are strong parallels to today.

Many nations claim fealty to the principles of liberal trade – yet they impose harmful export curbs on medical supplies and medicines and engage in other zero-sum behaviour. A nasty blame game has begun that calls into question whether certain nations are reliable suppliers. Vague notions of repatriating supply chains have been mooted. Meanwhile, the COVID-19 pandemic continues, piling pressure on policymakers to deliver results immediately. There is little near-term, let alone medium-term, thinking. International cooperation on trade policy is pitiful.

Must governments sleepwalk towards a spiral of export restrictions that make it harder for every nation to fight COVID-19? Our view is that is too early to write the obituary of the liberal trading system. Governments have more options than they realise – so they have a choice and they must choose wisely.

Practical considerations – which even the most ardent economic nationalists cannot ignore – also shift the choice from turning inward or not to how best to make the most of the current world trading system. It is impossible to fundamentally alter the pre-pandemic distribution of factories across the world in time for the second wave of infection of COVID-19. Policymakers must deal with the supply chains and patterns of international specialisation at they are, not as they might wish them to be.

While much has been made of China as the ‘factory of the world’, in fact, for the diverse range of goods that the WTO groups together as COVID-19 “medical products,” in the vast majority of cases there are a large number of nations that are established exporters. To be precise, for the 80 categories of medical products identified by the WTO, in only 14 cases are there fewer than five exporting nations that consistently export more than \$10 million per year. For 54 types of medical exports, there are ten or more nations that consistently export, according to calculations done by the Global Trade Alert Team using fine-grained United Nations trade data.

In practical terms, this means that a liberal world trading system gives health ministries, hospitals, and other medical service providers a wide range of suppliers to choose from. The fact that the COVID-19 pandemic hit different nations at different times implies that buyers can switch between suppliers and so reduce the risks of depending on any one of them. This facet of globalisation should be seen as a massive risk mitigation device. But for international trade to deliver its magic supply, routes must be kept open. Too many governments turning inward would frustrate this, exacerbate the coming collapse in world trade, and represent an unforced error of historical proportions. The price paid is not abstract – it is in lives lost.

There is also a moral case to be made in favour of international cooperation. A world where supply-chain trade is blocked, and local productive facilities are potentially nationalised in retaliation, is not a world where the dozens of nations without production facilities will be able to treat COVID patients safely.

Another risk is that the multi-polar world trading system can mitigate is over dependence on any one nation to foster collaborative solutions. That economic nationalists in one trading power have buried their heads in the sand does not excuse other governments from taking sensible unilateral action and from developing cooperative responses necessary to keep supply routes open.

This is not be the time for grand designs. It is the time for pragmatic steps that leverage mutual interests. The initiative of the seven-nation group, put together by New Zealand and Singapore, to keep supply routes open is a case in point.¹²

We reject the conventional wisdom that profound economic shocks must be followed by protectionism. History teaches us that turning inward does not work. Recent events, documented in the chapters in this book, reinforce that lesson. Past is not prologue. Governments have a choice.

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¹² The 22 April 2020 announcement by 50 governments, including China and the United States, to maintain open and predictable trade in agricultural and food products is welcome too. The signatories pledged not to impose export restrictions on agricultural (but not food) products. See WTO document WT/GC/208.

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1 How trade can fight the pandemic and contribute to global health

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The world is in the midst of a dual crisis, threatening both the health of millions of people and the world economy. Since all this began in the “world’s factory”, China, some voices are using the crisis to argue for breaking up global value chains and reshoring production closer to home. The argument is that it is dangerous – from both an economic and public health perspective – to be so dependent on imports. In this chapter, we argue that the opposite is true.

The world is in the midst of a dual crisis threatening the health of millions of people as well as the world economy. Since the crisis began in China, the “world’s factory”, there are arguments now for breaking up global value chains and reshoring production closer to home on the grounds that it is dangerous – from both an economic and public health perspective – to be so dependent on imports. In this chapter, we argue that the opposite is true.

Is it not reasonable to ask whether we are too dependent on *some* vital supplies from abroad? In fact, 90% of the personal protective equipment (PPE) sold in the EU is imported, from surgical gloves made in Malaysia to headgear manufactured in Morocco and face masks produced in Japan. Some firms might choose to increase security of supply and safe delivery, to reshore manufacturing and “move home”. And this applies not only to PPE-products. It might be wise to remove other eggs from the China basket, and it is a responsibility of business to ensure better environmental and social sustainability along supply chains. Hence, a return to the status quo after the crisis is not desirable.

Why global value chains are good for public health

However, it would be dangerous to suggest that countries should radically reduce their dependency on imports and embark on a path towards deglobalisation. The present web of global value chains, where the various stages of the production process are spread out over the globe, has served us well historically. Some countries focus on knowledge-intensive production, branding, design, marketing, and other intangibles; others focus on manufacturing or various combinations in an open global market where FDI is welcomed, and where goods, services, people, and data can flow across borders, create incomes and employment, and provide consumers with choices of quality goods and services at competitive prices.

This openness is also important for the sake of public health. The immediate COVID-19 crisis requires a global market, as do the long-term health prospects of people throughout the world. Those firms in the business of “supplying health” are not just in the pharmaceutical industry, producing medicines, but also in the less well-defined “medical supplies sector”, producing a wide range of goods from low-tech soap, gloves, disinfectants, and bandages to more specialised surgical instruments, respirators, ventilators, and state of the art x-ray machines.

Depending on how you measure them, there may be more than a million different medical technologies used in the world today, while 8,000 generic drugs are registered with the World Health Organization (WHO). And that's not counting services sectors such as digital medicine, which is enabling the outsourcing of diagnosis and monitoring, as well as health-related tourism, which is increasingly making a vital contribution to global health. In fact, multinationals in the medical supplies and pharmaceutical sectors are spread across the entire value creation process and throughout countries with different comparative advantages ranging from R&D, the manufacturing of components, and the assembly and distribution of final goods, to marketing, sales, and maintenance.

Whereas R&D is predominantly carried out in the US and EU, the bulk of manufacturing takes place in China, Mexico, Singapore, Costa Rica, the Dominican Republic, and Malaysia, where such production has become prioritised locally, leading to the emergence of medical “clusters”. The resulting cost containment is essential for financing large-scale health programmes.

Before the pandemic, many countries faced growing demographic challenges. Although longer life expectancy can be regarded a positive achievement, it also presents economic challenges. Hospitals and retirement homes in many developed countries are gradually finding themselves in an cumulative cost spiral. And despite broad aspirations for

improved public health, resources are limited. Arguing against the role of trade in public health is a de facto argument in favour of inefficiency and consequently higher costs, with patients who will pay the price through more expensive healthcare or higher taxes.

This is also not only a matter of cost; one country on its own simply cannot manufacture all the medical technology, provide the chemical inputs used for medicines, and innovate to create essential vaccines. And even if one country were able to pull this all off, it surely wouldn't be the safest method of ensuring universal access to vital products.

Another strong contribution of trade to public health is that without it, some vital medicines and medical technology simply would not exist. These products require large investments in R&D that would not be profitable if the firms investing could not export the results. Reduced trade opportunities lead in turn to diluted innovation and help lower access to health-related products worldwide.

Protectionism in the pharma and medical supplies sectors

To ensure a safe and cost-efficient supply of medicines and medical supplies, open borders are vital. That is not to say that trade should be unregulated. These sectors are tightly regulated – and rightly so – by a vast array of laws, tests, and mandatory procedures that ensure effectiveness and patient safety but can be costly for the firms involved. To a large extent, those costs are transferred to taxpayers and patients, either directly or indirectly, and nobody questions the need for them. But in addition to *necessary* non-tariff measures, there are also *unnecessary* measures – such as import bans, licensing requirements, and “buy-national” public procurement requirements – that protect domestic industry rather than patients.

There are also many WTO countries that, at least before the crisis, charged high tariffs on medical devices, medicines, disinfectants, and soap. Some examples are highlighted in Table 1.

Table 1

Products	Tariff rate	Number of countries
Medical devices	5 - 10 %	42
	10 - 12 %	15
	> 20 %	2
Medicines	> 6 %	22
Disinfectants	≥ 15 %	25
Soap	≥ 15 %	79
	≥ 30 %	31

Source: WTO Tariff Download facility.

In addition to import barriers, many countries are now introducing export barriers or *export bans* on protective equipment and medical supplies, even *within* the EU Single Market. Any attempt to contain the virus within national borders is in vain, while export bans and barriers ignore global value chains and create production bottlenecks by locking inputs *within* countries. Similarly counterproductive are the restrictions on food exports. Even temporary export bans risk generating mistrust, harming trade relations, and creating a protectionist spiral that will lead to a further escalation of export bans. Such measures risk making access to important goods more difficult in the case of future outbreaks, and leave developing countries at particular risk.

Removing trade barriers in the wake of the pandemic

In the current crisis, worldwide demand for a range of medical supplies has increased dramatically. The trade barriers in place limit access to these products and make them unnecessarily costly. Protectionism is rarely the right way to go, and even less so when a global crisis of this magnitude is upon us.

Liberalising trade in medicines and medicinal supplies can help save lives, with eliminating tariffs on these products a particularly essential tool. Because there's simply not enough time to conduct a new round of tariff negotiations in the WTO, unilateral action should be taken by all countries to remove import duties on health-related goods. In most countries, this can be achieved instantly. Other measures that can be implemented rapidly include accelerating administrative procedures to facilitate both the production and import of essential products.

The good news is that governments around the world are implementing import liberalisation measures. Since COVID-19 was declared a pandemic on 12 March 2020, 77 nations have to date (19 April 2020) reduced import barriers on medicines and medical supplies. Although this liberalisation so far includes mostly tariff measures, some non-tariff measures have also been implemented. The map below, produced by Global Trade Alert, highlights the nations that had removed import barriers to medicines and medical supplies as of 12 April 2020.

Examples of governments that have removed tariffs include:

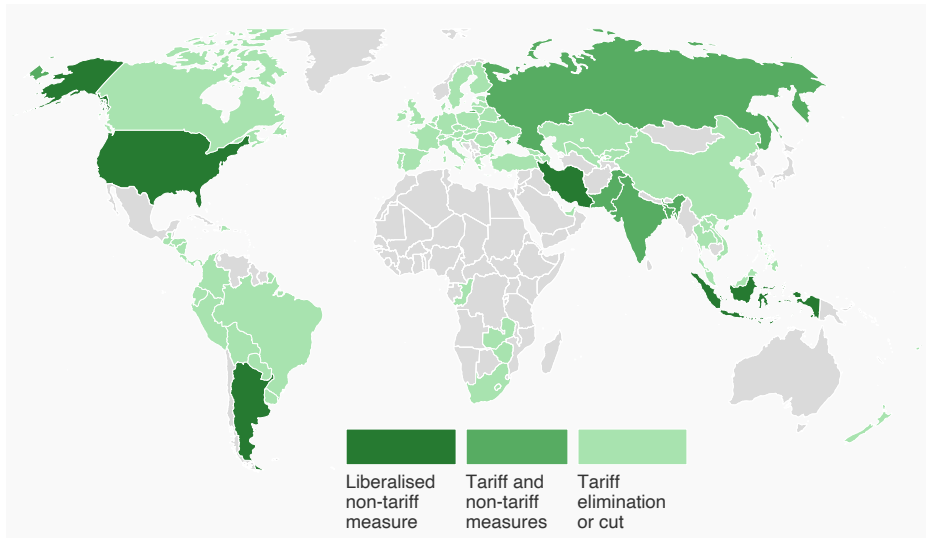
- China, which (naturally) was among the first to reduce import tariffs on certain medical supplies, but also on some raw materials and agricultural products;
- the EU, which has waived customs duties and VAT on imports of medical and protective equipment from non-EU countries retroactively as of 30 January 2020; and
- Bangladesh, which has exempted medical equipment from import duties and taxes.

Some countries have also taken steps to reduce non-tariff barriers: Iran has removed an import ban on ethanol, used to produce sanitisers and disinfectants, and Argentina has simplified the import clearance process of certain critical sanitary supplies. In the EU, the European Commission has recommended market surveillance authorities to temporarily authorise the marketing of PPE-products without the otherwise-mandatory CE-marking, provided that health and safety levels are maintained.¹ The European Standardisation Organisations have also agreed to make freely available a series of European standards for medical devices and PPE-products. This is all designed to facilitate the rapid and smooth access of vital products to market.

Despite the positive steps taken by many countries, some countries – mostly but not exclusively in Africa – have so far implemented few if any import liberalisation measures on medicines and medical equipment.

1 <https://eur-lex.europa.eu/legal-content/GA/TXT/?uri=CELEX:32020H0403>

Figure 1 77 Nations have cut import barriers to COVID-19 medical supplies and medicines this year



Source: Global Trade Alert, 12 April 2020.

In addition to unilateral action, some coordinated responses are taking place between countries. A group of seven countries – New Zealand, Singapore, Canada, Australia, Chile, Brunei, and Myanmar – committed in a statement at the end of March to keeping supply chains open and removing any existing trade restrictive measures on essential goods, especially medical supplies.² They also committed to working with like-minded countries to ensure uninterrupted trade flows. A few days later, the G20 countries issued a ministerial statement promising to work to ensure the flow of vital medical supplies and equipment and “take immediate necessary measures to facilitate trade in those essential goods.”³

On 16 April 2020, Phil Hogan, the European Commissioner for Trade, proposed a less immediate and more long-term solution to greater global preparedness for future crises. In a meeting of EU trade ministers, Hogan suggested that the “international community” launch “a comprehensive negotiation of a plurilateral agreement that would lead to a level playing field, including the possible permanent liberalisation of tariffs on medical equipment.”⁴

2 <https://www.trademinister.gov.au/minister/simon-birmingham/media-release/joint-ministerial-statement-australia-brunei-darussalam-canada-chile-republic-union-myanmar-new-zealand-and-singapore>

3 https://www.wto.org/english/news_c/news20_c/dgra_30mar20_c.pdf

4 https://ec.europa.eu/commission/commissioners/2019-2024/hogan/announcements/introductory-statement-commissioner-phil-hogan-informal-meeting-eu-trade-ministers_en

While these initiatives are moves in the right direction and considered essential to facilitating trade in products used to fight COVID-19, more action is needed from governments to ensure that trade policy contributes its full potential to tackling the crisis and protecting public health.

What more can countries do? Recommendations for policymakers

Beyond unilateral tariff reductions and the removal of unnecessary non-tariff barriers on medicines and medical supplies, additional measures can be taken by governments, alone or together, to facilitate trade in these products.

Border crossings must guarantee supply-chain continuity and speed up the transport of critical goods. Countries can also explore the coordination of emergency programmes for relevant agencies to speed up the clearance and release of medicines, medical supplies, and food in times of crises. Such items will have to be clearly defined, and simplifications in customs procedures could reduce the administrative burden on businesses.

Governments need to ensure that people with key competences can cross borders safely when needed. Today, many companies are highly dependent on being able to move personnel with key competencies between their operations in different countries. For the pharmaceutical and medical supply sectors, this applies not only to medical and R&D personnel, but also to technical experts in the fields of operations and maintenance.

From the medium-term perspective, it is vital to guarantee that trade can contribute to public health and help prepare us for future virus outbreaks. This will require increased international coordination and cooperation. Collective global measures are still needed to make the unilateral, temporary measures to liberalise trade in medicines and medical supplies permanent. Convening a new round of global tariff negotiations in the WTO would be the desirable choice but not the most realistic, since they would be time-consuming.

The second best collective action would be a plurilateral agreement among as many countries as possible to liberalise trade in medicines and medical supplies. Committing to a plurilateral agreement on medicines and medical goods would be the right thing to do in the event of any future pandemics, other calamitous situations, or simply given the demographic challenges facing many countries around the world. Cheaper and improved access to medicines and medical supplies, not least in the least-developed countries, can never be a bad thing.

One way forward would be to build on the WTO Pharmaceutical Tariff Elimination Agreement (the “Zero-for-Zero Initiative”).⁵ Signed in 1994, the agreement’s signatories included the US, Canada, Japan, and the EU. It abolished tariffs for finished pharmaceutical products and certain ingredients and components used to produce them.

Reviving this agreement could be beneficial but would require updating and modification, as the initiative contains numerous shortcomings. First, the agreement included a commitment to review and update the list of products and ingredients at least once every three years, but has not been updated in nearly a decade. Regularly updating the list of tariff-free products in such an agreement and keeping up with the rapid product development in this sector is a prerequisite.

Second, such an agreement should be expanded in terms of products. One shortcoming of the WTO Pharmaceutical Tariff Elimination Agreement is that not all health-related products were covered. Restricting the agreement’s scope to pharmaceuticals makes it too narrow; medical devices and PPE should be included.

Finally, the agreement needs to expand the number of participating countries. Many large countries, such as Brazil, China, India, and Russia, have not signed on to this initiative and therefore still levy tariffs on pharmaceutical products. Encouraging more countries to sign the agreement should be a priority. Countries could also explore the possibility of including rules on non-tariff measures and certain related service sectors in a plurilateral agreement on pharmaceuticals and medical supplies.

A majority of African and South American countries charge high tariffs for medical products, such as import tariffs of 15% or more on soap. These countries would benefit from suspending tariffs and facilitating administrative procedures for trade in vital products, but for some countries, especially the least developed (LDCs), tariffs contribute a major part of government revenue. Donor countries could therefore consider providing aid to fill in some budget gaps, which would provide developing nations with incentives to move toward zero tariffs for pharmaceuticals and medical supplies.

5 https://www.wto.org/gatt_docs/English/SULPDF/91770009.pdf

Conclusions

The COVID-19 pandemic can teach us at least five lessons from a trade policy perspective.

1. At the general level, the immediate protectionist reaction is rarely the right one, and even less so in a crisis where public health is at stake and unnecessary trade obstacles risk impeding and restricting access to vital medicines and medical equipment.

The examples are many, but the recent intra-EU export bans are some of the most counterproductive.

2. International trade is not the problem but (part of) the solution.

An open, global market, where innovative goods, services, people, and data can flow across borders without unnecessary obstacles, contributes to both public health and the healthy recovery of our economies.

3. Imports matter as much as exports.

Imports provide us with cost-efficient and qualitative medicines and medical supplies. They are also required as inputs to production and exports, such as chemical substances, for producing medicines.

4. Diversifying the localisation of various stages in the production process might be one reasonable outcome of the COVID-19 crisis.

Not putting every egg in the same basket can be a wise move from many perspectives. Equally, the ambition to protect supply lines from interruptions does not necessitate large-scale re-shoring.

5. The many small steps taken to tackle the crisis should eventually move us in a multi-lateralising direction (or at the least towards a plurilateral accord). We might not get all the way, but the COVID-19 crisis makes it abundantly clear that the solution is not “everyone for themselves” but a common endeavour in the name of humanity.

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2 COVID-19: Demand spikes, export restrictions, and quality concerns imperil poor country access to medical supplies

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Early 2020 has seen a chaos of export restrictions, policy flipflops, price spikes, and quality concerns surrounding trade in vital medical supplies. This chapter summarises the restrictions taken by the EU, US, and China and argues that developing nations are particularly exposed to the downside. More worryingly, the export restrictions could trigger a spiral of retaliation. Dozens of countries have already imposed such restraints – and the restrictions go well beyond the personal protective equipment that has been in the headlines. It includes hospital equipment, pharmaceuticals, and food.

Developing countries will be impacted by the coronavirus. Their policy response regarding social distancing may, understandably, be different from the approaches taken in China, Europe, the US and elsewhere (Barnett-Howell and Mobarak 2020). They will also certainly face other, context-specific preparedness constraints: for example, more than one third of west Africans do not have access to basic handwashing facilities at home (OECD 2020).

But for public health, medical workers in developing countries will require access to the same respirators, surgical masks, hospital gloves and other personal protective equipment (PPE) that have proven to be in short supply elsewhere. And poor countries will have fewer options than China, Europe and the US. Many lack domestic manufacturing facilities that their governments could instruct to suddenly scale up production. Some will be entirely reliant on imports as a source of supply. Price spikes in international markets – or being cut off from imports because historical foreign suppliers suddenly refuse to share – could put in peril their ability to cope.

Unfortunately, there are some signs that the greatest fears of many such countries will materialise. In the face of a pandemic, one back of the envelope estimate indicates that the social value of an American hospital worker accessing an N95 respirator could “easily be more than a million dollars per mask” (Abaluck et al. 2020). Major PPE suppliers, such as the EU and US, have suddenly imposed limits on exports. EU and US policies were poorly designed and clearly imposed in haste. Initial announcements were not only draconian but also self-defeating. Each has thus been subject to nearly continual adjustment, creating massive uncertainty about PPE availability for foreign consumers, including those in poor countries.

Furthermore, China was also a major initial contributor to the global shortage. As the original hotspot of COVID-19, caring for its population of 1.4 billion people was a large source of the spike in global demand. But as a supplier of more than 40% of world imports of personal protective equipment, the early 2020 Chinese demand increase contributed to disrupting global PPE availability. As time has passed, China has responded with additional supply, but new challenges have emerged. An overwhelming increase in foreign demand has led to new concerns over product quality and the appropriate levels of regulatory oversight.

As a result, global PPE markets are in chaos, with reports of piracy, defective products, hoarding and price gouging, in addition to the shortages. Many poor and vulnerable countries face uncertainty over their current and future access to imported PPE.

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The purpose of this chapter is modest. It starts by clarifying what is known about the frenzied policy events and potential trade impacted by major government interventions in global PPE markets in early 2020. That includes export limits imposed by the EU (Section 1) and US (Section 2). It then turns to the complicated role played by China (Section 3). Each section also provides an initial assessment of some of the developing country importers of PPE most directly exposed to foreign supply shocks, with the standard caveat that inference is limited, given a lack of detailed data about domestic production capabilities or existing stockpiles of these products. Section 4 introduces issues of product quality and regulatory adjustments taking place endogenously during the pandemic, and a final section concludes.

The EU export authorisation programme for PPE

In late February 2020, Italy was the first EU member state to plunge into a health crisis, and was forced to ration hospital treatment.¹ Spain and other countries were hit hard as well. But France and Germany, two major European suppliers of vital medical equipment, took trade policy into their own hands, prioritising protection of their own citizens.²

- On March 3, France requisitioned domestic production of respirators for French health care workers.³
- On March 4, Germany imposed its own national export restrictions on masks, face shields, and other PPE.⁴

Thus, as Italy and other areas of the continent faced shortages, Europeans lost access to life-saving equipment made in other EU member states.

- The European Commission intervened on March 15 by establishing an emergency export authorisation programme for five pieces of personal protective equipment: face shields, protective garments, mouth-nose-protective equipment, hospital gloves, as well as protective goggles and visors.

The promise of the initial act was that it would be temporary, and would terminate after six weeks, on April 25 (European Commission 2020a). It did not ban exports to non-member states, but potential sales outside of the Union would be subject to bureaucratic review and could potentially be declined.

One major problem with the Commission's initial export restrictions was their potential to disrupt pan-European supply chains, as they also applied to commerce with major European (but non-EU) economies like Switzerland and Norway. For that reason, the Commission modified the original authorisation.

- On March 20, the Commission announced a modification to the programme so that it no longer impacted trade with Switzerland, Norway, and a handful of other countries and territories (European Commission, 2020b).

1 This section draws heavily from Bown (2020b,e). See also Keynes (2020).

2 European Commission (2020a) stated, "Production of personal protective equipment such as mouth protection masks in the Union is currently concentrated in a limited number of Member States, namely the Czech Republic, France, Germany, and Poland." The Czech Republic imposed export restrictions as well.

3 See Government of France (2020). See also Lara Marlowe (2020), "Coronavirus: European solidarity sidelined as French interests take priority Row over face masks exposes threat to EU principles of free trade and collaboration", The Irish Times, 30 March.

4 See Federal Ministry for Economic Affairs and Energy (2020).

Nevertheless, the EU's restrictions remained imposed for the next five weeks on products for which there was an estimated \$10.3 billion in foreign sales to covered countries in 2019 (Bown 2020c). Of the restricted products, EU exports of face shields were the largest at \$6.5 billion, followed by protective garments (\$2.7 billion), mouth-nose-protective equipment (\$746 million), hospital gloves (\$264 million), as well as protective goggles and visors (\$148 million).

- After the programme had been in effect for a month, the European Commission proposed three additional modifications (European Commission, 2020c).

First, the export authorisation programme for protective masks ("mouth-nose-protection equipment") would be extended for another 30 days starting April 26; the export restrictions for the other four products would be lifted on April 25 on schedule. Second, the export restrictions would no longer apply to a group of West Balkan countries in process of acceding to the EU, including Albania, Bosnia and Herzegovina, North Macedonia, Montenegro, Serbia, and Kosovo. Third, the Commission established a new transparency commitment that would eventually require "Member States to report to the Commission on their authorisations granted and refused and commits the Commission to report publicly on these developments."

The EU's export restrictions for PPE have the potential to impact a number of developing countries historically reliant on EU member states for their imports (Figure 1).⁵ The initial export restriction applying to all five PPE products could impact sales to a range of countries in Eastern Europe, northern Africa, and sub-Saharan Africa for six weeks starting March 15. (To the extent that such countries historically procured supplies from Germany, France, or the Czech Republic, they would have been cut off earlier in March.) Conditional on the proposed modification going into effect on April 26, the export restrictions would cease to apply to countries like Albania, northern Macedonia and Serbia. For other importing countries, export restrictions would remain on mouth-nose-protection equipment.

Figure 1

EU export restrictions on medical supplies put countries in Eastern Europe, northern Africa, and sub-Saharan Africa at risk



Percent of total imports sourced from EU, by product subject to EU export restriction

	Face shields	Mouth-nose-protection equipment	Protective spectacles and visors	Protective garments	Gloves
Cape Verde	91%	87%	89%	75%	91%
Tunisia	86%	63%	35%	89%	41%
Senegal	55%	61%	51%	33%	56%
Republic of the Congo	51%	67%	45%	36%	55%
Albania	77%	74%	12%	58%	14%
Niger	54%	71%	71%	5%	26%
Angola	63%	29%	62%	29%	42%
Macedonia	71%	70%	22%	6%	32%
Morocco	78%	54%	9%	34%	22%
Serbia	73%	72%	17%	7%	20%



EU = European Union

Note: Average share of a country's total imports of each product sourced from the EU over 2016-2018.

Source: Constructed by the author with country-specific import data at 6-digit Harmonized System level from UN Comtrade accessed via World Integrated Trade Solution (WITS). See Bown (2020b).

Nevertheless, the initial six weeks may have imperilled some countries' access to PPE during a critical period of preparing for the pandemic. Given global shortages of PPE, it is highly unlikely they would have been able to suddenly switch and procure supplies from alternative sources. And, for mouth-nose-protection equipment for which the export restrictions continued to apply beyond April 25, a number of African countries could still face shortages. Historically, countries like Cape Verde, Tunisia, Senegal, Congo, Niger and Morocco have procured much of their imports of hospital masks from EU member states.

The EU's export restrictions for PPE have the potential to impact a number of developing countries historically reliant on EU member states for their imports ... could impact sales to a range of countries in Eastern Europe, northern Africa, and sub-Saharan Africa for six weeks starting March 15.

US export restrictions under the Defence Production Act

On 3 April 2020, 3M, the American manufacturer of respirators and other PPE, issued the extraordinary statement that the Trump administration had “requested that 3M cease exporting respirators that we currently manufacture in the US to the Canadian and Latin American markets” (3M 2020a). In 2019, 34% of US exports of respirators and surgical masks went to Canada, and 30% went to Mexico alone (Bown 2020d). Later that day, President Donald Trump announced and issued a memorandum that the US would restrict exports of certain PPE under the Defence Production Act (DPA) (White House 2020a, 2020b).⁶

Whether the DPA announcement would turn into actual US policy was initially unclear. Over his prior three years in office, President Trump had earned the reputation of using such announcements to generate uncertainty. Sometimes the end result was a trade policy change, but often the threat was used to make a deal on something else.⁷ And in this case, his administration was in ongoing negotiations with 3M to increase American access to PPE.

On 6 April, the President and 3M announced an agreement. 3M would be permitted to continue to export from its American facilities, and it would import 167 million respirators from its production facilities in China over the next three months (White House 2020c, 3M 2020b). Given the deal, it appeared as if the export restrictions the President had previously announced under the DPA might be off.

Many were thus surprised when the export restricting policy was made official late on 7 April. Federal Emergency Management Agency (FEMA) issued a rule to limit American exports of a variety of respirators, surgical masks, and hospital gloves starting on 7 April for 120 days, terminating on August 10 (FEMA 2020a). The rule provided only limited exemptions, the main one being that “materials from shipments made by or on behalf of US manufacturers with continuous export agreements with customers in other countries since at least 1 January 2020, so long as at least 80% of such manufacturer’s domestic production of covered materials, on a per item basis, was distributed in the US in the preceding 12 months.” This language appeared as if it might accommodate 3M’s business model, which relied on its American manufacturing facilities to supply PPE

⁶ This section draws heavily from Bown (2020a, 2020d).

⁷ As one example, on May 30, 2019, Trump issued a statement that he was “invoking the authorities granted to me by the International Emergency Economic Powers Act” and would apply tariffs on all imports from Mexico starting June 10, as the President was unhappy with how Mexican was addressing migration issues (White House 2019). There was never an official Federal Register notice implementing the policy, and the President did not follow through with the tariffs.

to the US, Canadian, and Latin American markets. Nevertheless, the rule also indicated that the decision of whether to exempt any potential shipment from the export ban remained at the discretion of the Trump administration.

Then, late on Friday 17 April, the Trump administration quietly released a revised rule providing a complete exemption for exports to Canada and Mexico after all (FEMA 2020b).⁸ However, even the modified rule would continue to restrict exports made as commercial transactions to other destinations.

... FEMA issued a rule to limit American exports of a variety of respirators, surgical masks, and hospital gloves starting on 7 April ... Then, late on Friday 17 April, the Trump administration quietly released a revised rule providing a complete exemption for exports to Canada and Mexico ... the rule could be self-defeating if it exposed the US to retaliatory export bans. In 2019, the US imported more than five times the amount of these pieces of PPE as it exported

Overall, the US exported an estimated \$1.1 billion of the restricted products in 2019, including disposable respirators and surgical masks (\$511 million), air-purifying respirators (\$415 million), and hospital gloves (\$150 million). As indicated, much of these exports went to Canada and Mexico. Under the revised rule, these countries would be exempted. While not a point of discussion here, the rule could be self-defeating if it exposed the US to retaliatory export bans. In 2019, the US imported more than five times the amount of these pieces of PPE as it exported (Bown 2020d).

Nevertheless, there are a number of Latin American countries that have sourced a large share of their imports of these products from the US historically (Figure 2). They did not receive a blanket exemption even under the revised rule of 17 April. However, the revised rule does contain one other potentially important exemption – for humanitarian purposes – that could apply. PPE exports could be exempted if they were procured by a charity or NGO and freely distributed.⁹ Yet, the ban would appear to continue to apply to hospitals in these countries desperate for PPE and seeking to purchase such equipment from American manufacturers via a commercial transaction.

8 There had been reports that the administration was changing course after a flood of complaints; see, for example, Jenny Leonard (2020), “Trump Eases PPE Export Ban With Canada, Mexico Exemptions,” Bloomberg, 14 April.

9 Specifically exempted were “Exports of Covered Materials by Non-profit or Non-governmental Organisations that are Solely for Donation to Foreign Charities or Governments for Free Distribution (Not Sale) at their Destination(s)” (FEMA 2020b).

Figure 2

US export restrictions on medical supplies put countries in Latin America at risk



Percent of total imports sourced from US, by product subject to US export restriction

	Respirators and surgical masks	Air-purifying respirators	Hospital gloves
Jamaica	73	93	56
Palau	64	55	44
Belize	61	68	33
Dominican Republic	54	75	28
St. Lucia	67	NA	58
Guatemala	23	77	18
El Salvador	28	78	10
Costa Rica	40	55	18



NA = not available

Note: Average share of a country's total imports of each product sourced from the US over 2016-2018.

Source: Constructed by the author with country-specific import data at 6-digit Harmonized System level from UN Comtrade accessed via World Integrated Trade Solution (WITS). See Bown (2020d).

The Trump administration's export restrictions shared other important similarities with the EU policy. The initial policy in each was applied in haste, with little regard for supply chains that could have led the policies to be self-defeating. Nor did either consider their larger exposure to retaliatory export restrictions imposed by other countries. Each also increased uncertainty about PPE availability for historical importers, including a number of poor countries.

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China's exports of personal protective equipment

The origin of the coronavirus outbreak was Wuhan province, and PPE demand in China spiked beginning in January. While estimates of the size of the demand increase remain unclear, these events almost certainly took some global supply immediately off the market. There were also media reports – subsequently denied by the Chinese government – that China itself imposed export limits on PPE.¹⁰ This all took place before Europe, the US, and countries elsewhere began to ban exports in response to local spikes in demand, shortages of supply, and inadequate stockpiles. But the anticipated falloff in Chinese supply to the world was surely a contributing concern – once the data were released in late March, it became apparent that China's exports of PPE were 15% lower in January and February of 2020 than during the same period in 2019. Though it remained a net exporter, China's imports of PPE had also increased.¹¹

Before the crisis had taken hold, China supplied over 40% of world imports for five categories of personal protective equipment (Bown 2020e).¹² For many countries, and for many products, China was the source of much more than 40% of PPE imports over 2016-2018.

... China supplied over 40% of world imports for five categories of personal protective equipment ... For many countries, and for many products, China was the source of much more than 40% ... There were media reports – subsequently denied by the Chinese government – that China itself imposed export limits on PPE.

A number of developing countries have been reliant on China as an import source for their PPE (Figure 3). The geographical proximity of Kyrgyzstan, Cambodia, Myanmar, Malaysia, Pakistan, Iran and Uzbekistan echoes patterns for the EU (Eastern Europe, Africa) and US (Latin America), suggestive of the role played by regional networks. Yet, China is also clearly different – it is a much larger exporter than the EU and especially the US. And the import reliance of countries relatively far from China, including in western Africa (Togo and Mauritania) as well as South America (Peru, Argentina) illustrates the dominant role played by China as a global supplier.

10 Wang Hui (2020), "China denies banning export of face masks," CGTN, 6 March.

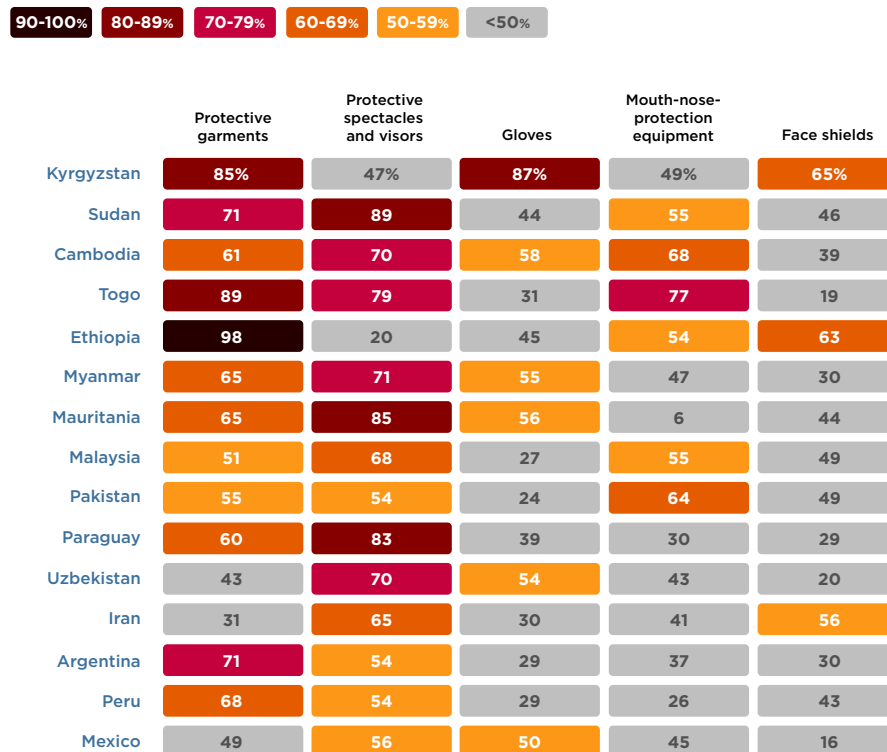
11 This section draws heavily from Bown (2020c).

12 To define which pieces of personal protective equipment to examine, this analysis relies on the five products identified in the EU's export restrictions (European Commission, 2020a).

Figure 3

Many developing countries rely on imports from China for their medical supplies

Percent of total imports sourced from China by product



Note: Average share of a country's total imports of each product sourced from China over 2016-2018.

Source: Constructed by the author with country-specific import data at 6-digit Harmonized System level from UN Comtrade accessed via World Integrated Trade Solution (WITS). For product definitions, see Bown (2020b).

March and April featured China's economy re-emerging from the crisis, its health system having potentially tamed the initial wave of the pandemic. Some of China's PPE manufacturers resumed and scaled up exporting to destinations around the world. However, some of the reports of events taking place in markets were also extraordinary. Whereas relatively low-cost surgical masks and N95 respirators once would have been transported by container ship in a voyage taking weeks, heightened demand meant they were now being flown by air freight, by commercial airlines, or by private jet, to move them from factory floor to hospitals within days or even hours. At the same time,

demand was reportedly uncoordinated, with Federal governments competing with local governments to bid up prices for equipment that could potentially be used to supply the same hospitals and assist the same health care workers treating the same patients.¹³ Finally, some governments also reported acts of piracy; a German official indicated that 200,000 masks bound for Germany from China had been “confiscated” while in route.¹⁴

... the spike in demand for Chinese-produced PPE is almost certain to have driven up prices. For poor countries without market power, one effect was likely an additional strain on public health budgets, even for those countries lucky enough to tap into foreign supplies.

The lack of coordinated procurement and the spike in demand for Chinese-produced PPE is almost certain to have driven up prices. For poor countries without market power, one effect was likely an additional strain on public health budgets, even for those countries lucky enough to tap into foreign supplies.

Regulatory changes, product quality, and reputational effects

In response to COVID-19, governments have also been adjusting their regulatory environments, including for PPE. Some countries have relaxed regulations in an attempt to facilitate domestic production as well as imports. The US Food and Drug Administration, for example, issued new Emergency Use Authorisation (EUA) to permit eligibility of certain products, including KN95 respirators made in China, that had not previously been approved for use in the US.¹⁵ Italy also created a process by which suppliers could self-certify their surgical masks as being compliant with safety recommendations.¹⁶

13 Ana Swanson (2020), “White House Airlifts Medical Supplies From China in Coronavirus Fight”, *New York Times* 29 March; Andrew Beaton (2020), “A Million N95 Masks Are Coming From China—on Board the New England Patriots’ Plane”, *Wall Street Journal*, 2 April; Bojan Pancevski (2020), “As Countries Vie for Coronavirus Supplies, Germany Cuts Deal With China”, *Wall Street Journal*, 8 April.

14 See Richard Lough and Andreas Rinke (2020) “US coronavirus supply spree sparks outrage among allies”, *Reuters* 3 April. 3M issued a statement denying the confiscated shipment involved its sales of masks (3M, 2020c).

15 “On April 3, FDA issued a new Emergency Use Authorisation (EUA) for non-NIOSH-approved respirators made in China, which makes KN95 respirators eligible for authorisation if certain criteria are met, including evidence demonstrating that the respirator is authentic” (Fulton, Kadish and Sumner, 2020).

16 See Roberto Cursano and Riccardo Ovidi (2020), “Italy: Medical Masks Without CE Marking”, *Baker McKenzie*, 27 March 2020. See also Alan Beattie (2020), “Crisis response is stuck in regulatory quagmire” *Financial Times*, 2 April.

The US FDA issued Authorisation to permit eligibility of KN95 respirators made in China, that had not previously been approved for use in the US. Italy also created a process by which suppliers could self-certify their surgical masks ... the regulatory relaxation and heightened demand for PPE resulted in an increased incidence of concerns over product quality. ... on 10 April, the Chinese government moved in the other direction, increasing the stringency of its regulations for certain PPE intended for export. China suddenly imposed export quality checks for PPE as well as other products, including masks, protective garments, goggles and gloves.

Not surprisingly, the regulatory relaxation and heightened demand for PPE resulted in an increased incidence of concerns over product quality. In March, reports arose in the Netherlands of faulty Chinese-supplied masks; similar reports over defective PPE had occurred within China itself.¹⁷ That many of the initial reports involved Chinese supplies was not surprising for a number of reasons. Two important ones were that China was such a large share of global supply, and that it had ramped up its additional production earlier in 2020 than other countries in response to the pandemic.

Nevertheless, on 10 April, the Chinese government moved in the other direction, increasing the stringency of its regulations for certain PPE intended for export. China suddenly imposed export quality checks for PPE as well as other products, including masks, protective garments, goggles and gloves.¹⁸

One way to interpret the Chinese government action was out of concern for the reputational effects (negative externalities) that might tarnish its industry, if new Chinese entrants were generating products of inferior quality that threatened incumbent suppliers – including the subsidiaries of foreign multinationals. Recall the melamine scandal in China in 2008, in which the chemical was found in infant formula. Not only did the lack of adequate regulatory oversight cause health concerns, but it also inflicted damage on the Chinese dairy sector's international reputation.¹⁹ The recent Chinese regulatory action could be an attempt to avoid a similar fate for its PPE industry.

17 See Alexandra Stevenson and Tiffany May (2020), "China Pushes to Churn Out Coronavirus Gear, but Struggles to Police it", *New York Times*, 27 March; Adam Payne, Sinéad Baker and Ruqayyah Moynihan "The Netherlands has recalled 600,000 coronavirus face masks it imported from China after discovering they were faulty", *Business Insider* 29 March.

18 Liza Lin (2020), "China Tightens Customs Checks for Medical Equipment Exports", *Wall Street Journal*, 10 April and Keith Bradsher (2020) "China Delays Mask and Ventilator Exports After Quality Complaints", *New York Times*, 11 April.

19 See Bai et al (2019).

Nevertheless, a Chinese regulatory decision that led to a slowdown of PPE exports could have other reputational effects. It ran the risk of signalling that the Chinese government was proving indifferent to the millions of foreigners suffering from the ravages of the COVID-19 pandemic whose medical workers were desperate for PPE imports from China.²⁰

Poor countries, with many fewer personnel and financial resources available to tackle the same issues, may face heightened risk of only getting access to lemons.

For poor countries, these incidents raise additional concerns for their imports of PPE. Even consumers in countries with the most advanced regulatory oversight have ended up with faulty products. Poor countries, with many fewer personnel and financial resources available to tackle the same issues, may face heightened risk of only getting access to lemons.

Economics and policies

Export restrictions are a costly form of trade policy. They are problematic if markets are competitive and market failures are absent. In that case, an export restriction discourages local production and incentivises too much local consumption. But it also has distributional implications, creating winners and losers. Relative to open trade, local consumers benefit (through lower prices and greater access to products), and the local supplier loses. In global terms, the policy can be beggar-thy-neighbour, as it can impose costs on trading partners.²¹ Taking supplies off the global market can lead to higher world prices and reduced quantities, harming hospital workers in need in other countries.

An export restriction has distributional implications ... Relative to open trade, local consumers benefit, and the local supplier loses. In global terms, the policy can impose costs on trading partners. Taking supplies off the global market can lead to higher world prices ... harming hospital workers in need in other countries.

20 See Kate O’Keeffe, Liza Lin and Eva Xiao (2020), “China’s Export Restrictions Strand Medical Goods US Needs to Fight Coronavirus, State Department Says”, Wall Street Journal, 16 April.

21 See, for example, Bagwell and Staiger (2002).

The chaos of early 2020 certainly signalled that there were likely failures in PPE markets. Nevertheless, export restrictions were not the first best policy to address those problems. And without a diagnosis of the true underlying market failure, export restrictions could make matters worse, even if only considering the interests of the policy-imposing country and assuming away any other countries' policy response. For a country like the US, such an assumption was ludicrous. Trading partners could retaliate by restricting exports of inputs that American companies needed to make the PPE. They could also threaten to withhold any number of other products, on which the US was also import-reliant in its fight against the pandemic.

... one country's PPE export restriction may beget more ... The worry involves the knock-on effects of EU and US actions. Here, there are parallels with the problematic export restrictions on agricultural products imposed in the late 2000s, in response to commodity price spikes, that exacerbated food shortages ... This led to a "multiplier effect," worsening the impact of export restrictions, especially for net importers of food ... The risk is that a similar, escalating pattern of export limits on vital medical supplies arises today

A final important additional concern is that one country's PPE export restriction may beget more. The EU and US are not the world's largest sources of trade in PPE; indeed, the US especially is a major net importer (Bown 2020d). The worry involves the knock-on effects of EU and US actions. Here, there are parallels with the problematic export restrictions on agricultural products imposed in the late 2000s, in response to commodity price spikes, that exacerbated food shortages (see Giordani, Rocha and Ruta 2016; Martin and Anderson 2011). During that period, one country's export restriction led to additional global shortages, further increasing world prices, putting pressure on other countries to impose even more export restrictions. This led to a "multiplier effect," worsening the impact of export restrictions, especially for net importers of food.

The risk is that a similar, escalating pattern of export limits on vital medical supplies arises today. Dozens of countries have imposed such restraints. And the restrictions go well beyond PPE, to include other hospital equipment, pharmaceuticals, and food.²² Like the pandemic itself, no end is in sight.

22 See Keynes (2020), for a discussion. For monitoring of these export restricting policies, see Evenett (2020), Espitia, Rocha and Ruta (2020), UN International Trade Centre (2020), and WTO (2020).

Some of the most vulnerable to these export restrictions are the countries reliant on imports, without any manufacturing capacity to scale up PPE production of their own. That is likely to include many poor countries, put in the difficult position to cope with the COVID-19 crisis for countless additional reasons. But cutting them off from foreign supplies only adds to their concerns.

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3 Flawed prescription: Export curbs on medical goods won't tackle shortages

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As COVID-19 spreads, countries have been scrambling to meet the surge in demand for medical consumables, medical equipment, and medicines. Many governments have turned to the short-term expedient of curbing exports of medical supplies. However, export curbs are not a solution – they neither incentivise increased production nor facilitate delivery and in fact do considerable damage at home and abroad. A global mechanism is called for; one that pools risk, provides incentives to ramp up production, assures producers a sufficient revenue pool to compete for and compensates them appropriately, and ensures trade-barrier-free distribution and the effective use of key medical supplies in recipient nations.

Having failed to prepare properly – and in some cases, having failed to follow their own plans for dealing with pandemics – governments have been scrambling for medical supplies as COVID-19 spreads among their populations. The attendant surge in demand for medical consumables (including personal protective equipment such as face masks and gloves), medical equipment (such as medical ventilators), and medicines has resulted in governments turning to short-term expedients. In the area of trade policy, this has resulted in curbing the exports of medical supplies. The purpose of this chapter is to critically evaluate this unilateral trade-policy response.²

¹ Completion of this chapter occurred while the author was DLA Distinguished Visiting Professor at the Carey Business School, Johns Hopkins University.

² The chapters by Chad Bown, Bernard Hoekman, and co-authors, and Anna Stellingier and co-authors in this eBook also highlight certain adverse effects of export curbs on medical supplies. Duplication across these chapters has been kept to a minimum and readers are encouraged to read all four chapters for a comprehensive overview of the damage done by these short-sighted public-policy interventions.

For sure, there is plenty at stake. It is not just the health of patients that suffer from COVID-19. Front-line medical personnel are at risk – and if they get sick they cannot treat others. Already, the UK government has confirmed that 27 doctors, nurses, porters, and volunteers have died from COVID-19 (Marsh 2020).

A second, less-discussed dimension is that economic nationalists and other sceptics of globalisation have exploited current shortages of medical supplies to argue that sourcing from abroad cannot be relied upon in extremis.³ In this view, greater self-reliance is needed in the future and medical supply chains should be shortened or even repatriated entirely. Like it or not, the debate over how best to source medical kit has become the latest battleground between competing visions of the world economy.

For another group, the export curbs on medical supplies are not part of some bigger scheme to redesign the world trading system in the wake of the crisis. Instead, such curbs are seen as 'realpolitik'. The implicit criticism then is that critics of export curbs are being naïve. A secondary argument is that since these curbs are 'inevitably' temporary, then there is little to worry about. Normal service will soon be restored.

These two lines of argument beg the question of whether governments, taking steps individually and together, can design alternative means to scale up production of medical supplies and medicines when demand surges as a result of a pandemic without disrupting trade flows with export bans and the like. If so, the realpolitik amounts to justifying the reflexive response of a poorly prepared government as opposed to the execution of a carefully chosen plan.⁴

In this chapter, I describe the extensive resort to export curbs on medical consumables, medical equipment, and medicines since the onset of the COVID-19 pandemic. The various forms of such curbs are discussed as well. I then describe some of the adverse consequences of such export curbs and argue that they have not solved the medical-kit

3 Perhaps the clearest statement of this view came from Mr. Peter Navarro, a senior White House adviser, at the 2 April 2020 [briefing](#) of the (US) Coronavirus Task Force:

One of the – one of the things that this crisis has taught us, sir, is that we are dangerously over-dependent on a global supply chain for our medicines, like penicillin; our medical supplies, like masks; and our medical equipment, like ventilators.

We have – right now as we speak, over 50 countries have already imposed some forms of export restrictions in their country against the rest of the world. And what we've – what we're learning from that is that no matter how many treaties you have, no matter how many alliances, no matter how many phone calls, when push comes to shove you run the risk, as a nation, of not having what you need.

And if there's any vindication of the President's 'Buy American, secure borders, and a strong manufacturing base' philosophy, strategy, and belief, it is this crisis – because it underscores everything that we see there.

4 In this regard, it is worth recalling that some governments undertake extensive pandemic planning. Whether they stick to that plan, including making the investments necessary before any pandemic strikes, is another matter. It is worth noting that the past 10 years have seen fiscal austerity in many countries and governments may have resorted to the expedient of forgoing such investments.

shortages. Moving from critique to constructive suggestion, the remainder of the chapter goes back to the drawing board. I identify the key features of the central problem, assess their implications, and propose alternative arrangements.

Resort to export bans since the start of the COVID-19 pandemic

As is so often the case in trade policy, governments have many ways to accomplish the same (typically intermediate) objective. In this case, once governments began to scramble for medical supplies, one step they took was to prevent or at least frustrate local producers or distributors of medical supplies and medicines from delivering to foreign buyers – even if those purchases had been paid for.

Although there may be multiple ways to curb exports, those monitoring policy choice must be careful not to limit themselves to following too narrow a set of policy interventions.⁵

The Global Trade Alert team has tracked curbs on the export of medical consumables (including personal protective equipment), medical equipment, and medicines since the start of this year. In addition to formal government statements of policy, media reports were used to spot when governments changed export policy towards these goods.⁶ Applying the abductive reasoning of the Duck Test (“If it looks like a duck, swims like a duck, and quacks like a duck, then it probably is a duck”), then any new government measure that in effect limits exports of these goods was considered within the scope of this monitoring initiative.

As of 25 April 2020, a total of 122 new export curbs on medical goods have been identified. These curbs include outright bans, which are often framed as a temporary (time-limited) measure. In addition, there are attempts to jaw-bone local medical kit-producers to supply domestic buyers exclusively, or at least first. In other cases, explicit percentage limits on the export of domestically produced medical kit have been prescribed. In at least three countries (China, France, and Taiwan), the authorities have requisitioned all domestic supply, preventing any locally produced medical kit from being exported unless the government chooses to export them (no evidence could be found for the last situation).

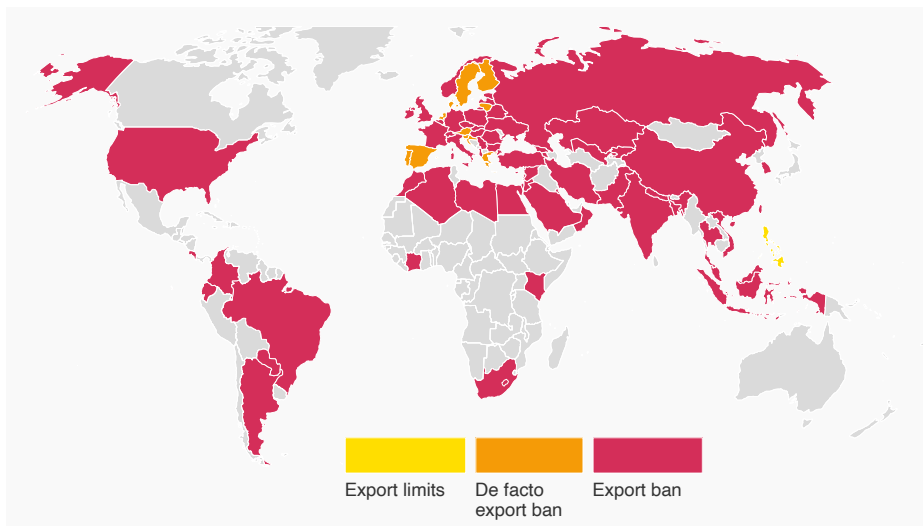
5 The World Customs Organization will only report on formal export curbs that it can confirm with national authorities.

6 The use of media reports is necessary because some governments do not hurry to publish formal decrees or regulations which specify the details of any export curb. Governments vary considerably in their publication practices. Moreover, often government ministers and senior officials prefer to announce export curbs to the media before the underlying regulation is finalised.

Another less transparent form of export curb arises from export authorisation schemes. These legal contrivances enable governments to claim they are not banning exports while denying permission to local producers to fulfil contracts with foreign customers. Until governments make available evidence that exports were permitted (in some cases, senior officials have ignored media requests for precisely this information), in practical terms, there is little reason to differentiate an export authorisation scheme from an export ban.

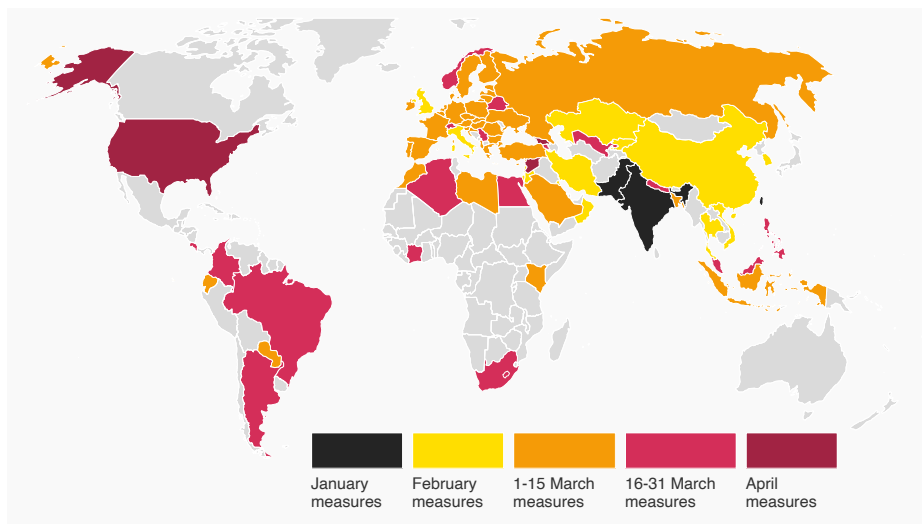
Figure 1 reveals that to date over 75 governments have imposed some form of an export curb on medical supplies. It should be noted that the product coverage of these curbs differs as does their duration. Still, this map makes clear the global reach of these particular policy developments.

Figure 1 Sickened they neighbour: At some point this year, 76 nations have limited exports of medical supplies



Source: Official documents and media reports assembled by the Global Trade Alert team, University of St Gallen, 20 April 2020.

Figure 2 shows the proliferation of export curbs over time. Given the origin of COVID-19, unsurprisingly the curbs tended to ‘move west’ over time. That is, export restrictions started in the Greater China region and then moved westward as COVID-19 infections spread in that direction. February 2020 saw 18 new export curbs put in place; policy change accelerated in March 2020 with 73 new export curbs being introduced. This month so far (as of 25 April), 26 additional export limits on medical supplies and medicines have been introduced.

Figure 2 New export curbs on medical supplies accelerated in March 2020

Source: Official sources and media reports assembled by the Global Trade Alert team, University of St Gallen, 20 April 2020. Date of first relevant policy intervention used to prepare this map: 24 January 2020

Given that COVID-19 infection rates are still rising in Africa, Latin America, and South Asia, additional export curbs cannot be ruled out. Moreover, should a significant second wave of infection occur, then existing temporary export bans may be extended and new limits introduced. These developments appear likely despite calls for restraint and for the disciplined use of such export curbs, not least by the [G20 Trade Ministers](#) meeting virtually on 30 March 2020.

Consequences of export curbs on medical supplies

The existing literature on export restrictions does not provide much confidence that these policy interventions will work. Economic assessments of these restrictions have concluded that they are harmful to trading partners (by raising the level and volatility of prices on world markets) and domestic producers, ineffective at lowering domestic prices, and counterproductive. Much of the research on export restrictions relates to food and commodity exports and it is summarised in the Martin and Glauber chapter in this eBook, so I will not repeat those findings here. The present focus will be on the medical aspect of the current bans.

The first observation is that, by preventing contracted deliveries of medical supplies and medicines, export curbs disrupt the COVID-19 health planning in trading partners. On the ground, this amounts to denying personal protective equipment to front-line medical personnel and to populations, increasing their risk of infection and inducing further contagion, both national and international. As Chad Bown argues in this contribution to this eBook, countries that are sole or even net importers of medical kit and medicines are particularly vulnerable and many of them have low per-capita incomes. There is a clear development dimension to this matter.⁷

The second observation is that export curbs will restrict supply to world markets, with inevitable consequences for prices. Using their database on COVID-19 trade, Espitia et al. (2020) estimate that a wave of export curbs will increase the cost of medical supplies, on average, by 23%. Prices of protective goggles and masks are estimated to rise by 40.4%, flow splitters for oxygen supplies by 33.7%, enzymes by 19.6%, and medical ventilators by 12.6%. Such price increases significantly reduce the real value of national health budgets, again compromising the effectiveness of public health interventions.

Third, an export ban may prevent current local production from being shipped abroad but, on their own, do not encourage the much-needed expansions of production.⁸ In short, narrowing the excess demand for medical equipment and medicines requires other state action and, given the international supply chains at work, as Bernard Hockman and his colleagues note in this eBook, international collaboration as well. Exports curbs are no panacea.

Export curbs also have three adverse consequences for political support for liberal trade regimes. First, export curbs on medical supplies are a gift to those economic nationalists abroad that want to unwind or shorten international supply chains in this sector. They can claim that foreign suppliers are unreliable and cannot be trusted.

Second, widespread resort to export curbs may make other governments wary of reducing import barriers on medical supplies and medicines – after all, what is the value of unilateral import liberalisation if there is little or no medical supplies to buy (at least at customary prices)? Thus, the adverse international knock-on effects of export curbs on medical supplies and medicines are not confined to important health outcomes.

7 Indeed, questions of coherence arise for a government that imposes both an export curb on medical supplies and medicines and offers aid to developing countries to tackle COVID-19.

8 In fact, preventing a firm from selling abroad may also reduce the incentive to sell at home (in particular if there are economies of scale in production).

Exporters of these goods are compromising their medium-term commercial interests through their opportunistic resort to export bans. Do the governments of such export nations really expect that their foreign counterparts will forget the events of this year the next time a proposal is made to liberalise trade in medical products and medicines at the World Trade Organization or in regional trade agreements? Indeed, a legitimate concern is that the unilateral resort to export curbs witnessed this year has made future trade reform in this sector much harder.

Third, resort to export curbs on medical supplies inevitably calls into question the wisdom of previous, well-intentioned donations of such kit to nations that bore the brunt of the COVID-19 pandemic earlier. Indeed, it is precisely because pandemics such as these affect nations at different times that international trade and donations of medical kit act as a way that an integrated global economy can provide insurance for governments against shortages. Instead, a consequence of earlier donations being ridiculed is that humanitarian aid policy becomes less generous and that goodwill between nations is correspondingly reduced. Another gift to nationalist politicians.

In sum, most policies involve pros and cons. As far as export curbs on medical supplies and medicines are concerned, the former are greatly overshadowed by the latter. As a result, there is not much real in the realpolitik that some defenders of export curbs claim. An alternative approach is needed to narrow the gap between supply and demand brought about by the COVID-19 pandemic. Governments need to go back to the drawing board before any second wave of infection hits.

Back to the drawing board: Key elements of the shortage problem facing policymakers

As the COVID-19 pandemic has spread, demand for medical supplies, medical equipment, and medicines has soared in the countries where there are high numbers of infected persons. However, the installed production base is unable to meet current levels of demand. The overriding problem then is that the implied excess demand or production shortfall needs to be narrowed and as quickly as possible.

A second feature of the problem is that subsequent waves of infection by COVID-19 or some variant of it cannot be ruled out. This suggests that the demand for additional medical equipment etc. may surge again in the coming months or in a year or so.

A third feature is that COVID-19 strikes at different countries at different times. To date, Africa, Latin America, and South Asia still have to endure the worst of the first wave of COVID-19. Moreover, some countries where infection rates have fallen markedly (for example, China, Singapore, South Korea) are now worried about a second round of infection.

A fourth feature is that, largely as a result of market forces rewarding specialisation, many nations import medical supplies, equipment, and medicines. Even those nations where these vital medical supplies are made are often importers of specialist or patented goods.

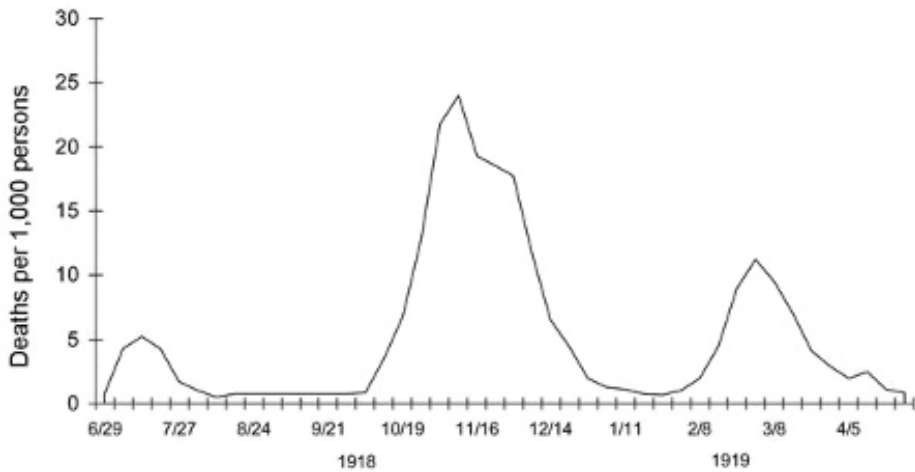
These four features of the current pandemic imply that there are sharp and unpredictable gaps between supply and demand for medical supplies that can differ across product type, across nations, and over time.

Consequences of these features

If the estimated levels of demand for key pieces of medical equipment are accurate, and if the rates at which firms have said they can ramp up production are taken at face value, then for medical ventilators and other sophisticated equipment it is, barring a miracle, simply too late in the US and parts of Western Europe to ensure that the medical capacity in hospitals can cope with the predicted levels of very sick citizens. The ethical dilemmas raised by this observation are not the subject of this chapter, but they are certainly worthy of deliberation and debate. The focus here is on the implications for tackling the production shortfall and the case for a collaborative international response.

This bleak prediction, however, should not be used to dismiss out-of-hand – on the grounds that it is too late – a cooperative international response. The second feature mentioned above implies that further waves of COVID-19 are possible before a successful vaccine can be found, tested, and distributed. There were three waves of the Spanish flu in 1918 and, as far as the UK was concerned, the second wave had a larger human toll than the first (Figure 3). Taking steps to reduce future production shortfalls is prudent, even for those nations for which a cooperative international response is ‘too late’ for the first wave.

Figure 3 Monthly loss of life from Spanish flu in the UK



Notes: Three pandemic waves: weekly combined influenza and pneumonia mortality, UK, 1918 to 1919. Reference: PD-USGOV-HHS-CDC. See also “The flu that wasn’t Spanish”, History of Government, GOV.UK, 13 September 2018.

Given that the inherited international patterns of specialisation in medical supplies, equipment, and medicines cannot be significantly changed by even the most aggressive national industrial policy, should any second wave hit in the next six to 12 months, then governments cannot realistically expect to ‘go it alone’ without their citizens’ lives being put at risk. Should a government believe it can outbid others when purchasing from abroad, the most likely response is for foreign nations to ban exports of the sought-after medical supplies.

The third feature of the problem implies that, even if it is ‘too late’ to prevent deaths caused by medical shortages in Western Europe and North America, it may not be too late to alleviate suffering and to save lives in those parts of the world where the spread of COVID-19 is still accelerating. Moreover, failure to successfully clamp down on the pandemic in Africa, Latin America, and South Asia raises risks of later reinfection in other parts of the world (potentially inducing the second wave). The nature of this pandemic is that must be surmounted worldwide.

Since Africa, Latin America, and South Asia tend to import much of their medical supplies, then tackling COVID-19 there requires increasing production in other countries (the fourth feature mentioned above). But manufacturers may not respond by expanding output if they believe that financially-strapped developing countries cannot pay for vital medical supplies, thus suggesting the need to provide financial aid as part of a cooperative international response.

The conclusion is that even the most dogmatic adherent to 'my nation first' economic policymaking should, when confronted with these four features of the current COVID-19 pandemic, recognise that unilateral approaches will fall short. Drawing this conclusion shifts the discussion to collaborative international solutions, where important challenges need to be overcome as well.

The O-ring nature of this problem

Formulating the problem in terms of narrowing the gap between elevated demand and available supply obscures the many pieces that have to fall into place in order to accomplish this goal. Economists refer to situations where a desired outcome depends on the competent execution of several steps as 'O-rings', highlighting the fact that a flawed simple part (an 'O-ring') can compromise the performance of the entire system. Ramping up production of key medical supplies requires several elements to fall into place and by necessity needs some degree of international coordination by experts.

To appreciate the O-ring nature of this problem, consider the case of medical ventilators.⁹ They are technologically sophisticated pieces of equipment that require qualified medical personnel for effective use. Such ventilators cannot be delivered and expected to be used by generalist medical personnel to maximum effect. Thus, the existing expertise of the receiving nation's front-line medical personnel must be considered.

Elaborate supply chains crossing borders have developed to produce parts and components for such ventilators and so production of the latter cannot be ramped up without the former. Raw-material needs cannot be overlooked either. Any expansion of medical-ventilator production would need to be matched along its supply chain. It is not solely a matter of repurposing an existing production line.

In an era when corporate executives economise on the capital tied up in their business, firms will be reluctant to retain redundant production capacity without compensation. Nor will they expand production if there is too much uncertainty concerning ultimate payment and the purchasing power of buyers. Firms will ignore incentives to scale up production to meet foreign demand if their government bans exports of their products. Moreover, producers will take into account any import tariffs, customs delays, and other non-tariff barriers when assessing the profitability of supplying buyers located abroad.

⁹ For recent accounts of the practical difficulties in scaling up production of medical ventilators, see "The ventilator challenge will test ingenuity to the limit" (*Financial Times*, [1 April 2020](#)) and "Ventilators are key to preventing coronavirus deaths – but does the world have enough of them?" (*Fortune*, 17 March 2020).

As necessity is the mother of invention, pandemics will induce new ideas about how to deliver the same or better medical outcomes with modified or even radically different types of equipment. As governments regulate such medical equipment before allowing it to be used on patients, incentives to innovate will be blunted without transparent and expeditious testing and approval processes.

In sum, there is much more to ramping up production than flicking on a switch for an assembly run – or to offering a production subsidy, as textbooks would suggest.

A global mechanism to tackle shortages of medical goods

The COVID-19 pandemic has created sizeable and unpredictable mismatches between supply and demand across different types of medical equipment, across different nations, and over time. Rising to this complex task calls for a global mechanism that pools risk, provides incentives to ramp up production, assures producers a sufficient revenue pool to compete for and compensates them appropriately, and ensures trade-barrier-free distribution and the effective use of key medical supplies in recipient nations.

Specifically, the mechanism would need to have the following ten aspects:

1. Be open to all nations willing to sign up and make contributions according to their level of development.
2. Identify medical supplies potentially susceptible to excess demand during further waves of COVID-19.
3. For each type of medical supply, where necessary, define the regulatory standards that would be accepted by all participating governments.
4. Create a procedure for expedited approval for proposed variants of existing equipment and other innovations.
5. Finance expansion of production capacity of manufacturers of key medical supplies and the companies they source from.
6. Incentivise production when needed, including providing incentives to license production of key medical equipment.
7. Facilitate expeditious and trade-barrier-free distribution of key medical supplies to where needed.
8. Enhance impact of key medical supplies in the destination country by drawing upon a global reserve of qualified medical personnel.
9. Pool buying power across governments and prevent bidding wars among buyers.

10. Compensate producers appropriately but not excessively from a fund large enough to assure manufacturers that non-payment risk is low.

The mechanism could be used to augment existing stockpiles of medical equipment held by the World Health Organization.

Such a mechanism would have to be financed. Concerns about financing should be weighed against the number of lives lost due to medical supply shortages during the first wave of COVID-19. In a world with a global mechanism that successfully delivers medical equipment where it is needed and that tests populations sooner, suppression strategies can be relaxed earlier and may need to be less severe in the first place. The loss in living standards and the need for greater stimulus packages resulting from little or no collective action should be compared to the cost of creating and executing this mechanism.

While the discussion above relates to medical supplies and equipment, at some point a vaccine will be developed for the COVID-19 virus. Consideration should also be given to the manner in which the testing, production, distribution, and financing of any vaccines so developed would be executed under this mechanism.

In sum, there is a multi-faceted technocratic solution to the challenge of securing enough medical supplies, medical equipment, and medicines. Adopting it would require a volte-face on the part of certain more nationalistic governments. As the death counts rise from the first wave of COVID-19 infections and the second wave beckons, it is just possible that some governments will have a 'come-to-Jesus' moment and realise that a properly overseen expert-driven approach offers the prospect of saving more lives than the current dog-eat-dog approach.

Concluding remarks

The COVID-19 pandemic created a surge in demand for medical consumables including personal protective equipment, medical equipment, and medicines. Rapidly narrowing the gap between demand and supply is the overarching public policy objective here. Export curbs are not a solution – they neither incentivise increased production nor facilitate delivery. Export curbs offer at best a momentary sugar high and a misplaced feeling of control while doing considerable damage at home and abroad. There is nothing smart about the realpolitik of imposing export curbs on medical supplies and medicines during the COVID-19 pandemic.

Fortunately, alternative approaches exist. Unfashionable as it is in some quarters, the very nature of this particular excess-demand problem requires an international solution. Turning inward won't work. And with the threat of a second wave of COVID-19 infection, the imperative to get this right remains. Those governments that did not cover themselves in glory during the first wave of infection still have a chance to redeem themselves and, more importantly, to save lives.

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4 COVID-19: Expanding access to essential supplies in a value chain world¹

Matteo Fiorini, Bernard Hoekman and Aydin Yildirim

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Some governments have responded to shortages of medical supplies by imposing export controls and requisitioning domestic suppliers. This chapter examines several recent examples where restrictions and confiscations actually made it harder, not easier, to get vital equipment to healthcare professionals. The authors argue that such policies have and will continue to backfire because they impede the operation of international supply chains that are today a critical element of all nations' manufacturing capacity. One policy lesson is that governments should work with industry to put in place systems to identify and address supply-chain bottlenecks that affect production and trade in essential equipment.

Governments around the world are greatly increasing their procurement of personal protective equipment (PPE), including protective masks, for health workers as well as infected people and those at risk. China, the world's largest producer, confronted shortages early 2020 after the COVID-19 crisis erupted. The government requisitioned all production capacity and greatly expanded imports of PPE.² Following the international spread of the virus, other countries followed suit in placing export bans and redirecting supplies to the government in order to provide healthcare workers with urgently needed PPE.

1 We are grateful to Marco Bronckers, Simon Evenett, Petros Mavroidis, Michele Ruta, and Jan Wouters for helpful discussions and suggestions. This paper relies heavily on press reports. To save space we provide links to press sources instead of citing authors and titles of articles. The project leading to this paper received funding from the EU's Horizon 2020 research and innovation program under grant agreement No 770680 (RESPECT).

2 For example, in a 6 February notice, Makrite, a leading supplier of protective masks, announced that its facilities in Hubei and Dongguan were "...fully commissioned by the Chinese Government. We are banned from exporting and doing business domestically. Due to large demands from the coronavirus outbreak in China, we can now supply solely to the government." See <http://www.makrite.com/notice/>. Chinese demand was estimated at 240 million masks per day in January 2020, more than ten times its manufacturing capacity at the time (OECD 2020).

Often this involves direct intervention and requisition of medical products most needed to fight COVID-19. Particularly striking is that several European countries, including the Czech Republic, Germany, France, Italy, and Romania, have applied measures against each other as well as against non-EU countries. For example, on the quays of the port of Gioia Tauro in Southern Italy, Italian custom authorities seized 364,200 pairs of surgical gloves coming from Malaysia and 9,720 devices for tracheal intubation from China during what would otherwise have been a standard transshipment operation, with part of the consignment intended for customers in France.³

Export restrictions and requisitions of domestic supplies of essential goods, while understandable, have unintended consequences. Because production is organised around supply chains, they may reduce access to critical supplies, increase average prices, augment market volatility, and distort investment decisions, with adverse effects both in the short and in the long run.

A typical example occurred on the quays of the port of Gioia Tauro in Southern Italy, with Italian custom authorities seizing 364,200 pairs of surgical gloves coming from Malaysia and 9,720 devices for tracheal intubation from China during what would otherwise have been standard transshipment operation, with part of the consignment intended for customers in France.

This chapter focuses on a product that is central to combatting COVID-19 – protective masks – and draws some lessons from the use of export restrictions by governments.

The protective medical mask market

Before diving into the discussion of business cases, we note a few basics about the structure of the market for protective medical masks. Comprehensive information that would permit assessment of the industry structure and up-to-date, detailed data on the relevant value chains for these critical devices do not exist – a matter we will come back to later.⁴

3 <http://www.gdf.gov.it/stampa/ultime-notizie/anno-2020/marzo/requisite-19-tonnellate-di-materiale-medico>; <https://www.lastampa.it/topnews/2020/03/28/news/gioia-tauro-il-sequestro-di-dispositivi-medici-rischia-di-creare-1-incidente-diplomatico-con-la-francia-1.38648894>. The legal basis for the seizure was decree number 18 of March 17 2020 which authorizes the head of the Civil Defense to order the requisition of basically any good (with the exception of real estate) needed to address the pandemic emergency. The decree includes provisions for the compensation of the owners of seized supplies or services. https://www.gazzettaufficiale.it/atto/vediMenuHTML?atto.dataPubblicazioneGazzetta=2020-03-17&atto.codiceRedazionale=20G00034&tipoSerie=serie_generale&tipoVigenza=originario

4 Analysts have been limited to trade flow data, which (1) is often too aggregated and does not provide the fine level of detail required to identify specific products, but (2) does provide information on underlying supply chains. Chad Bown at the Petersen Institute has used such data to good effect – see Bown (2020a,b,c). The World Bank has put together an online database on COVID-19 relevant trade flows. See <https://www.worldbank.org/en/data/interactive/2020/04/02/database-on-coronavirus-covid-19-trade-flows-and-policies>

There are three types of protective medical masks: disposable procedural masks (familiar to most from dental treatment); disposable surgical masks; and respirators (both disposable and reusable). The main difference between procedural and surgical masks is that the latter are sterile, a necessary condition for use in operating rooms. Both types primarily prevent wearers from contaminating others (e.g. patients) but, depending on design specifications, are less effective, if at all, in protecting the wearer from inhaling airborne infectious agents (aerosols).

Respirator masks protect the wearer against fluids and inhalation of airborne particles. Depending on the technical standards they satisfy, respirators can filter at least 80% of particles (the EU FFP1 standard); up to 94 to 95% (FFP2 and N95); or 99% of particles (FFP3). The latter two types can filter out bacteria and viruses and are needed by people at risk from interacting with infected persons or environments.

China is the largest supplier of surgical masks in the world, accounting for about half of global production in 2019. Before the COVID-19 crisis, China produced around 20 million masks per day; by early March 2020, industry observers suggest this had been ramped up more than six-fold, to 120 million per day (Bondaz 2020), including through retooling and repurposing idled manufacturing capacity of other sectors – automotive and electronics.⁵

A key input into surgical-mask production is nonwoven fabric that is used for the potentially many layers in a mask, including the filter. Usually, this material is formed from polypropylene that has been melted and blown into rolled sheets (‘meltblown’).⁶ Its production is highly capital intensive and supply of (access to) meltblown fabric rolls is one factor determining the ability of producers to rapidly ramp up mask production capacity. Production of masks tends to be capital intensive and large-scale production is mostly fully automated.⁷

5 See <https://www.frstrategie.org/publications/notes/covid-19-comment-chine-t-elle-considerablement-augmente-sa-production-masques-2020/>; <http://www.byd.com/en/news/2020-03-13/BYD-Unveils-World%27s-Largest-Mass-Produced-Face-Masks-Plant>

6 Additional components of respirators include aluminum or steel clips and staples; rubber or polypropylene valves; and seals (generally made of polyethylene foam or polyurethane). All masks have straps (polyester, polyisoprene, or Lycra). Some 25% of global production polyethylene capacity is in Xiantao, Hubei Province, and was taken offline when the region was locked down in January 2020. Several large producers of masks located in Hubei Province were also closed. See <https://www.frstrategie.org/publications/notes/covid-19-comment-chine-t-elle-considerablement-augmente-sa-production-masques-2020> and <https://www.nytimes.com/2020/02/06/business/coronavirus-face-masks.html>

7 <https://www.thomasnet.com/articles/other/how-surgical-masks-are-made/> and <https://www.thomasnet.com/articles/plant-facility-equipment/how-to-make-n95-masks/>

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The global medical mask and respirator market is fragmented. Large players in the mask market include diversified multinationals such as 3M, Honeywell, and KOWA (Japan); Kimberly-Clark Professional, a subsidiary of Kimberly-Clark, a major paper and pulp products company that operates nonwoven fabric mills; specialised medical supply companies such as Makrite (Taiwan), Medicom (Canada), Shanghai Dasheng Health Products Manufacture Company, and Shanghai Gangkai Purifying Products Company in China; and firms that specialise in PPE products more generally, i.e. for many sectors and activities, such as uvex Safety Group (a subsidiary of uvex Winter Holding, Germany), Moldex-Metric (US), and SAS Safety Group (a subsidiary of Bunzl, UK).

Many of these firms have subsidiaries or plants in other countries, often China. For example, Makrite has plants in China; Medicom owns eight manufacturing facilities in North America, Europe, and Asia – this is not a phenomenon that pertains only to large players like 3M. Others supply primarily from and for a national or regional market – e.g. uvex Safety Group (Germany) and Prestige Ameritech (US). In many countries, there are no large-scale production facilities and masks are made by numerous SMEs.⁸

Trade policy and protective masks: Two examples

Two business cases help illustrate export restrictions in action.

Case 1: Mölnlycke

On 1 April 2020, the French weekly *L'Express* reported on the case of Mölnlycke,⁹ a Swedish company that designs and supplies medical products and solutions including surgical masks.¹⁰ Mölnlycke is a multinational company with manufacturing sites in 15 countries and sells to over 100 countries. While it does not have production plants

⁸ In India, for example, the market is served by a “high number of fragmented small and medium-sized companies with a production capacity of between 10,000 and 1,00,000 masks a day” (<https://www.investindia.gov.in/team-india-blogs/solving-supply-chain-issues-mask-manufacturing/>).

⁹ https://www.lexpress.fr/actualite/monde/europe/requisition-et-indignation-partagee-la-guerre-des-masques-entre-la-suede-et-la-france_2122374.html

¹⁰ <https://www.molnlycke.com/about-us/>

in France, Mölnlycke operates a warehouse and logistics centre in Lyon that is the hub of its distribution network for clients located in France, Italy, Spain, Switzerland, Belgium, and the Netherlands.

On 3 March 2020, President Macron decreed that all stocks and production of surgical masks and surgical respirators on French soil will be requisitioned by the authorities and distributed to medical staff and French people affected by COVID-19.¹¹ The official decree published the same day set the deadline of the measure to 31 March, which was extended to 31 May ten days later.¹² On 5 March, French authorities, in full compliance with the decree, requisitioned the entire stock of surgical masks that Mölnlycke had in Lyon, which had been produced by plants in Asia and were in transit to clients in other European countries. This included 1 million masks purchased by Italian customers and 1 million bought by clients in Spain. Another 1 million masks were ready to be shipped to other European nations serviced through the Lyon distribution centre.

It did not take more than a few hours for Mölnlycke to adjust. The Irish Times reports a non-confirmed “colorful [story] involving a ship’s captain who allegedly halted unloading in Marseille to reroute [a subsequent shipment of Mölnlycke masks] for the safety of a Belgian port.”¹³ What was confirmed, by Mölnlycke CEO Richard Twomey in an interview on Radio Sweden, is that the company decided to serve the Italian and Spanish markets via a Belgian hub and then through air freight to the final destination.¹⁴ This alternative route is substantially more expensive but was deemed necessary to enable the company to meet its commitments.

The requisition led to a diplomatic dispute between France and Sweden. The resulting political pressure and media attention resulted in an eventual decision by the French government to allow all Mölnlycke’s consignments of masks to be released to their intended final destinations with a one-month delay ... What is particularly striking about the Mölnlycke case was that the masks were not locally produced and simply happened to use a supply chain that included a distribution centre in France.

11 <https://twitter.com/EmmanuelMacron/status/1234847500768509956?s=20>

12 https://www.legifrance.gouv.fr/affichTexte.do;jsessionid=52B4C18E13F97C69667B2AD9513DF05D.iplgfr27s_3?cidTexte=JORFTEXT000041721820&idArticle=&categorieLien=id

13 <https://www.irishtimes.com/news/world/europe/coronavirus-european-solidarity-sidelined-as-french-interests-take-priority-1.4216184>

14 <https://sverigesradio.se/sida/artikel.aspx?programid=2054&artikel=7445229>

The requisition led to a diplomatic dispute between France and Sweden. The political pressure and media attention resulted in an eventual decision by the French government to allow all Mölnlycke's consignments of masks to be released to their intended final destinations with a one-month delay.¹⁵ Similar events transpired for firms with medical-equipment production facilities located in France, as occurred in China, Italy, and other countries affected by COVID-19.¹⁶ What is particularly striking about the Mölnlycke case was that the masks were not locally produced and simply happened to use a supply chain that included a distribution centre in France.

Case 2: 3M

A global company, 3M is a major manufacturer of respirators, with plants in Europe, Asia, Latin America, and the US. It produced some 550 million masks worldwide in 2019. Starting in January 2020, following the outbreak of COVID-19, 3M ramped up planned production of N95 respirators, doubling its global capacity to 1.1 billion per year; it subsequently allocated resources to further boost capacity to 2 billion by early 2021. In the US, 3M aims to produce 50 million N95 respirators per month by June 2020, a 40% increase.¹⁷

On 2 April 2020, the Trump administration invoked the 1950 Defense Production Act which gives the federal government “any or all authority” to direct the output of US companies in the national interest, accompanied by a 3 April presidential memorandum instructing the relevant federal authorities to allocate scarce or threatened health and medical resources to domestic use.¹⁸ A concrete manifestation of this was a prohibition on the export of N95 respirators, with 3M a major target. In a 3 April press release, 3M responded to the Trump order banning exports, pointing to the significant humanitarian implications of halting respirator supplies to healthcare workers in Canada and Latin America, where 3M is a critical supplier of respirators. 3M also pointed out that “ceasing all export of respirators produced in the US would likely cause other countries to retaliate and do the same, as some have already done. If that were to occur, the net number of respirators being made available to the US would actually decrease. That is the opposite of what we and the Administration, on behalf of the American people, both seek.”¹⁹

15 https://www.lexpress.fr/actualite/monde/europe/guerre-des-masques-finalement-la-france-restitue-son-stock-a-la-suede_2123015.html

16 For example, the New York Times reported that “Valmy SAS, a midsize medical supplies producer near Lyon, France, was unable to fulfill an order for a million masks by the British National Health Service because the French government requisitioned supplies.” <https://www.nytimes.com/2020/03/13/business/masks-china-coronavirus.html>

17 <https://news.3m.com/blog/3m-stories/ceo-update-3ms-response-covid-19>

18 <https://www.whitehouse.gov/presidential-actions/memorandum-allocating-certain-scarce-threatened-health-medical-resources-domestic-use/>

19 <https://news.3m.com/press-release/company-english/3m-response-defense-production-act-order>.

In a 5 April press conference, President Trump clarified the administration's thinking behind his order:

[W]e need the masks. We don't want other people getting it, and that's why we're — that's why we're instituting a lot of Defense Production Act, you could call it, retaliations because that's what it is; it's a retaliation. If people don't — if people don't give us what we need for our people, we're going to be very tough, and we've been very tough We're very disappointed in 3M. They should be taking care of our country. And they can sell to others, but they should be taking care of our country. The people that have dealt with them have dealt successfully with many companies over the last month. They don't like the way 3M has treated our country. They don't, frankly, like the representatives of 3M.²⁰

The background to this exchange was resistance by 3M to redirect to the US masks being shipped from Singapore to Asian clients²¹ and to pressure not to export some 3 million N95 respirators to Canada and Latin America from 3M plants located in the US. 3M argued it was a global company with clients worldwide and an associated responsibility to serve healthcare providers globally. The urgent need for the masks was stressed strongly in statements by the Canadian government, both at the federal level by Prime Minister Trudeau and at the provincial level.²²

The foreign-policy pressure and pushback by 3M had some effect. On 6 April, 3M and the Trump administration announced a resolution of the conflict, based on a plan to ship 166.5 million respirators to the US from foreign plants, primarily in China, over the following three months. The agreement with 3M reflected the reality that as a global company, 3M had much more capacity outside than inside the US, and that what was needed was to leverage its global capacity and expand US imports. The 3M press release notably included a statement that 3M and the Trump administration “worked together to ensure that this plan does not create further humanitarian implications for countries currently fighting the COVID-19 outbreak, and committed to further collaborate to fight price gouging and counterfeiting.”²³

20 <https://www.whitehouse.gov/briefings-statements/remarks-president-trump-vice-president-pence-members-coronavirus-task-force-press-briefing-19/>. In a CNBC interview, 3M CEO Mike Roman stated that “The idea that 3M is not doing all it can to fight price gouging and unauthorized reselling is absurd. The narrative that we are not doing everything we can to maximize delivery of respirators in our own company, nothing could be further from the truth.” <https://www.cnbc.com/2020/04/03/coronavirus-update-3m-eco-defends-mask-production-after-trump-invokes-dpa.html>.

21 <https://www.ft.com/content/ccc34681-5f47-416b-9cbc-d824e9ecc68e>.

22 <https://www.politico.com/news/2020/04/03/3m-warns-of-white-house-order-to-stop-exporting-masks-to-canada-163060>. Ontario's premier Doug Ford stated that the province “desperately” needed the masks. See <https://www.toronto.com/opinion-story/9936345-if-donald-trump-turns-the-coronavirus-pandemic-into-a-trade-war-justin-trudeau-knows-just-how-to-fight-it/>.

23 <https://news.3m.com/blog/3m-stories/3m-and-trump-administration-announce-plan-import-1665-million-additional-respirators>

On 8 April, the US Federal Emergency Management Agency (FEMA) issued a temporary final rule prohibiting exports of scarce COVID-19-related products without FEMA authorisation. Reflecting the deal with 3M, the rule included an exception for exports of US-produced PPE equipment, indicating that FEMA:

...will not purchase covered materials from shipments made by or on behalf of US manufacturers with continuous export agreements with customers in other countries since at least January 1, 2020, so long as at least 80 percent of such manufacturer's domestic production of covered materials, on a per item basis, was distributed in the US in the preceding 12 months. The Administrator decided that this exemption is necessary or appropriate to promote the national defense because it would limit the impact of this order on pre-existing commercial relationships, in recognition of the importance of these commercial relationships to the international supply chain, and for humanitarian reasons, in consideration of the global nature of the COVID-19 pandemic.²⁴

Thus, the upshot was that the Trump administration permitted 3M to only partially continue exporting to existing customers – and this is conditional on at least 80% of US output being allocated to the US market.²⁵ As of 6 April, some 500,000 masks “had been cleared for release, but nearly three million masks were intercepted by US officials at 3M’s South Dakota facility”.²⁶

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24 US Federal Register, Federal Emergency Management Agency, 44 CFR Part 328 Docket ID FEMA-2020-0018 RIN 1660-AB01. *Prioritization and Allocation of Certain Scarce or Threatened Health and Medical Resources for Domestic Use*, temporary final rule.

25 <https://www.ft.com/content/f6768727-e04c-4483-ab24-37a8da4d7437>

26 <https://www.theguardian.com/world/2020/apr/06/us-blocks-face-masks-canada-n95-protection-equipment>.

From zero-sum competition for stocks to leveraging the supply chain

Rather than seek to direct all supplies to the domestic market and compete in a zero-sum fashion for scarce output and resources, ignoring the interdependence associated with supply-chain production, the focus should be on allowing supply chains to work. Many observers have noted this is one reason to keep borders open and to facilitate trade rather than impede it.²⁷

Rather than seek to direct all supplies to the domestic market and compete in a zero-sum fashion for scarce output and resources, ignoring the interdependence associated with supply-chain production, the focus should be on allowing supply chains to work.

The ‘keep markets open’ prescription is not conditional on global value chain production. In the case of PPE production, the value chains are not that complex and tend to be regional. As noted by 3M CEO Mike Roman, for example, 3M follows a regionalisation strategy with close-proximity suppliers and importers, serving nearby customers through local sourcing. Thus, 3M makes respirators in China mostly for the Chinese market; in Korea mostly for the Korean market; and in the US, two facilities in Aberdeen (South Dakota) and Omaha (Nebraska), annually produce 400 million respirators mostly for the US market, using components – including the filters – that are mostly made in-house.²⁸ Although supply chains are less of a factor for protective masks than for other medical products, being able to import final products is an important source of additional supply when needed.²⁹

Businesses will respond – but may need support

There has been a massive supply response to the need for PPE. In the case of masks, this is reflected in the rapid expansion of production by incumbents and by the entry of large numbers of new players, many of which retooled production plants and used technical skills that had been applied in other industries. Examples of new entry abound. One is a consortium of US apparel makers that are converting production capacity to make

27 E.g., Bown (2020a,b,c), Evenett (2020), Espitia et al. (2020), Gonzalez (2020), OECD (2020), WTO (2020), Brekelmans and Poitiers (2020).

28 As noted US production will be greatly ramped up in the course of 2020. See https://www.bloomberg.com/news/features/2020-03-25/3m-doubled-production-of-n95-face-masks-to-fight-coronavirus?utm_source=twitter&utm_content=businessweek&cmpid=socialflow-twitter-businessweek&utm_medium=social&utm_campaign=socialflow-organic. See also <https://seekingalpha.com/article/4336228-3m-surge-in-demand-for-respirators-and-supply-chain-strength>

29 A regionalisation strategy is still susceptible to export bans. In early March, Germany banned the export of medical masks and other PPE, precluding 3M from servicing demand by Italy from its German facilities. <https://www.ft.com/content/d3bc25ca-652c-11ea-b3f3-fe4680ea68b5>

reusable and washable all-cotton 3-ply face masks for the US Department of Health and Human Services. One member of this consortium, Hanesbrands, expects to make more than 320 million masks. Some 10 million were delivered in early April and the company is ramping up to produce 40 million per week. The masks are approved by the US Food and Drug Administration and are intended for everyday wear to help mitigate the spread of COVID-19.³⁰

A smaller-scale example from Europe is the French company Chargeurs, which has converted its technical-textile-fibre production to supply over one million sanitary masks per week and – in light of expected longer-term needs – is developing new types of masks satisfying both health and safety and sustainability standards. Yet another example is the Italian clothing company Ermenegildo Zegna, which converted two facilities to produce 280,000 units of protective equipment for hospitals in the Italian region of Piedmont and the Swiss Canton of Ticino.³¹

These examples illustrate the importance of firms having access to information on applicable product and production standards, obtaining rapid certification of prototypes and production facilities and being able to source requisite inputs – including from foreign suppliers.

These examples illustrate the importance of firms having access to information on applicable product and production standards, obtaining rapid certification of prototypes and production facilities, and being able to source requisite inputs – including from foreign suppliers. Effective two-way communication channels are needed so that firms can signal where policies constitute barriers to entry, identify specific bottlenecks that impede ramping up of supply, know what the standards are, and be able to certify products on an expedited basis. Authorities need to have information to understand the relevant supply chains to produce and distribute essential products. Firms, in turn, should be able to form expectations regarding final demand in the short and medium run and have information on the availability of critical components and inputs needed to produce prioritised products.

Standards and certification of products/plants/suppliers are critical for safety, but regulatory enforcement processes can be a constraint to responding rapidly to an emergency. One good practice is for governments to accept foreign standards during the emergency (Gonzalez 2020); for example, the US Centers for Disease Control

30 <https://www.businesswire.com/news/home/20200407005837/en/HanesBrands-Takes-Actions-Navigate-COVID-19-Pandemic-Preserve>

31 <https://www.chargeurs.com/chargeurs-va-produire-en-quantites-industrielles-du-gel-et-des-masques-de-protection/> and <https://wwd.com/fashion-news/fashion-scoops/ermenegildo-zegna-group-produce-medical-overalls-coronavirus-1203560377/>

approved use of respirators that satisfied equivalent foreign standards, including China's GB 2626-2006 and GB 2626-2019 standards, as well as the European EN 149-2001 standards.³²

Common product standards and mutual recognition procedures facilitate supply responses and cross-border production arrangements. Common EU standards and internationally accepted norms for protective masks, combined with certification of manufacturing plants both at home and in other countries, helped firms and healthcare providers to supply/obtain medical supplies and protective equipment.

Looking ahead, recent experience reinforces the value-added that can be generated through international regulatory cooperation, mutual recognition arrangements and efforts to determine whether and where regulatory regimes across countries/systems have the same goals – and, in such instances, work towards establishing equivalence regimes.

Looking ahead, recent experience reinforces the value-added that can be generated through international regulatory cooperation, mutual recognition arrangements, and efforts to determine whether and where regulatory regimes across countries/systems have the same goals – and, in such instances, work towards establishing equivalence regimes. This would both support international sourcing in response to crises and assist firms to ramp up supply when needed, as well as reduce trade costs in normal times.

The opportunity cost of not having equivalence and recognition regimes in place was illustrated by the decision by China to impose new export-licence requirements in early April 2020. The government was responding to rejections, based on quality grounds, by several European countries of PPE shipments sourced from Chinese companies. The Chinese authorities feared a reputational backlash and sought to ensure that exported products meet quality and safety standards by limiting exports to firms certified to sell in the domestic market (i.e. firms having been accredited as meeting Chinese technical regulations). Companies accredited by buyers in the US or EU – e.g. firms with CE certification – were blocked from exporting by the new regulation until they had obtained certification in China.³³

32 <https://www.thomasnet.com/articles/plant-facility-equipment/how-to-make-n95-masks/>

33 <https://www.scmp.com/news/china/diplomacy/article/3078427/coronavirus-chinas-new-export-restrictions-medical-supplies>. According to one report, of 102 Chinese medical supply companies with CE accreditation, just 21 were licensed to sell their products within China. See: <https://www.scmp.com/news/china/society/article/3077953/coronavirus-china-bans-export-test-kits-medical-supplies-firms>

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Such instances call for cooperation between the governments concerned that permits greater differentiation between suppliers and that allow for flexibility in imposing penalties.

What should be done?

Formal recognition and equivalence arrangements for certification and acceptance of foreign standards would help prevent rigid enforcement of national standards with their detrimental trade-restricting effects, especially in a crisis where unilateral action can have high humanitarian costs. While quality and safety of products are paramount, this can be ensured through close cooperation between regulators and the use of contracts between buyers and sellers that clearly specify the standards to be used.

Models that can sustain cooperation on technical standards and regulatory regimes have been developed for many areas of regulation ... The current crisis suggests doing more to harness the potential of plurilateral cooperation on technical regulations and related production processes could have substantial payoffs....

Models that can sustain cooperation on technical standards and regulatory regimes have been developed for many areas of regulation. They include mutual recognition, international regulatory cooperation between regulators in a given subject area, agreements of good manufacturing practices, and agreements that establish a framework for engagement – among a set of countries/regulators – to identify good practices, facilitate joint learning, and determine whether national regulatory regimes have similar goals and are equivalent in attaining desired outcomes.

Since 2017, groups of WTO members have begun talks that may lead to open plurilateral agreements on specific trade and investment policies. The current crisis suggests harnessing the potential of plurilateral cooperation on technical regulations and related production processes could have substantial payoffs for participating countries in both normal times as well as in emergencies (e.g. Hoekman and Sabel 2019).

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5 COVID-19: Export controls and international cooperation¹

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As part of their response to the COVID-19 pandemic, many countries have restricted exports of medical products with the aim to allocate domestic supplies to national healthcare systems and citizens. However, these policies can have unintended consequences and may be of limited effectiveness, fostering price spikes, volatility, and foreign policy tensions. The G20 and like-minded WTO members could help reduce incentives to use export controls through plurilateral cooperation agreements on key policy areas for responding to such crises.

Many countries have restricted exports of medical products as part of their response to the COVID-19 pandemic with the aim to allocate domestic supplies to national healthcare systems and citizens. The global spike in demand for medical supplies far outstrips existing emergency stocks and available supply capacity. According to the independent trade policy monitoring initiative Global Trade Alert, as of mid-April 2020, some 75 governments – including China, the EU, European member states, India, Turkey, the UK, and the US – had implemented some type of export curb on medical supplies and medicines or implemented measures to direct supplies to domestic needs. At the same time, a similar number of countries reduced or removed tariffs to facilitate imports of essential supplies and to reduce the cost of sourcing products from foreign suppliers.

In some cases, trade restrictions have been imposed and subsequently relaxed in response to pressure from trading partners and following assessments of national demand, available stocks, and supply capacity. The realisation that most producers of medical products import inputs has led to the reversal of some export restrictions. For

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example, India decided to partially reverse a ban on exports of certain drugs for which Indian firms are leading global suppliers but whose active ingredients are often sourced from other countries, notably China (Rowland and Slater 2020).

Firm-level case studies discussed in Fiorini et al. (2020) illustrate how export restrictions and requisitions of domestic supplies of essential goods may seem logical and justifiable but give rise to unintended consequences and may reduce access to critical supplies, increase average prices, augment market volatility, and distort investment decisions, with both short- and long-term adverse effects.

Such effects are not limited to public health and economic realms; they can also have foreign-policy repercussions. In the case of the EU, the immediate policy responses of some member states may have damaged the European project by eroding trust among European partners.

Robust government intervention is critical in emergencies like the current COVID-19 pandemic. Regulation is needed to control speculation and hoarding, and ensure that scarce critical supplies are allocated to priority uses, notably healthcare providers. This cannot and certainly should not be 'left to the market'.

Government policies during the COVID-19 pandemic show that not only may governments be inclined to use trade policy instruments to maximise the domestic supply of essential goods, but they are likely to do so without much consideration for the effectiveness of the trade measures they use, the second-order incentive effects they create in the affected markets, or the spillovers for other countries.

We discuss some broad lessons from experiences to date with export controls and draw some implications for international cooperation in this area of trade policy.

Export controls will have predictable unintended adverse consequences

As many observers have emphasized (e.g. Bown 2020a,b,c, Evenett 2020, Espitia et al. 2020, Gonzalez 2020, OECD 2020), export restrictions are second-best responses. This is because they tend to be both inefficient and ineffective in realising their objectives while causing harm to trade partners. Further, they may have negative humanitarian, foreign-policy, and security consequences. Export restrictions are inefficient and ineffective because they trigger retaliation (or emulation) by affected exporting countries, cause companies to reallocate supplies away from the country taking action,

promote panic buying, hoarding, and speculation, and negatively shape investor risk perceptions once the crisis has passed. In the short run, the downside effects boost price volatility and price spikes for targeted products.

If many countries restrict exports – as is currently the case – the result will be to increase prices above what they otherwise might be and, more generally, increase the uncertainty of supply and associated price volatility. Retaliation – or more likely, emulation – will affect all domestic plants that need to import critical parts and supplies in order to rapidly ramp up local production, and reduce the availability of final goods at home. Finding alternative local suppliers and retooling existing factories (or creating new ones) will inevitably take time and involve the use of less productive technologies and suboptimal input mixes.

Export bans affecting key inputs used in other countries will negatively affect their ability to respond to greater global demand and increase exports. Many firms have international production networks and need to source parts and components in order to continue to produce, let alone scale up.²

A ban on exporting medical products and supplies will have no effect if the country does not produce anywhere near enough of what it needs during a crisis. However, export bans and associated policies to requisition all domestic stocks and production capacity, especially if implemented by major suppliers, may increase shortages and prices by stimulating panic buying. Numerous press reports have documented this dynamic (e.g. Whalen et al. 2020). Examples include vigorous competition between US state-level authorities for supplies (Linskey et al. 2020) and French media reports on alleged American buyers making better offers for masks that had been ordered by French authorities, directly on the airport apron (Sotto 2020). While it was subsequently clarified that in the latter case no contracts had been signed by the prospective French buyers and that they were simply outbid, the case illustrates how excess demand for products in short supply will naturally drive up prices (André 2020, Peel et al. 2020).

2 To some extent, such constraints may be overcome through use of new technologies. An example is the use of 3D printing to produce parts that cannot be supplied by an OEM because of export restrictions. However, the feasibility of such responses will be affected by intellectual property rights held by the original producer/designer and thus may call for governments to provide legal cover for reverse engineering parts and components and to address potential liability risks associated with lack of certification and conformity assessment. See Feldman 2020.

Requisition policies may make matters worse as suppliers have incentives not to ship to one country large consignments that otherwise would be redistributed to many final clients in a given region (see, for example, the case of Mölnlycke discussed in Fiorini et al. 2020) or if there is a significant probability of confiscation on arrival and/or payment delays. Clearly, reputation will matter, and much will depend on the supplier–buyer relationship, but on balance, supply from the rest of the world will not be enhanced.

Widespread use of export bans will increase prices, both because of shortages (demand outstripping supply) and because of buyers' attempts to capture some of the limited supply. Price increases reflecting higher input costs – e.g. the price of surgical masks has increased in many markets because of sharp increases in the demand for melt-blown nonwoven fabric and increasing transport and logistics costs due to lockdowns – will be augmented by speculation and hoarding. This in turn may induce traders to refrain from operating in the relevant markets and force governments to spend more resources on combating the adverse consequences of such policies.³

Allowing international supply chains to work is critical to ramp up supply. Some politicians and their advisers argue that the current crisis points to the need for greater – if not complete – self-sufficiency to ensure adequate domestic supply in a time of crisis. The implicit premises underlying such views are that (i) global markets are unreliable, (ii) countries can be (become) self-sufficient, and (iii) are willing to bear the costs of doing so.

Arguments that the COVID-19 crisis reveals that countries should not rely on trade and that policy should incentivise firms to produce locally are misconceived. Even if self-sufficiency were achieved, it would not necessarily result in a better outcome than one where countries specialise and rely on trade. The current pandemic has led to serious short-term supply constraints, but these would exist at national levels as well. Having to cross a border is not the issue, given that it only takes 48 hours at most to get anything from anywhere in the world. Autarky will not make it any faster to get whatever is critical in a crisis to those who need it.

It is better that governments build up stocks of essential supplies before crises hit, encourage diversifying production capacity to the most efficient locations in different regions of the world, cooperate in establishing regulatory requirements that ensure some level of excess capacity and ability to rapidly ramp up supply of essential products, and minimise policy-induced bottlenecks and frictions that reduce supply responses.

3 For example, the [Turkish trade ministry has announced](#) a dramatic rise in predatory pricing of medical equipment and laid out a series of measures to better monitor and combat price gouging. See Republic of Turkey Ministry of Trade (2020), "[Tibbi maskede fahiş fiyat uygulayan 9 firmaya 943 bin lira ceza](#)", 9 March.

This crisis is likely to accelerate an ongoing trend towards diversification (regionalisation) of supply, but trade will and should be a core part of the equation – and thus, so should cooperation to keep borders open and operating efficiently. From a resilience perspective, relying less on very large plants in a few locations that maximise scale economies comes at a cost: it increases the probability that an exogenous shock creates serious shortages. Developing regional value chains to serve regional markets may have only a limited cost penalty and may have other benefits– e.g. a smaller climate footprint. Geographically diversifying production also enhances the resiliency of supply chains by reducing the need – and thus the probability – of confronting export restrictions and resulting supply shortages.

Trade agreements are not a binding constraint on beggar-thy-neighbour policies

The export restrictions, requisitions, and pre-emptive purchasing by governments illustrate that trade agreements – even a very deep-integration arrangement like the EU – are not binding constraints on governments to block trade when they deem it to be in the national interest. In principle, the WTO prohibits export bans as these are a quantitative restriction on trade. However, GATT Article XI:2 allows temporary export prohibitions or restrictions to prevent or relieve critical shortages of foodstuffs or other essential products. More important in practice is the general-exceptions provision of the WTO, Article XX(b), which permits trade measures that are necessary to protect human, animal, or plant life, or health – and thus provides for the measures currently used by many countries.⁴

In the case of the EU, such export controls apply to all EU member states as the EU has a common commercial policy. The export bans imposed by several EU member states in the initial phase of the crisis imply a re-nationalisation of trade policy, not just vis-à-vis non-EU countries, which is an exclusive competence of the European Commission overseen by the Council and European Parliament, but also vis-à-vis other EU member states. This is not prohibited by the EU treaty. Export bans are permitted when necessary to address emergencies and safeguard national health and safety. Over time, the European Court of Justice has narrowed the scope for members to invoke exceptions to restrict intra-EU trade, but the EU treaty does not ban export restraints taken on public-health grounds. The same applies to de facto nationalisation of supplies

4 The WTO also includes a broadly worded national security exception. Art. XXI(b)(iii) states that the WTO does not constrain a member from taking any action which it considers necessary for the protection of its essential security interests.

or production capacity by the state. Even if there were an unconditional prohibition on the use of national export bans on intra-EU and extra-EU trade, seizures and requisitions in the national interest could be – and have been – used as a substitute mechanism.

Information is critical – for governments and for firms

All trade agreements include provisions allowing for exceptions in crises. The EU case illustrates that even very deep agreements will not prohibit governments from taking actions they deem to be in the public interest in emergencies. This suggests that arguments that the crisis illustrates the need for stronger disciplines on the use of export controls are unlikely to have much traction.

That said, the current situation shows the value of mechanisms that ensure interventions are transparent and of systems to help governments coordinate and (hopefully) cooperate to address shortages. Even with a common shock (e.g. a pandemic), there will be differences in supply capacity and demand for products across countries. Such differences may not be obvious and can be revealed through sharing information and coordination.

Firms need systems to monitor market conditions and identify slack and chokepoints in their global network so that they can adjust production and respond to changes in demand. Governments need information systems that allow them to determine where supply capacity exists. Firms generally can assess demand and their supply options, but governments often do not have such information readily at hand. Identifying real-time bottlenecks in the supply chain and measures to address them requires cooperation between industry and government, as well as among governments. Weak links in supply chains and sources of friction that significantly impede rapid production expansion need to be identified, and evidence whether they are due to or can be overcome by policy action.

Such information systems are not in place in many, if not most, countries. Authorities do not have a good understanding of the prevailing supply chains and production capacity. Individual lead firms of course know their supply chains but do not share this information, as it is a source of their competitive advantage. Some regulators – notably the New Zealand Medicines and Medical Safety Authority – require approved product marketers to disclose the supply chain, including where active ingredients for medicines are made and where they are packaged (Roos 2020). However, most jurisdictions appear to have been largely in the dark regarding the nature and composition of the relevant supply chains for medical products, which is in notable contrast to other goods such as food products, where traceability has become an element of the production process.

What could G20 and WTO members do now – and in the medium term?

The G20 trade ministers jointly pledged on 30 March 2020 to take immediate necessary measures to facilitate trade in essential goods, conditional on national requirements and needs, and agreed that “emergency measures designed to tackle COVID-19, if deemed necessary, must be targeted, proportionate, transparent, and temporary, not create unnecessary barriers to trade or disruption to global supply chains, and be consistent with WTO rules”.⁵ These are useful principles and it will be important that G20 members apply them, but whether this will be the case remains an open question. Over a decade of experience has shown that G20 countries have largely been unwilling to live up to trade policy commitments (Evenett 2019, Bown 2020d).

It is unrealistic to expect all G20 members to agree to disciplines on export restrictions. The attenuation in support for multilateral cooperation – evident since the Global Crisis – and the electoral success of political candidates and parties opposing globalisation and an open world economy make any such effort even more unlikely to succeed. Developing informal forms of cooperation centred on information exchange, dialogue, and peer review may be more feasible. Such cooperation should encompass the private sector given that the latter has a much better grasp of the relevant supply chains. Looking forward, public-private policy partnerships (Rosenau 2000) need to generate and share up-to-date critical data on supply conditions and supply-chain capacity around the globe.⁶

In the case of agri-food production and policy responses to COVID-19, a system to facilitate collecting and sharing information on global agricultural markets already exists: the Agricultural Market Information System (FAO et al. 2011) was established by the G20 after the food-price shocks and market volatility of 2007–8 when over a third of global wheat production and over half of world rice output became subject to export restrictions. The system has helped countries generate valuable information and created an international expertise network to inform coordinated policy responses to shocks.

⁵ See https://g20.org/en/media/Documents/G20_Trade%20&%20Investment_Ministerial_Statement_EN.pdf

⁶ The concept of supply chain councils suggested in the trade facilitation literature could be applied here. See Hoekman (2013, 2014).

Putting in place a similar system for the types of products needed to respond to public-health emergencies should be a priority for the international community. This will not prevent countries from using export controls, but it will help promote transparency, provide data on the market situation to governments, and facilitate coordination between governments and international organisations.

Recent trade policy has seen a rise in managed trade, exemplified by the 2019 Chinese agreement to import \$200 billion more from the US by 2021 than it did in 2017. Responses to the COVID-19 crisis also include managed trade: governments are dealing bilaterally with large producers and avoiding standard competitive-sourcing procedures required by national public-procurement regulation. While driven by the crisis and by perceptions that arms-length transactions are unreliable for public procurement of medical and protective supplies, such practices can be costly in economic terms, be susceptible to fraud, and create negative spillovers on other countries. Ensuring such measures are time-limited and transparent to domestic stakeholders is a must for accountability. A mechanism that ensures international transparency and monitoring can help provide the needed accountability while also providing a basis for identifying and addressing negative spillover effects.

Analysis of trade-policy responses to the crisis and their effectiveness could be complemented by information on medical supply chains and productive capacity. A global picture of supply and demand and high-frequency assessments of policy responses could reduce the political pressures to close borders by giving stakeholders a better grasp of the capacity and progress to ramp up supply. Exchanging experiences and learning could help governments identify effective and efficient interventions.

Such an initiative need not include all G20 members if consensus cannot be obtained.⁷ What is needed is for the major players to cooperate, as they did in the Global Forum on Steel Excess Capacity, which brought together the major steel-producing countries and drew on the industry for data on production capacity, stocks, and investment plans. The Global Forum and Agricultural Market Information System show that the type of initiative suggested here is feasible.

More ambitiously, this applies as well to the challenge of reversing the massive fiscal support being provided to keep economies afloat. As extensively documented by the Global Trade Alert initiative, in recent years, many countries are increasingly using a variety of subsidy-like instruments to support domestic production and exports

⁷ In contrast to information sharing and action on public health matters, which by definition must be global in scope given that diseases can originate anywhere (Oxford Martin Commission 2013), information on supply capacity and related trends can be limited to a smaller number of countries that account for most of global production.

(Evenett 2019). Hoekman and Nelson (2020) call for an international work programme that brings together national finance and economy ministries, relevant regulators, and other government authorities concerned with the governance of subsidies. A trusted, neutral, and technically capable body should be appointed to measure and analyse relevant policies. A joint initiative spanning the specialised international financial and development organisations – to which the major emerging economies belong – can provide technical and analytical support. Developing a body of professionally competent, peer reviewable, internationally balanced work may over time promote international agreement on good practice norms and standards. The massive COVID-19-motivated subsidies for economic activity have raised the need for transparency and managing competitive spillovers, thus greatly increasing the salience of such a coordination mechanism.

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6 Trade policy and food security

Will J. Martin and Joseph W. Glauber

International Food Policy Research Institute

The COVID-19 crisis has seen the emergence of export restrictions to ensure food security, although food levels are high and the production outlook for key staples is good. This column reviews the experience of quantitative restrictions during the price spikes of 2007–8 and argues that quantitative restrictions are a source of instability in both the exporting market and the world market. Policymakers should seek to avoid quantitative restrictions to the greatest extent possible.

The use of export restrictions to ensure food security has re-emerged during the COVID-19 crisis. This is somewhat surprising as food availability levels are high and the production outlook for key staples is good. Fortunately, the COVID-19 crisis is unlike many previous pandemics in that its impact on food outputs is likely to be relatively small. In contrast with the 1918 Spanish Flu pandemic, the worst mortality effects are not on people in their prime working age. In contrast with the avian flu and swine flu pandemics, there is no direct impact on livestock. There is, however, some impact on the production of nutrition-dense products such as fruits and vegetables and on production and processing of livestock products that involve teams working in close proximity.

Predicting the impact of COVID-19 on agricultural trade requires an understanding of the determinants of agricultural trade policy. Interest-group pressures, for example, create a drive towards protection (Grossman and Helpman 1994); production of staple-foods calls for policy to stabilise domestic prices.

To understand the recent developments in agricultural trade policies, it's worth understanding the motivation behind such policies and reviewing the turbulent experience of the years 2007–8.

Key elements of agricultural trade policies

Opening an economy to trade in agricultural products has two important effects on market outcomes:

1. It affects the level of prices relative to the level that would prevail under autarchy.
2. It affects the volatility of agricultural prices.

Bernhofen and Brown (2005) showed that the gains from opening the then-agricultural economy of Japan in 1859 yielded an increase in real income of around 9%. Burgess and Donaldson (2010, 2017) note that poor transport within India resulted in high rates of price volatility and to famines because of variable rainfall and strong sensitivity of grain output to rainfall. They also showed that linking regions of India to trade through the rail network reduced the volatility of agricultural incomes, the correlation between rainfall variation and famines, and the incidence of famines.

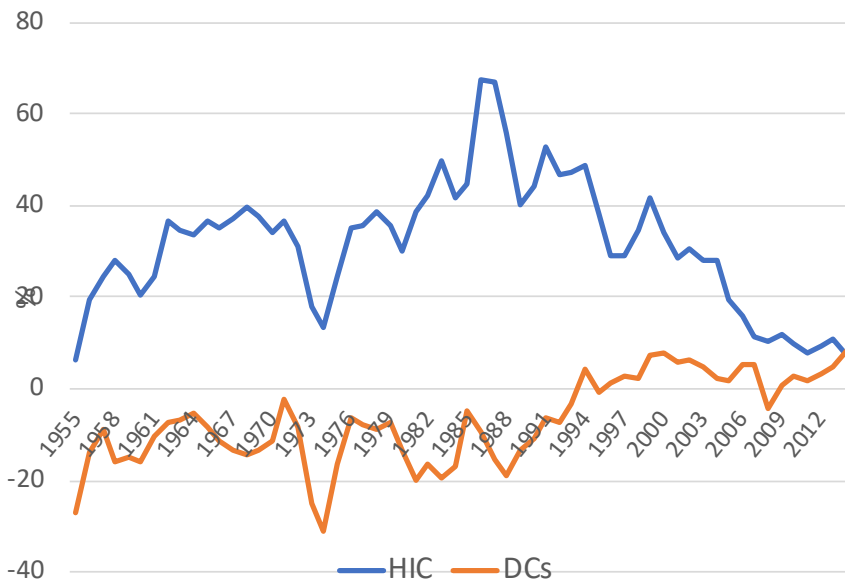
Policymakers are, however, rarely fully comfortable with the outcomes of opening agricultural markets to trade and frequently introduce protection measures that raise or lower agricultural prices relative to external levels. The long-term rates of protection to agricultural sectors are broadly consistent with the interest-group model (Anderson et al. 2013). Sectors such as dairy and sugar production, for example, where producers are easily organised because of their geographic concentration, tend to receive relatively high rates of protection. Paradoxically, rich countries with small numbers of farmers have historically also received higher rates of protection than poorer countries (Anderson 2009).

Because the main shocks to agricultural markets come from output volatility and world output is much less volatile than output in individual countries, world prices would generally be expected to be much less volatile than autarchic prices. However, policymakers have policy options to make their domestic prices less volatile than world prices. They can, for instance, set a domestic price and use variable tariffs and/or export taxes to reduce the extent to which their domestic prices change when world prices change. This results in countercyclical relationships between agricultural protection and world price levels.

Figure 1 shows sharp declines in protection in both rich and poor countries in the 1973–4 price spike. In 2007–8 a similar pattern was evident in developing countries, but not in the high-income countries. This is because the industrial countries, where food prices are less of a political issue, had moved away from variable levies that some countries had previously used to prop up fixed internal-market prices. While this approach was

convenient for policymakers in those countries, it had become clear that it resulted in excessive volatility in world market prices and so variable levies were outlawed in the Uruguay Round (Hathaway and Ingco 1994).

Figure 1 Changing nominal rates of protection for agricultural products, high-income (HIC) & developing countries (DC)



Source: Anderson (2009), updated using data from www.ag-incentives.org.

The relationship between the desire to provide a particular level of protection or taxation and the desire to insulate domestic prices from changes in world prices is examined in Ivanic and Martin (2014). Trade policymakers seek to balance the costs resulting from sharp shocks to domestic prices with those deviating from their desired long-run level of protection or taxation. When world prices rise sharply, as in 2007–8, developing-country policymakers initially resist the increase in prices of staple foods by lowering their protection rates. Or, if world prices fall, as in the mid-1990s, protection rates tend to rise. But these changes in protection take policymakers away from the protection rates consistent with the political-economy equilibrium. After increases in world prices and reductions in protection, for example, producers in politically powerful sectors begin to press for a return to higher protection rates and domestic prices tend to rise in line.

Where policymakers are concerned about poverty, there is also an altruistic motivation for this response to price increases. Ivanic and Martin (2017) find that increases in food prices raise poverty in the short run because many poor people are net buyers of food, producers have little short-term ability to respond to higher prices, and wages for unskilled labour frequently do not rise in response to higher food prices. But when price changes are sustained, producers can respond and wages for unskilled workers can be raised. In this situation, altruistic policymakers are rational to allow fuller transmission of the changes in world prices in the longer term.

When world food prices rise sharply, as they did in 2007–8, there is a strong tendency for policymakers in exporting developing countries to introduce export restrictions such as export bans, quotas, or export taxes (Slayton 2009). Policymakers in importing countries, also wishing to avoid sharp increases in prices, reduce the protection imposed on imports and sometimes reduce consumption taxes as well. In some extreme cases, importers introduce import subsidies. When these are substantial, these countries then need to use export restrictions to stop products flowing out of the country.

Some argue that export restrictions and other insulating policies protect the poor from price increases. Anderson et al. (2014) find evidence of this for the 2007–8 price spike if the effect of insulation on world prices was ignored. However, once they took into account the direct effect of the changes in protection rates and the effect of these changes in insulation on world prices, this beneficial impact disappeared.

If exports are to be restricted, then the worst approach is to introduce quantitative restrictions. Policymakers frequently use quantitative restrictions, such as export bans or quotas, to retain supplies of grain. One key problem with these measures is that they will either destabilise domestic prices or require a costly programme of stock accumulation to keep domestic prices stable.

Consider a case where policymakers expect domestic demand of 80,000 tons at current prices and production of 100,000 tons and so set an export quota of 20,000 tons. As soon as expectations of weather conditions – or any other factor influencing demand and/or supply – change, the export quota is no longer consistent with balancing supply and demand at the current price, and the domestic price will need to change. Because both demand and supply are quite inelastic, the change in price needed to rebalance supply and demand may be quite large. Had policymakers been using a price-based measure such as an export tax, the change in domestic supply or demand would merely have resulted in a change in the quantity exported.

One reason for the popularity of export restrictions is that they, like an export tax, can create a gap between the domestic and the export price. With an export tax, this gap generates government revenue. With an export quota, this gap accrues as quota rents to those – typically well-connected entities – successful in obtaining export quotas. Unfortunately, activities to obtain these quota rents can generate substantial economic costs (Krueger 1974).

Export bans are a particularly pernicious form of policy, both for the exporting country and the rest of the world. A key problem with an export ban or, equivalently, an export quota of zero, is that it's very unlikely that the desired level of exports – on any criterion – will be exactly zero. Even if it appears that – at the time the barrier is introduced – supply and demand will more or less balance, markets for food products are continually in flux. Weather conditions will almost inevitably change the volume of production, making a quota of zero the wrong amount and creating a need for adjustments in domestic prices.

If the objective of the policy is to increase export returns by raising world prices, then clearly a ban is not the right policy since it constrains exports to zero and eliminates the possibility of exporting at higher prices. If the goal is to create rents to distribute to favoured groups, a ban is a failure since there are no quotas to distribute. Perhaps the only situation where an export ban makes sense is the bootlegger and Baptist scenario (Yandle 1983), where the ban finds support from both groups that want to restrict exports and groups that want to profit by undermining that purpose, such as smugglers and corrupt officials turning a blind eye to smuggling activities.

Another problem with using quantitative restrictions to manage agricultural trade is uncertainty about their introduction and/or abolition. If market participants anticipate that a binding measure will be introduced, they have a strong incentive to create the problem that the quantitative restriction is meant to solve. If a binding limit on exports is anticipated, it makes sense for exporters to ship products out as quickly as they can. Removing binding quantitative restrictions is also challenging, as prices may rise sharply when abolition is anticipated.

These problems have frequently resulted in export bans staying in place far longer than would be desirable. In one recent example, India's export bans on rice and wheat between 2007 and 2011 resulted in costly government-run stocks reaching three times their desired level (Gulati and Jain 2013) as the government sought to avoid prices going too low. Similarly, Zambia's anticipatory export ban on maize imposed in April 2016 to counter the expected negative effects of El Niño ended up lasting far beyond the time at which it became clear that there was no decline in output (Al Mamun et al. 2018).

A quantitative restriction will also be destabilising when shocks arise in other countries. Under a price-based regime, a positive shock to world prices will cause all countries to help absorb the shock by increasing their consumption and cutting back on their supply. Countries using a quantitative restriction instead force the rest of the world to absorb the shock.

When countries use price-based measures to stabilise domestic price relative to world prices, there is a fundamental fallacy of composition. Because insulation does not reduce volatility in the same way that diversification across suppliers does, it merely transfers price volatility from one country to another. While one country can stabilise its domestic price relative to the world price, this destabilises world prices. If all countries do it, domestic prices end up just as unstable as they would have been in the absence of intervention. The resulting collective action problem has been likened to everyone standing up in a stadium to get a better view (Martin and Anderson 2012).

A different explanation for export restrictions is that policymakers in exporting countries are concerned about shipping out food needed in the domestic market. This explanation is not only offered by policymakers and journalists but also pervades academic analysis of major famines such as the Irish potato famine of 1848 (e.g. Kinealy 1997); however, it requires much more critical assessment than it generally receives.

One key weakness in this argument is that competitive markets are very capable of retaining food for which there is effective demand. A second weakness is that if some people lack the resources to access food, an export restriction does not address this fundamental problem. The short-run impact of an export restriction that lowers domestic prices on households' real incomes and on access to food depends on whether the households are net buyers or net sellers of food (Deaton 1989). An export restriction may affect access indirectly by lowering domestic prices, making net food buyers better off and lowering the cost of their food. But if it does this successfully, it will make net food sellers worse off and may, in fact, increase poverty and worsen food security. While lower food prices tend to reduce poverty in the short run (Ivanic and Martin 2008), there are many cases in exporting countries where lowering prices of staple food commodities causes a net increase in the poverty headcount (see, for example, Koo et al. 2020, Ivanic and Martin 2008).

The impact of beggar-thy-neighbour trade policies

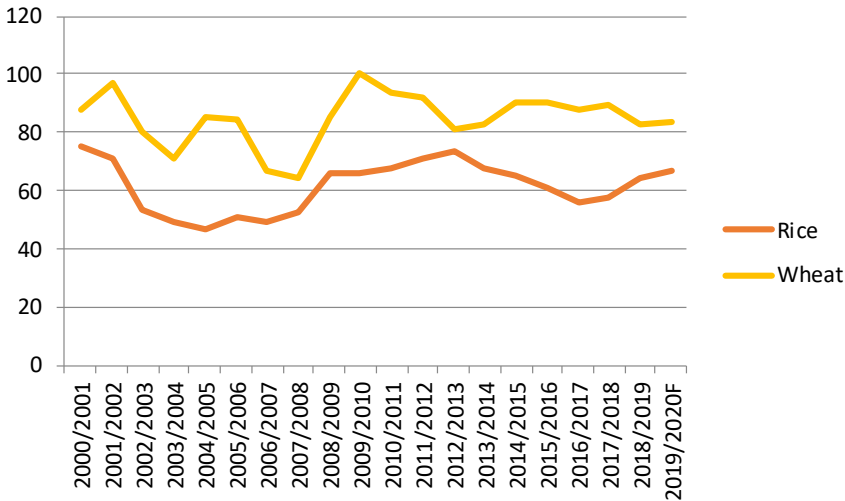
While the impact of export restrictions on the exporting country may create short-run benefits, the costs are most often borne by importing countries who face shorter supplies and higher prices as a result. Such was the case during the global food-price spikes of 2007–08, when 33 countries reacted by halting exports through the withdrawal of export licences, export bans, and other restrictions. As Martin and Anderson (2012) point out, such export restrictions exacerbated world price volatility by reducing world supplies and increasing world demand. That encouraged others to follow suit by banning exports or by panic buying in importing countries. Anderson and Nelgen (2011) estimate that changes in restrictions on global grain trade during 2006–08 were responsible for increasing rice prices by 40%, maize prices by 20%, and wheat prices by 10%. The substantial impact on world prices proved extremely damaging for low-income food-import-dependent countries and to the efforts of humanitarian organisations to procure supplies, while benefitting large exporters.

So should we be concerned about recent actions to restrict cereal exports? Excluding China, the current global stocks-to-use ratios for wheat and rice are close to their median level of the last two decades and substantially higher than in 2008 (Figure 2). The sufficiency of inventories explains the relative price stability in the market for staples. The underlying situation is better than suggested by these statistics when also considering China's inventories of rice and wheat, which are sufficient for 10 to 13 months of domestic consumption (Glauber et al. 2020).

Moreover, harvests are expected to be good. The [United States Department of Agriculture](#) (2020) projects a 5% increase in 2020 global wheat production over 2019, while rice production is projected to remain about the same as in 2019. Production of these key staples is unlikely to suffer disruptions from the COVID-19 crisis – at least in major producing countries – since much of it is mechanised, requiring relatively little labour input, and takes place in areas with dispersed, already physically distanced, rural populations. Similarly, there is low probability of disruptions to international transport and distribution of these key staples, being dry bulk commodities that can be loaded, shipped, and discharged with minimum human-to-human interaction.

Despite these favourable conditions in world markets, some countries have introduced export restrictions on key food products. At the time of writing, 13 countries had introduced such measures, and binding measures accounted for less than 1% of global traded calories. But the situation is evolving and up-to-date counts are available via the International Food Policy Research Institute's food [export restriction tracker](#).

Figure 2 Global ending stocks as percent of global consumption (excluding China) expressed as days of use



Source: USDA, Foreign Agricultural Service, PSD database. <https://apps.fas.usda.gov/psdonline/app/index.html#/app/home>.

World exports are heavily concentrated. Russia, the EU, the US, Canada, and Ukraine together are likely to account for 75% of all wheat exports in 2019–20. It therefore matters a great deal what governments of these countries do. So far, Kazakhstan, which has a 3% share in global wheat exports, has announced export restrictions. Russia and Ukraine, which account for around 30% of global wheat exports, have also imposed quotas on wheat exports through the end of June 2020 but the quotas are not considered to be binding (that is, the quotas are set higher than normal export levels at this time of year). Unfortunately, many of these measures are quantitative restrictions and they may be triggered by future developments. Devitt (2020) believes that Russia’s export quota for the second quarter of 2020 will be exhausted by mid-May, making the export quota for the world’s largest wheat exporter binding and potentially an important influence on world market supplies. Ukraine has a quota based on expected exports, which could be triggered if exports rise (Polityuk and Karazy 2020).

The rice market is equally concentrated, with 75% of exports coming from the largest five exporters and nearly a quarter from India alone. India’s stock-to-use ratio for rice, however, stands at a historic high of 34% and prospects for the 2020 harvest are good, such that it should have no reason to consider export restrictions, although some concerns have been expressed about difficulties moving products domestically (Glauber et al.

2020). Viet Nam's world market share is 16%, and the country announced an export ban on 24 March 2020. On 11 April, this was replaced by an export plan allowing exports only up to a quota (Thu 2020).

Addressing export restrictions

The present outlook for staple food markets is much brighter than it was during the 2007–8 price spike. Hence, imposing trade restrictions now would be even more misguided than it was in 2008. Such policies could instead become the problem: if Viet Nam and Kazakhstan maintain barriers and other countries follow in their footsteps, it could trigger food-price spikes and speculative behaviour in agricultural commodity markets. The world's poor would be the ones to bear the brunt of the results.

Experience from past crises has demonstrated that avoidance of trade-restrictive measures can be as effective in protecting consumers and farm incomes as direct support measures. Improving market transparency and the availability of up-to-date data and information is imperative, particularly in crises when panic-driven reactions can aggravate trade disruptions. The Agricultural Market Information System, an inter-agency platform launched by the G20 in 2011 in response to the food price spikes in 2007–8 and 2010–11, is actively monitoring market conditions, contributing towards better information and market transparency.

Similarly, Article 12 of the WTO Agreement on Agriculture requires its members, except developing country members which are not net exporters of the product concerned, to notify the Committee on Agriculture before imposing new export restrictions (WTO 2020). Unfortunately, most actions are either not notified or notified only after imposition. For example, of the 16 WTO members who have instituted export restrictions during the COVID-19 crisis, only four have notified their actions to the WTO, and all of the notifications were after the restrictions had been implemented (as of 18 April 2020). Export restrictions are monitored and reported on by international organisations such as the OECD and the International Food Policy Research Institute and by independent trade-policy-monitoring initiatives such as Global Trade Alert.

So far, little or no progress has been made in WTO negotiations towards disciplining export restrictions. In 2011, G20 leaders agreed not to impose export restrictions on humanitarian food aid being procured by the World Food Programme. However, subsequent efforts to have this agreement adopted by the entire WTO membership were unsuccessful, in part owing to opposition from large developing countries within the G20 who did not want to expand the agreement to the WTO (Diaz-Bonilla and Hepburn 2016, Anania 2014).

Conclusion

Trade in agricultural products is essential to both increase national income and reduce the volatility of food supplies that comes from relying only on local production. This does not mean that countries must have completely open trade regimes. Policymakers frequently intervene both to change the level of prices and their volatility. Policies to change the level of prices appears to follow the predictions of political-economy models, with better-organised groups benefitting at the expense of consumers and overall economic efficiency.

Opening to trade reduces the main source of volatility in individual food markets by linking it to the much more diversified world market supply. But many policymakers can reduce the volatility of prices in their markets further by insulating their domestic prices from changes in world market prices. This introduces a key systemic problem because insulating individual market prices increases the volatility of world prices. This problem applies generally to markets for food staples such as wheat and rice but is particularly noticeable when food prices move sharply.

Several quantitative restrictions such as export bans and export quotas have been introduced or are under consideration in export markets for wheat and rice (the situation can be tracked via the International Food Policy Research Institute [export restriction tracker](#)). These measures are highly undesirable and could have seriously adverse consequences for food security.

Quantitative restrictions are a source of instability in both the exporting market and the world market. For domestic markets, as soon as an export restriction binds, any change in availability or expected availability turns into a shock to domestic market prices. The mere possibility that an export restriction might be introduced is a source of instability. If market participants think that a quota might restrict exports in the future, they have an incentive to bring forward shipments, creating a fear-of-fear-itself shortage of grain that triggers the quota and generates unnecessary market uncertainty and volatility.

Unfortunately, attempts through the WTO to deal with the collective action problems associated with price insulation have not been successful to date. However, the 2007–08 food-price crisis and its aftermath appear to have created a greater understanding of the collective action problem and mechanisms such as the Agricultural Market Information System have provided much better information on the situation than was available in 2007.

In the COVID-19 situation, policymakers must realise the soundness of the fundamental supply-demand situation and the adverse consequences for their own countries of using quantitative restrictions such as export bans and seek to avoid their use to the greatest extent possible.

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7 Export restrictions in times of pandemic: Options and limits under international trade agreements

Joost Pauwelyn¹

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Dozens of governments have banned or limited exports of vital medical supplies and food. Are these legal under WTO and EU law? This chapter argues that while such bans are not allowed in normal times, the rules do not apply when the measures are justified on health grounds, are temporarily applied, and are aimed at preventing or relieving critical shortages of essential products. The only real deterrent to export bans is the threat of foreign retaliation that cuts off access to indispensable imports.

More or fewer exports?

In trade *negotiations*, exports have traditionally been seen as “good” (firms make money abroad) and imports “bad” (imports threaten domestic producers). In turn, many trade *agreements* focus on disciplining import barriers such as tariffs. To increase their own country’s exports, the US reduces its tariff on Chinese cars while China cuts its tariff on US soybeans.

But what happens in times of coronavirus, when countries desperate for medical products such as personal protective equipment (PPE) restrict exports, not imports? Moreover, if PPE is to save lives locally, shouldn’t an EU member-state government have the right to restrict their export? Or must EU solidarity play a role? And, shouldn’t a country – such as Cameroon, which signed an Economic Partnership Agreement (EPA) with the EU – have some kind of “access guarantee” now that it needs life-saving equipment from the EU that it cannot produce itself? As of early April 2020, 69 governments had banned or

¹ I would like to thank David Kleimann and Gabrielle Marceau for precious comments on an earlier draft. All errors remain mine alone.

limited exports of PPE, medicines, and other medical goods (see Gonzalez 2020), and economists have almost universally condemned the recent surge in export restrictions (e.g. Bown 2020, Evenett 2020, OECD 2020).

The key argument in this chapter is that international law currently provides a great deal of leeway (carve-outs and exceptions) to enact such restrictions, especially during a pandemic (see also Glöckle 2020). We briefly outline the options and limits when it comes to export restrictions under EU Law (both within and outside the EU), WTO agreements, and preferential trade agreements such as CETA and USMCA. For a more extensive discussion with specific references to the legal provisions and cases, see Pauwelyn (2020).

Export restrictions under EU law

Under EU law, EU Member States may rely on health exceptions for both intra-EU export restrictions and extra-EU export restrictions.

Restrictions on “exports” within the EU

Although the EU remains one of the most integrated common markets in the world, EU Member States retain the right to impose quantitative restrictions on exports to other EU Member States. However, the exception made on the grounds of “*protection of health and life of humans*” comes with certain conditions attached.

- Restrictions must have the legitimate aim of protecting public health.
- The exception has been narrowly interpreted and measures must be “*proportional*”.
- Export restrictions should not “*constitute a means of arbitrary discrimination or a disguised restriction on trade between Member States*”.
- Measures have to be well-founded and supported by evidence.
- The burden of proof in justifying export restrictions on health grounds lies with EU Member States.

Restrictions on exports outside the EU

EU institutions, in turn, have the power to impose export authorisation requirements for exports outside the EU, which “*shall be free ...and not be subject to any quantitative restriction*”, except under certain conditions.

- The EU Commission can impose export restrictions to “*prevent a critical situation from arising on account of a shortage of essential products, or to remedy such a situation.*”
- Measures “*may be limited to exports to certain countries or to exports from certain regions of the Union.*”

Individual EU Member States also retain the right to restrict exports to third countries on the grounds of “*protection of health and life of humans*”. Here as well, “proportionality” applies, as when Romania recently announced restrictions on exports of certain agricultural products outside the EU: this was considered by the EU Commission as “not proportionate”, since Romania had not provided evidence that it was facing shortages of agricultural products intended for human consumption (Durasin 2020). The country subsequently lifted the export restrictions (Marinas 2020).

Export restrictions under WTO agreements

The WTO, in turn, imposes a general prohibition on quantitative export restrictions and obligations of non-discrimination, publication, and notification. But it provides for an even broader range of carve-outs and exceptions:

- temporary restrictions for “critical shortages”
- measures “necessary” to protect health
- products in “general or local short supply”
- certain export restrictions on input materials to supply a domestic processing industry
- national security.

WTO export restriction obligations

a) General prohibition

- Outlaws “*prohibitions or restrictions other than duties, taxes, or other charges ... on the exportation or sale for export of any product*”. Most export restrictions enacted in response to the current pandemic would probably meet this, since it is broadly worded and includes not only export bans, quotas, and export licenses, but also provisions for “other measures”.
- However, GATT only prohibits *quantitative* export restrictions and not “*duties, taxes or other charges*” unless a given WTO Member included such commitment in its tariff schedule or accession protocol. Oddly, this implies that, whatever WTO members are prohibited from doing via *quantitative* export restrictions, they can still

achieve by means of (largely unregulated) export *duties*. That said, in the wake of the COVID-19 pandemic, countries seem to have enacted only quantitative export restrictions, not export duties.

- The measure must have “*a limiting effect*” on the amount of a product being exported. This “*limiting effect*” need “*not be demonstrated by quantifying the effects of the measure at issue*”, e.g. via evidence that the actual amount of exports of face masks fell. Rather, such limiting effects “can be demonstrated through the design, architecture, and revealing structure of the measure at issue considered in its relevant context”.

b) Carve-out for “critical shortages”

- As long as pandemic-related export restrictions are “*temporarily applied*”, limited to foodstuffs or “*essential products*”, and demonstrated to “*prevent or relieve critical shortages*”, GATT should exempt such restrictions from the general prohibition.
- For export restrictions on “*foodstuffs*”, the Agreement on Agriculture imposes advance notice, consultation, and due consideration of importing members’ food security.

c) Non-discrimination, publication, and notification

- Subject to the exceptions below, export restrictions must be imposed on a non-discriminatory (MFN) basis.
- They must also be administered “*in a uniform, impartial and reasonable manner*”.
- When applying an export restriction, WTO members “*shall aim at a distribution of trade (i.e. exports) ... approaching as closely as possible the shares which various (WTO Members) might be expected to obtain in the absence of such restrictions.*” For example, if a WTO member limits (but does not completely ban) the export of ventilators, it ought to aim at an allocation of ventilator exports between other WTO members that is as close as possible to the relative shares of ventilators that these other members imported *before* the export restrictions were imposed.

WTO exceptions

a) Measures “necessary” to protect health

- Any violation of GATT obligations set out previously can be justified on health grounds; even if the “*critical shortages*” carve-out does not apply and the prohibition on quantitative export restrictions were triggered, certain GATT articles provide a second line of defence.
- General exceptions allow for measures “*necessary to protect human ... life or health*”.

- Yet, health restrictions cannot be applied “*in a manner that would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade.*”

b) Measures “essential” to address “general or local short supply”

- WTO Members can take such measures, provided that all WTO Members are entitled to an “*equitable share*” of the international supply of such products.
- Measures must be “*discontinued as soon as the conditions giving rise to them have ceased to exist*”.
- Restrictions may be justified when for example, protective masks are in “local short supply” in the regulating country, but possibly also when protective masks are in short supply generally or internationally and an exporting country (not itself in short supply) distributes exports of masks to wherever they are needed most.

c) Export restrictions on input materials to supply a domestic processing industry

Where countries are concerned about shortages or high prices of input materials, the exception allows for export restrictions on “*domestic materials necessary to ensure essential quantities of such materials to a domestic processing industry*”, but only “*during periods when the domestic price of such materials is held below the world price as part of a governmental stabilization plan*”.

d) National security exceptions

- A WTO Member can take “*any action which it considers necessary*” to protect “*its essential security interests*”, including action “*taken in time of war or other emergency in international relations*”.
- It is up to individual WTO Members to decide what “*it considers necessary*”. In a recent dispute, a WTO panel reviewed a Russian transit restriction for compliance with GATT’s security exception. Such an exercise remains very controversial.
- To date, WTO members have notified COVID-19 related export restrictions under “critical shortages” and health exceptions, not national security.

Preferential trade agreements

Other, less integrated, preferential trade agreements add little discipline to what is already in the WTO. For example, in the recently-concluded CETA between Canada and the EU, relevant GATT articles are simply incorporated. However, unlike GATT, CETA also prohibits export duties, though general exceptions apply (e.g. health, national security).

The more recently concluded USMCA adds provisions regarding export restrictions on foodstuffs, in order to address concerns about food security (prior notification, consultation, and detailed explanation of export restrictions taken, time limits, and a prohibition on export restrictions on “foodstuff purchased for a non-commercial, humanitarian purpose”).

Conclusion

“Trade saves lives” could have been the headline. COVID-19 hit so hard, quickly, and across borders, that many countries rushed to produce and *import*, while also imposing *export restrictions* on protective masks, ventilators, and other products they risked running out of.

Trade agreements generally prohibit quantitative export restrictions. But they also provide for a series of carve-outs and exceptions that explicitly allow countries, especially on a temporary basis, to restrict exports in times of pandemic, subject to certain conditions. In emergency situations like pandemics, the force of these legal constraints may be limited. Transparency, notifications, and consultations may be the best one can hope for (WTO 2020). The main deterrent for countries considering export restrictions in times of pandemic is most likely self-interest, including the realisation that export restrictions may cut-off their own supply chains, and that other countries may retaliate. At the same time, the EU’s and WTO’s legal strictures play an important role “in the shadow” of crisis. They can inform other countries, stabilise the situation, and avoid escalation. Once the crisis subsides, lessons can be learned, and rules and procedures potentially revised.

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8 Global supply chains will not be the same in the post-COVID-19 world

Beata Javorcik

EBRD, University of Oxford and CEPR

For too long we have been taking globalisation for granted. Until recently, low tariffs and stable trading rules had been a key feature of our world. But the combination of trade-policy shocks and COVID-19 has created uncertainty about the future of free trade and sparked a rethinking of global value chains. Going forth, firms will need to diversify their supplier base and look at reshoring. At the same time, opportunities will arise for less popular investment destinations to enter or to intensify participation in global value chains.

For too long we have been taking globalisation for granted. Until recently, low tariffs and stable trading rules had been a key feature of our world. The WTO and preferential trade agreements eliminated uncertainty about trade policy, and the WTO's dispute settlement mechanism was a central pillar of the multilateral trading system. Contrary to popular fears, even the Global Crisis did not bring about a resurgence of protectionism and trade wars.

The stability of the trading rules encouraged producers to set up production networks spanning the globe, placing different stages of a manufacturing process in different countries, often far away from the consumers of the final products. The focus was on cost optimisation, ruthless cost-cutting, and just-in-time production. Holding sizeable inventories was perceived as wasteful. From time to time, global value chains were rattled by a shock, such as the tsunami and earthquake that hit Japan in March 2011 and whose impact forced Japanese corporations in the US to halt production as they were unable to obtain parts and components from the suppliers in Japan. However, these shocks were perceived as one-off events, temporary disturbances to an otherwise successful business model.

But the world has changed. The combination of trade-policy shocks and COVID-19 may have created a perfect storm. Each of the events by itself would not be enough to spark a rethinking of global value chains, but the two combined may just do so.

The trade war between the US and China and recent restrictions on exports of medical supplies and agricultural products have created uncertainty about the future of free trade. It is no longer inconceivable that globalisation will be rolled back with national security arguments used to justify protectionism. The 2018 tariffs on aluminium and steel introduced by the US based on national security exceptions to the WTO rules have already paved the way for future protectionism. Business can no longer take it for granted that current tariff commitments enshrined in the WTO rules will prevent sudden protectionist surges, particularly as the WTO dispute-settlement mechanism has stopped functioning.

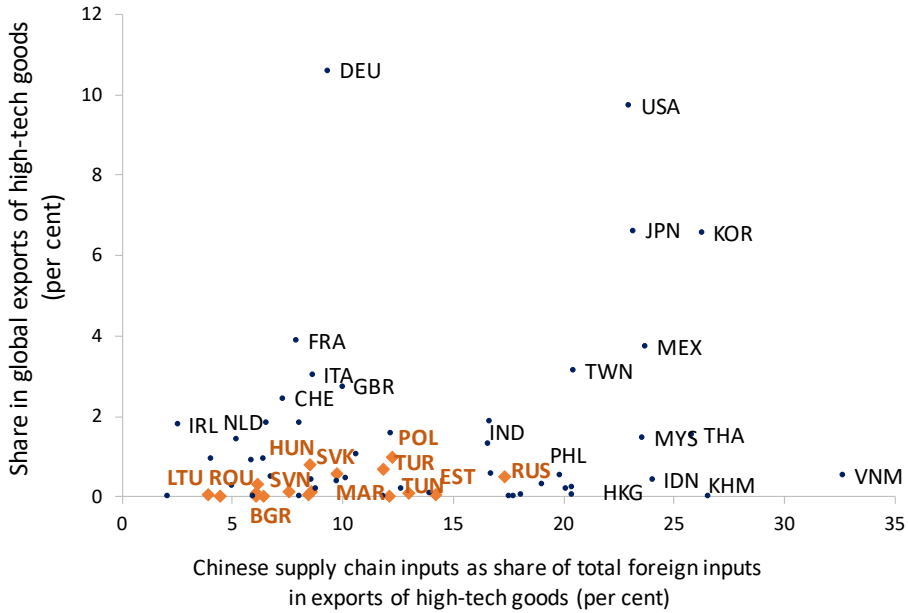
At the same time, COVID-19 has exposed vulnerabilities of the global supply chains to disruptions as well as what many may consider an excessive reliance on China for supplies.

The virus outbreak, which initially led to temporary closures of factories in the Chinese province of Hubei, caused disruptions in production on many continents. Hubei accounts for only 4.5% of Chinese GDP, but it is a high-tech manufacturing hub, home to local and foreign firms highly integrated into global supply chains in the automotive, electronic, and pharmaceutical industries.

As illustrated in Figure 1, firms in Asia and North America were particularly exposed to this disruption. About a quarter of intermediate inputs used in high-tech exports (defined as pharmaceuticals and chemical products, machinery, motor vehicles, and other transport equipment) in the US, Japan, Korea, and Mexico come from China. But even a car plant in Serbia had to stop production because its suppliers in China were unable to deliver parts.

Dependence on China can also be seen at the country level. Many countries are only now discovering how dependent they are on supplies coming from China (Figure 2). For example, almost three-quarters of blood thinners imported by Italy come from China. This is also true for 60% of antibiotic components imported by Japan and 40% imported by Germany, Italy, and France. This realisation has led to calls urging more self-reliance and reshoring.

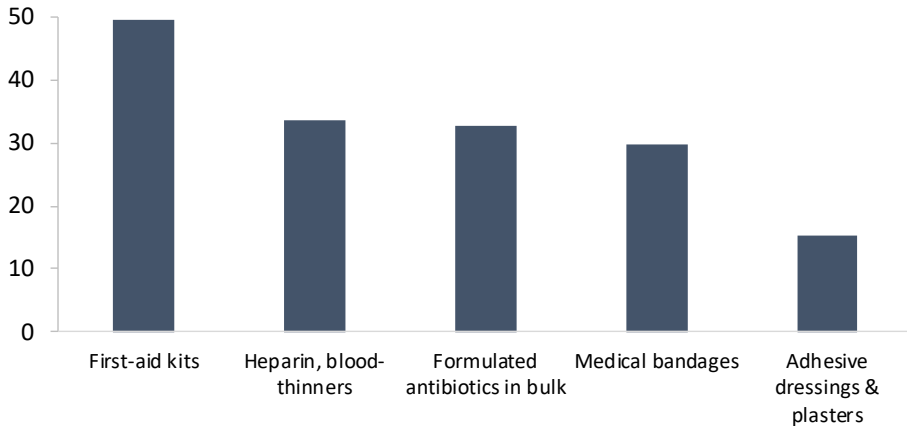
Figure 1 China's value-added as a share of total foreign value-added in exports, 2015 (%)



Notes: High-tech goods include pharmaceuticals and chemicals, computers, electronic and electrical equipment, machinery, motor vehicles, and other transport equipment.

Sources: EBRD (2020).

Figure 2 China's share in G7 total imports of selected medical supplies, 2018 (%)



Notes: Imports are for the following HS codes: 300650, 300190, 300320, 300590, 300570.

Sources: EBRD (2020).

The current events will force businesses to re-engineer their global value chains. These chains were designed to maximise efficiency and profits. And while just-in-time manufacturing may be the optimal way of producing complex products, the pandemic has exposed weaknesses inherent in a system that requires all of its parts to work like clockwork.

And more disruption may be under way. Scientists warn us that climate change will bring more extreme weather events and new outbreaks of infectious diseases. In the absence of decisive action on climate mitigation, shocks reverberating through the global economic system will become common.

Firms will be forced by their shareholders and rating agencies to think about the resilience of their global value chains. They will need to diversify their supplier base to protect against disruptions affecting a particular producer or a particular geographic location. There may be some reshoring, especially as automation has already reduced the importance of labour costs.

But this rethinking will also create opportunities for less popular investment destinations. Just to give an example, many countries in eastern Europe and eastern and southern Mediterranean have a comparative advantage in products exported by China (Figure 3), and eastern European countries are already exporting pharmaceutical products (Figure 4).

To seize this opportunity to enter or to intensify participation in global value chains, interested countries will need to step up their investment promotion efforts. They will need to inform potential investors about business opportunities on offer, showcase their commitment to maintaining a good business climate, and signal their welcoming attitude to foreign direct investment. The right strategy is not about fiscal incentives or other giveaways; it is about real commitment to fair treatment, stable and transparent rules, and investor-friendly attitude. Investment promotion is surprisingly cheap and effective (Harding and Javorcik 2011, 2013) but it will not work without the support of political leadership at the very top.

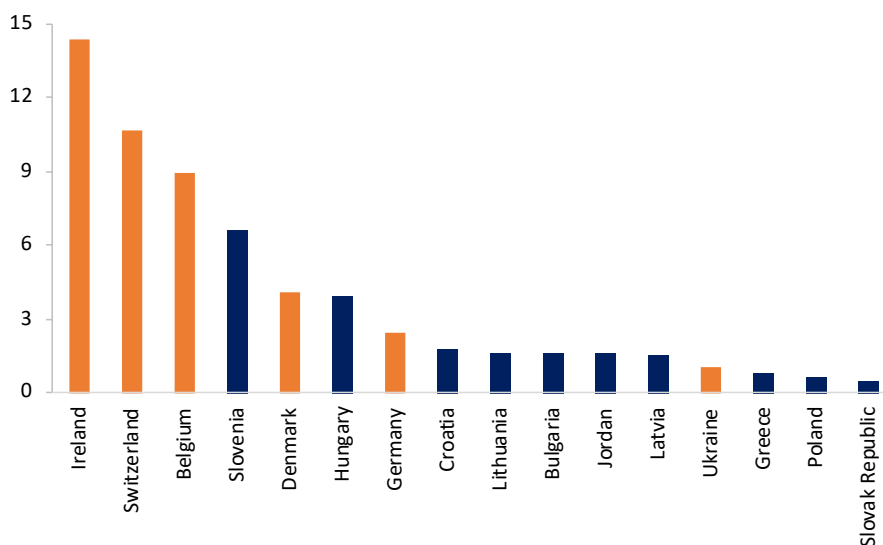
Figure 3 Which countries will take advantage of rethinking of global value chains?



Notes: The figures pertain to 4-digit HS codes in 2018. Bubble size indicates the absolute export volume in millions of US dollars. Restricted to lines with revealed comparative advantage ≥ 3 and export volume of more than \$500 million.

Source: EBRD (2020).

Figure 4 Pharmaceutical exports as a share of GDP, 2018 (%)



Notes: Exports are for all pharmaceutical 4-digit HS codes.

Sources: EBRD (2020).

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9 Resilience versus robustness in global value chains: Some policy implications

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OECD

Some governments assert that global value chains create economic vulnerabilities in times of a pandemic. This column examines recent experiences and the risk-management literature. It concludes that it is a mistake to equate self-sufficiency with robustness – putting all the eggs in one basket is still not a good idea. It is also a mistake to focus on production location when the imperative is to radically scale up production of vital medical supplies. Importantly, international supply chains will be needed to produce the billions of doses of COVID-19 vaccine we will soon need to manufacture and distribute.

With the COVID-19 crisis, a new debate has emerged with respect to global value chains (GVCs), examining whether excessive globalisation of production has not created new economic vulnerabilities. For example, Beata Javorcik recently wrote in the Financial Times that “businesses will be forced to rethink their global value chains” and that “while just-in-time manufacturing may be the optimal way of producing a highly complex item such as a car, the disadvantages of a system that requires all of its elements to work like clockwork have now been exposed”.² Even the World Economic Forum has recommended to “aggressively evaluate near-shore options to shorten supply chains and increase proximity to customers” as a response to COVID-19.³

1 The author is writing in a personal capacity. The views expressed are those of the author and do not necessarily reflect those of the OECD Secretariat or the member countries of the OECD.

2 “Coronavirus will change the way the world does business for good”, Financial Times, 8 April 2020.

3 “Coronavirus is disrupting global value chains. Here’s how companies can respond”, World Economic Forum, 27 February 2020.

While some lessons will have to be drawn, and both firms and consumers are likely to make different choices after the crisis, it may be premature to call for the end of GVCs or to conclude that shorter supply chains would be less vulnerable. This chapter reviews the relevant management and business literature and highlights evidence to show that the relationship between GVCs and resilience or robustness in the supply of inputs is more complicated than it looks. Even in the midst of the COVID-19 crisis, we see how efficient GVCs are in answering the most urgent needs of countries. Policies in the future should support business efforts to build more robust and resilient supply chains and not add to health and other dangers a policy risk built on misconceptions about GVCs.

While some lessons will be drawn, it may be premature to call for the end of GVCs or to conclude that shorter supply chains would be less vulnerable ... evidence shows that the relationship between GVCs and resilience or robustness in the supply of inputs is more complicated than it looks.

The vulnerability of supply chains during COVID-19

What are we exactly talking about when speaking of risk? On the supply side, firms face risks such as plant fires, natural disasters, financial risks, political instability, cyber-attacks, quality issues with suppliers and delivery failures. On the demand side, those risks include reputation of products, new competitors, policies restricting market access, macroeconomic crisis, and exchange rate volatility.

COVID-19 is first and foremost a global health crisis and has impacted the production of firms in GVCs in several ways.

- Production was stopped or disrupted because firms were directly affected by the presence of the virus at production sites.

Whether it was a decision coming from the government or from the firm itself, either there was a need to stop producing or to maintain production with new rules guaranteeing the safety of employees (with an impact on production such as delays or reduced output). This type of risk is related to the production site and applies to all firms in the same location. However, firms that source inputs from different locations confront an additional risk - even if the virus does not affect the production site, they nevertheless need inputs originating from a potentially affected area.

... such risk materialised in the fourth week of January 2020 when China decided to lock down the city of Wuhan ... Manufacturing companies in the rest of the world were quickly hit. Car manufacturer Hyundai halted all production in Korea on 7 February due to a shortage of components coming out of China.

This is a supply chain risk. For example, such risk materialised in the fourth week of January 2020 when China decided to lock down the city of Wuhan and start taking measures to prevent the spread of the virus to the rest of the country. Manufacturing companies in the rest of the world (unaware at this stage of the tsunami that was about to hit them) were quickly hit. Car manufacturer Hyundai halted all production in Korea on 7 February 2020 due to a shortage of components coming out of China. This type of contagion flowing through GVCs has also been observed with some natural disasters, such as the earthquake and tsunami in Japan in 2011, or the floods in Thailand that same year.

Within a matter of only a few weeks during February 2020, the virus spread rapidly to other regions, first to Europe and then to North America. Such was the speed of its spread that supply chains were hardly disrupted. It wasn't until 19 March that Ford stopped its production of cars in both North America and Europe. And there only four days separated Volkswagen closing its factories in Europe (17 March) and in the US (21 March).⁴ And whether domestic or not, suppliers of parts and components also closed their plants because they were affected by similar measures - not because their inputs could not be delivered; the contagion became more of a concussion (Baldwin 2020).

Transportation is also a source of risk. For those companies still producing during the lockdowns (and possibly for all companies once lockdowns are lifted and the virus is still present), the vulnerability of international supply chains will depend on whether international transportation networks are still operating and without significant increases in trade costs.

- While limiting trade in goods was not part of the health response (with the important exception of export bans and restrictions to trade for some key medical supplies and medicines), measures taken by governments limiting the movement of people or reinforcing border controls have, to some extent, led to the disruption in international trade.

4 "COVID-19 and plant closures: The automotive industry's response to the pandemic", Road Show, 17 April 2020.

Trade in services is directly impacted when it relies on the movement of consumers (e.g. tourism) or the movement of producers (e.g. many business services but also transport services).

Goods are moved across countries through services, and trade in goods is indirectly impacted by the measures affecting (those) services. This is especially the case for air freight, which has been relying on cargo holds in passenger planes and is favoured during the crisis to reduce the delivery time of key inputs and supplies. Quarantine measures for air or sea crews and additional sanitary controls related to COVID-19 (or measures to protect the people in charge of controls) are also delaying trade.

While domestic transport networks and logistics are also disrupted, there is an additional vulnerability for international freight and a risk specific to international production networks. However, it is difficult to assess the level of disruption to international trade currently. Most logistics firms report no strong impact on their operational capabilities with the exception of some air routes or specific destinations that may be more impacted by the virus.⁵ Volatility in freight rates has risen, but with falling demand, international trade costs are more likely to decrease than to increase.

All the above risks are on the supply side and were mainly the focus of most debates on the level of vulnerability in international supply chains. ... on the demand side, an even greater risk may be on the horizon – culminating in a profound worldwide economic crisis triggered by lockdowns and restrictions to movement of people ...

All the above risks are on the supply side and were mainly the focus of most debates on the level of vulnerability in international supply chains. However, on the demand side, an even greater risk may be on the horizon – culminating in a profound worldwide economic crisis triggered by lockdowns and restrictions to movement of people (which also restrict consumers ability to consume).

Contagion through GVCs will again become a concern if regions lift these restrictions sequentially and if the economic impact, although profound, is more or less severe across different areas. The mechanisms, which were observed during the 2008-2009 Global Financial Crisis via contagion through declining demand and amplification effects (Bems et al. 2009) will resurface. However, the COVID-19 crisis is of a different

⁵ See, for example ,the daily information provided by Bolloré Logistics (<https://www.bolloré-logistics.com/en/Pages/COVID-19.aspx>) or Kuehne+Nagel (https://www.kn-portal.com/updates_on_coronavirus). These firms report many challenges but indicate that they are operational in most regions.

nature, with the recession likely to stem from services and domestic activities rather be associated than trade finance issues, as in 2008-2009. The macroeconomic implications are also different (Guerrieri et al. 2020).

No current evidence that complex supply chains are more impacted by COVID-19

Numerous statements have been made about complex value chains being more impacted during the COVID-19 crisis, possibly due to additional risks and costs related to international trade.⁶ However, the available evidence – while limited at this stage – does not support such a view. The most impacted industries are those relying on the movement of people, such as hotels and restaurants, or passenger transport. And for countries under a lockdown, the bulk of the impact is through the fall in domestic demand and not international tourists.

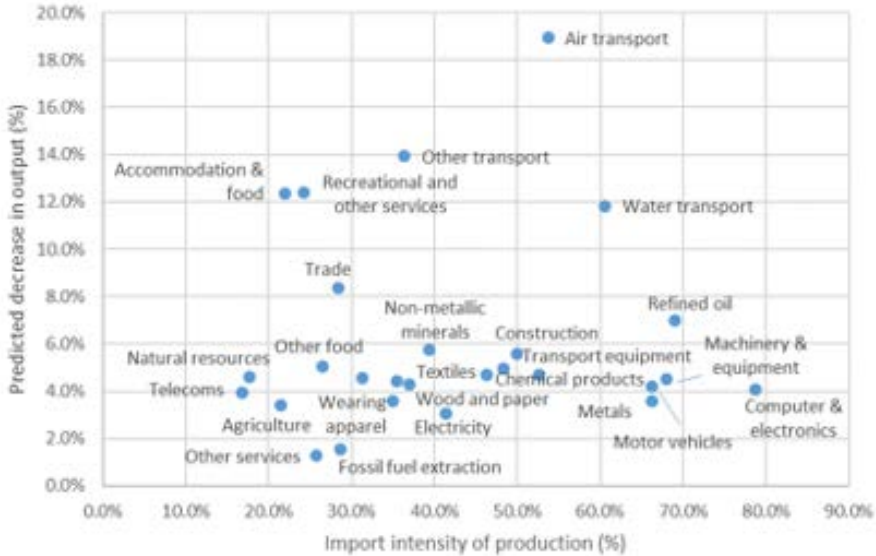
Numerous statements have been made about complex value chains being more impacted during the COVID-19 crisis, possibly due to additional risks and costs related to international trade. However, the available evidence – while limited at this stage – does not support such a view ... There is no correlation between the level of fragmentation of production and the severity of the economic impact of COVID-19.

The most impacted industries are those relying on the movement of people, such as hotels and restaurants, or passenger transport. And for countries under a lockdown, the bulk of the impact is through the fall in domestic demand and not international tourists.

Figure 1 is based on World Bank estimates of the economic impact of COVID-19 made on Thailand. (Maliszewska et al. 2020). This country is an interesting example due to its integration in manufacturing GVCs as well as tourism activities. For each sector, the decrease in output is the consequence of some level of under-utilisation of capital and labour, increase in international trade costs, and a decrease in any activities that involve proximity among people. As the pandemic is still ongoing, these figures are model predictions only and not observed data. They are plotted against the import intensity of production, which can be interpreted as an index of the level of fragmentation of production (Timmer et al. 2016). Data come from the OECD Trade in Value-Added (TiVA) database.

6 See, for example ,WTO trade forecasts released on 8 April 2020 at https://www.wto.org/english/news_e/pres20_e/pr855_e.htm.

Figure 1 Import intensity of production and predicted decrease in output, %, Thailand, by sector



Source: Maliszewska et al. (2020) and author's calculations with the OECD TiVA database.

There is no correlation between the level of fragmentation of production and the severity of the economic impact of COVID-19, not only because of services activities but also among manufacturing industries. For example, textiles and apparel is an industry that relies less on imports of inputs in Thailand when compared to the computer and electronics industry. But both have a similar predicted decrease in output. The computer and electronics industry has the highest level of fragmentation of production. Nevertheless, this industry is likely to be less impacted than retail and wholesale trade or accommodation and food services.

Resilience in GVCs is not the same as robustness

The risk management literature makes an important distinction between resilience and robustness in supply chains.

- *Resilience* can be defined as the ability to return to normal operations over an acceptable period of time, post-disruption.
- *Robustness* is the ability to maintain operations during a crisis (Brandon-Jones et al. 2014).

- Building robustness requires different strategies, when compared to building resilience, and when it comes to the distribution of key medical supplies (such as face masks, ventilators, medicines), it is robustness that matters, not resilience.

For example, the redundancy in suppliers or alternative locations of production is a strategy for *robustness*. Firms that have diversified suppliers and a production network across different countries can adjust their production when a disaster occurs in one place. After the earthquake in Japan in 2011, the experience led to manufacturers in the motor vehicles industry diversifying their suppliers (Matous and Todo 2017).

Fully localised production is not recommended for robustness. Samsung produces its latest generation of smartphones in Korea, with the main plant is near Daegu, which was the epicentre of COVID-19 in Korea at the end of February 2020. When the disease was discovered among its workers ... Samsung decided to switch part of its smartphone production to Vietnam where it operates other factories.

Fully localised production is not recommended for robustness as the disaster can happen within a domestic economy. This can be illustrated with the example of Samsung Electronics which generally produces its latest generation of smartphones within Korea, but older generations are manufactured abroad. The main plant is near the city of Daegu, the epicentre of COVID-19 in Korea at the end of February 2020. When the disease was discovered among its workers, factory immediately halted all activities for several days. Samsung then decided to switch part of its smartphone production to Vietnam where it operates other factories.⁷

Nevertheless, the geography of production is not the main element of strategies of firms interested in withstanding disruptions. Management literature insists more on information sharing as well as the visibility of supply chains. To anticipate disruptions, it is important to know exactly the level of inventories, as well as output all along the value chain.

- Large multinational enterprises (MNEs) develop ‘control towers’ and information systems that give accurate real-time information on production networks, and these tools allow for an efficient management of risks, independent of production and length of supply chains.

7 “Samsung shifts some smartphone production to Vietnam due to coronavirus”, *Financial Times*, 6 March 2020.

The complexity of the network is an important variable, but the approach of firms is not to simplify the network (since this network exists to improve performance) but rather to invest in tools for dealing with this complexity and to introduce some reactivity and flexibility in operations. Since important costs are associated with robustness, such as investing in tools that allow the monitoring of risks, some companies are more interested in resilience in their supply chains. They accept the risk that production can be stopped, but nevertheless invest in reducing the time needed for recovery.

Resilience can be built in different ways:

- Through products (with buffer stocks and standardised inputs easier to be replaced);
- Through the design of the value chain (identifying places and suppliers less subject to risk); and
- Through resilience monitoring (assessing the time to recover for each type of supplier).⁸

Some strategies are common to resilience and robustness, but the difference is that resilient firms tend to reduce their risks but will not invest significantly to anticipate and avoid all types of disruptions. Such firms prefer to go through the disruptions and minimise their impact.

Some strategies are common to resilience and robustness, but the difference is that resilient firms tend to reduce their risks but will not invest significantly to anticipate and avoid all types of disruptions. Such firms prefer to go through the disruptions and minimise their impact. This is why single sourcing and a long-term relationship with a single supplier is a strategy often observed for improving supply-chain resilience.

This is why single sourcing and a long-term relationship with a single supplier is a strategy often observed for improving supply-chain resilience. This strategy is not optimal in terms of robustness when this supplier is affected by a risk. However, instead of switching to other suppliers and possibly incurring sunk costs, it can lead to further investment from the supplier for facilitating recovery, as well as a shorter and less-costly disruption in the end.

There is empirical evidence that supplier diversification is associated with a slower recovery from supply disruptions, whereas the use of long-term relationships is associated with more rapid recovery (Jain et al. 2016).

⁸ See Sáenz and Revilla (2014) for an example with Cisco Systems.

Lessons from the tsunami in Japan and floods in Thailand in 2011: More offshoring

The experience with the 2011 tsunami in Japan and floods in Thailand is that ‘complex’ value chains are not always robust and they take the full hit of both the direct effect of the disaster and indirect contagion effects through their respective supply chains. But they are quite resilient. In Japan, most plants that were directly hit by the earthquake restarted all activity within three months (Inoue and Todo 2017). While ‘complex’ supply chains are a source of increased risks, they nevertheless provide a network of trading partners and economic gains that can facilitate recovery. Looking at firm-level data, Todo et al. (2015) find that firms with extensive networks of suppliers had a quicker recovery and they conclude that the positive effects of supply chains typically exceed the negative effects. Zhu et al. (2017) highlight that firms in the area affected by the earthquake responded by increasing offshoring activities.

The experience with the 2011 tsunami in Japan and floods in Thailand is that ‘complex’ value chains are not always robust and they take the full hit of both the direct effect of the disaster and indirect contagion effects through their respective supply chains. But they are quite resilient. ... While many observers were expecting more diversity in the location of production after the 2011 experience, Western Digital not only continued to produce in Thailand but also decided to close a factory in Malaysia in 2017 to concentrate even more its production in Thailand.

The Chao Phraya river floods in Thailand the same year were a second major natural disaster, with a deep economic impact on the hard disk drive (HDD) industry for which Thailand was concentrating 43% of the production. The leading firm in the HDD industry, Western Digital, had its factories inundated while its rival, Seagate, had factories in the same place in Thailand but located on elevated grounds (Haraguchi and Lall 2015). Some of Toshiba’s factories were also inundated, but the company could divert production to the Philippines. However, it took only six months for Western Digital to retake the lead in the market and 2012 was actually a record high for the production of hard disk drives. While many observers were expecting more diversity in the location of production after the 2011 experience, it happens that Western Digital not only continued to produce in Thailand but also decided to close a factory in Malaysia in 2017 to concentrate even more its production in Thailand.⁹

9 “Western Digital formats hard disk drive factory as demand spins down”, The Register, 17 July 2018.

In the midst of the COVID-19 outbreak, countries still rely on GVCs to address shortages in the supply of essential medical goods

COVID-19 is a global crisis very different from the localised natural disasters that took place with the earthquake in Japan or the floods in Thailand in 2011. It is too soon to talk about resilience as we are still in the middle of the crisis. But it seems that GVCs are rather robust during the pandemic and are even used to address the shortages observed in the supply of essential medical goods.

In Korea, a new industry has emerged that exports COVID-19 test kits to more than 100 countries. These tests allow rapid identification of infected people and play a key role in limiting the spread of the coronavirus. There are now about 25 Korean companies that have received the authorisation to export these kits (and soon 40 are expected).¹⁰ Seegene, one of the biggest of these companies (with 400 employees):

- Started to develop a test for detecting the coronavirus on 16 January 2020 using artificial intelligence and big data systems.
- On 5 February 2020, it was ready with an initial test that was approved for use in Korea on 23 February 2020.¹¹
- One month later, the company was producing 1 million test kits per week and by the beginning of April 2020, production was increased to 3 million test kits per week, with 90% available for export.

Providing the latest generation of COVID-19 test kits to governments all around the world in a few weeks is a feat that would not have been possible without leveraging GVCs. It happened in Korea because it's the G20 economy with the most integrated GVCs. The country was already producing in-vitro diagnostics (IVD) products before the crisis, but its main exports of medical goods were ultrasonic imaging devices and dental implants. Shifting an industry towards new products in such a short time requires international networks, skilled supply chain managers, reactivity, and agility. This type of experience simply does not come from local production and activities shielded from competition.¹²

10 "Korean-made COVID-19 testing kits demanded by over 100 countries", *Maeil Business News Korea*, 9 April 2020.

11 "How this South Korean company created coronavirus test kits in three weeks", CNN, 13 March 2020.

12 It would be interesting to further study how the impressive scale-up of production in China, in particular for face masks, was enabled by the experience of the country in GVCs as opposed to the leading role of the government and state-owned enterprises in the Chinese economy.

Providing the latest generation of COVID-19 test kits to governments all around the world in a few weeks is a feat that would not have been possible without leveraging GVCs. It happened in Korea because it's the G20 economy with the most integrated GVCs.

Unlike face masks or ventilators where require heavy investments to be produced and where some inputs are not widely available, the production of test kits is accessible to most countries. The US or Europe have a large production capacity in In-Vitro Diagnostics (IVD). Indeed, lead firms there have developed COVID-19 tests and supplied their local markets. The main inputs are chemicals and reagents that are not difficult to manufacture (Korea is relying mostly on domestic supply). Since mass production of these tests needed to be organised in the last three months, one can wonder why the model of local production and re-shoring advocated by some was not followed by others, and why we see Korea exporting millions of test kits to Europe and the US.

Whether we consider face masks (where countries that can produce them such as France prefer to import billions from China rather than ramping up their national production) or test kits, it seems that GVCs are the preferred way to efficiently supply key COVID-19 goods during the crisis, despite their supposed vulnerability.

Whether we consider face masks (where countries that can produce them such as France prefer to import billions from China rather than ramping up their national production) or test kits, it seems that GVCs are the preferred way to efficiently supply key COVID-19 goods during the crisis, despite their supposed vulnerability. This is a matter for further scrutiny post-crisis, and indicates that there are other factors at play – such as innovation, flexibility, reactivity, access to distribution networks, and so on – that accord an advantage to GVCs for the efficient supply of essential goods.

Concluding remarks

One motivation for introducing the concept of global value chains in policymaking was the need to understand business reality and how companies actually produce and trade goods and services. While it is acceptable to question GVCs in light of the COVID-19 crisis, business realities must guide policy deliberations.

GVCs have rendered important productivity gains and the main concern for post-COVID-19 scenarios based on the shortening of GVCs and re-shoring of activities is how to deal with a shock on productivity, while finding ways to recover from one of the biggest economic crises in history. The risk management literature has been

looking at the resilience and robustness of supply chains for more than 20 years and does not propose that domestic production and short supply chains are the best way of addressing risks. However, it offers some guidance on different strategies, and in particular, highlights that some firms may look for robustness (e.g. medical supplies and medicines) while other may focus on resilience with different types of organisation of supply chains at the end.

The risk management literature has been looking at the resilience and robustness of supply chains for more than 20 years. It does not conclude that domestic production or shorter supply chains are the best way of addressing risks ... it offers guidance on different strategies for robustness and resilience.

The experience with previous crisis and disasters is that GVCs are rather resilient. Some sectors in the economy will be much more impacted by COVID-19 than the manufacturing industries operating in GVCs. For example, addressing the crisis in the air transport sector or tourism industry should be a higher priority than re-shoring the computer and electronics industry.

When it comes to distribution of essential goods such as medical supplies and medicines (possibly the reason for the current focus on domestic production and re-shoring), two pitfalls need to be avoided in future trade and investment policy discussions.

- The first mistake is to equate self-sufficiency or domestic production with robustness.

If the objective is to build more robust supply chains (without promoting a new mercantilist agenda), a combination of international trade and local supply is what works best. That is what Samsung found with its smart phones. And the process of deciding which sourcing strategies are the most adaptable should be driven by firms, since the answer will be different across sectors and even across companies. Policies that introduce new barriers to trade and investment to push firms towards domestic production or re-shoring would raise costs and lead to sourcing patterns driven by policy risks and not by the optimal organisation of production required for addressing other risks.

- The second mistake is to focus on the location of production; the overriding imperative during a crisis is to maintain and scale up production.

Some governments have been frustrated by the fact that in the middle of the COVID-19 crisis, their countries' factories were not producing masks or ventilators. But countries with at least some production capacity were often faced with similar shortages in supply, and most of them ended up relying on trade rather than increasing their own production.

When demand is suddenly multiplied by a factor of ten or more, governments and companies are compelled to switch to a different production model of production. In this light, it is unrealistic to think that a country can maintain and sustain an industry with the production capacity required at the time of the crisis. Anticipation, preparation and international co-operation can achieve better results, when compared to isolated and silo-based strategies.

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In the near future, the mass production of a COVID-19 vaccine will require formidable international effort and cooperation. Scaling up production to allow a maximum of people to benefit from the vaccine in the shortest time possible can be achieved only through international production networks. Putting health considerations first requires having a fair assessment of what works and a solid reliance on production models that have delivered in the past. This is not the time for experimenting with untested new trade and industrial policies.

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10 Will the post-COVID world be less open to foreign direct investment?

Przemyslaw Kowalski¹

OECD

Even before COVID-19, inward foreign direct investment policies were being tightened due to concerns about the impact of foreign acquisitions on technology, competition, level playing field, and national security. This chapter reviews these trends and the measures adopted since the COVID-19 crisis began. The findings suggest that the pandemic is likely to accelerate the protectionist trends that were already reshaping the foreign investment policy landscape.

The economic consequences of the COVID-19 crisis may be worse than those of the 2008-09 financial and economic crisis, or even those of the Great Depression. While mercantilism is not its root cause, several traits of the current crisis suggest that international commerce may be hit particularly hard. With world merchandise trade currently predicted to fall by between 13 and 31% in 2020² and Foreign Direct Investment (FDI) expected to fall by between 30 and 40%,³ the impact on international commerce looks to be very significant, and even more negative scenarios cannot be excluded. The severity of trade, FDI, and the associated welfare effects will not only depend on how quickly the health situation is improved but also on the policy choices governments make.⁴

With world merchandise trade currently predicted to fall by between 13 and 31% in 2020 and Foreign Direct Investment (FDI) expected to fall by between 30 and 40% , the impact on international commerce is expected to be very significant, and even more negative scenarios cannot be excluded.

1 The views expressed in this chapter are solely those of the author and do not implicate the OECD or its Member States.

2 See, for example, the WTO projection from 8 April 2020: https://www.wto.org/english/news_c/pres20_c/pr855_c.htm

3 See the statement by UNCTAD from 30 March 2020: <https://unctad.org/cn/pages/SGStatementDetails.aspx?OriginalVersionID=250>

4 See, for example, https://www.wto.org/english/news_c/pres20_c/pr855_c.htm

An unprecedented test for globalisation

History teaches us that in times of economic crises, governments are more likely to adopt ad-hoc, inward looking policies, which often have sub-optimal economic and social effects and which take time to withdraw when a crisis is over.⁵ The severity and nature of the current crisis, and the unilateral character of some of the policy responses so far, suggest the COVID-19 crisis will be similar, if not worse. There is also a specific lesson from past pandemics which show a pattern of fear of an invisible lethal threat fuelling xenophobia and discrimination against foreigners (e.g. Livingstone Smith 2020). The media has already reported on several social incidences of such reactions during the COVID-19 crisis. Unfortunately, such sentiments might also influence economic policy choices.

FDI has been a key building block of the global economy in recent times and will be a critical element of the post-COVID economic reconstruction. Whether in a scenario of rebuilding the existing business architecture, or in scenarios involving significant restructuring or 'nearshoring' of supply chains to make them more resilient, efficient, or environment friendly, FDI will play a critical role. It will not only be an additional source of private investment – which, as we learned in the aftermath of the 2008-09 crisis, will be much needed – but also a vehicle of innovation, technology and optimisation, and risk management knowledge. FDI-related policy responses to the COVID-19 crisis will thus be an important area to monitor in the current context.

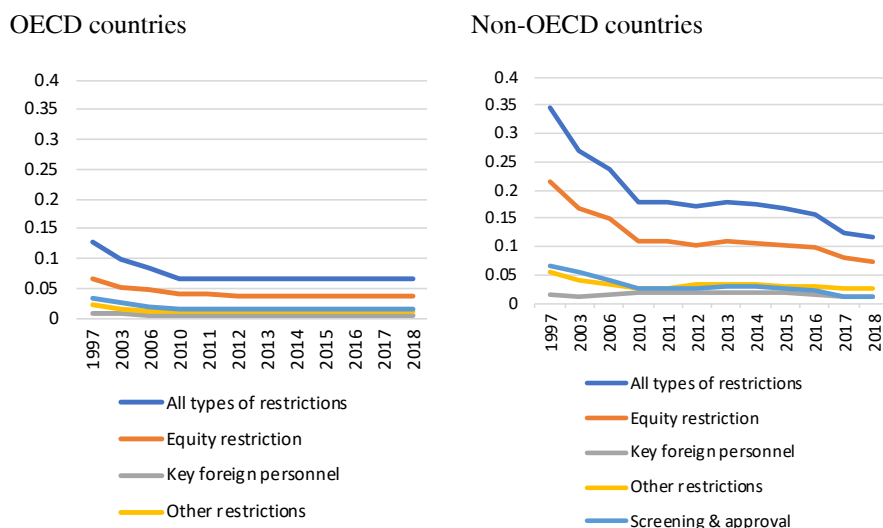
Trends in FDI restrictions prior to COVID-19

Long term trends in the regulation of inward FDI – as captured, for example, by the OECD FDI Regulatory Restrictiveness Index – indicate continued opening since the mid-1990s (Figure 1) and so far show little support for the claim of an alleged raise in investment protectionism (see also Thomsen and Mistura 2017). Evidence presented by UNCTAD (2020), on the other hand, shows that while the share of investment-liberalising measures introduced in recent years is still much higher than the share of investment-restricting ones overall, the latter has been on the rise since the early 2000s (Figure 2).

5 The Global Trade Alert project estimates, for example, that on average the G20 members have been introducing about 196 trade-distorting measures per year since the outbreak of the 2008-09 crisis, as contrasted with approximately 58 trade-facilitating measures in the same period. See https://www.globaltradealert.org/global_dynamics/day-to_0420/flow_all.

The OECD data show that FDI restrictions on equity participation, screening and approval, key foreign personnel and others have been reduced since the mid-1990s. This was particularly the case in non-OECD countries, although this country grouping still maintains more restrictive FDI policies than OECD countries on average (Figure 1).

Figure 1 OECD FDI Regulatory Restrictiveness Index, by restriction type and year

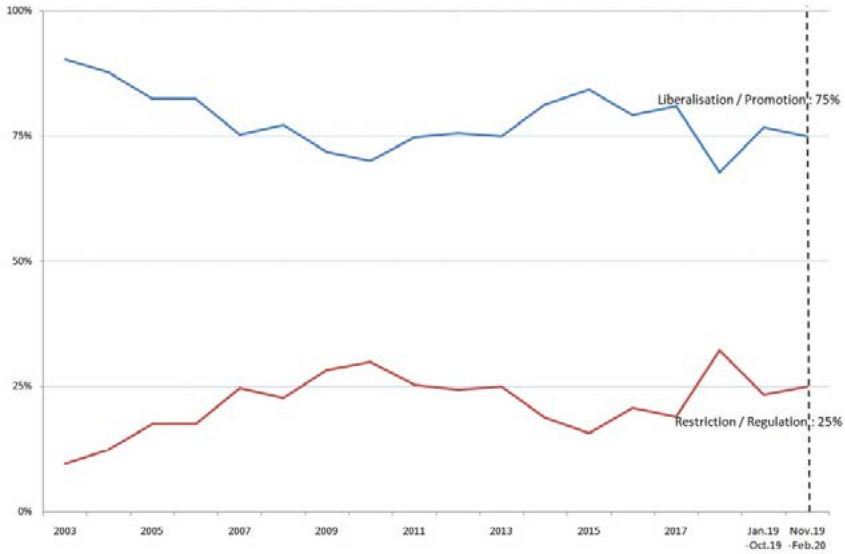


Note: values are, for each type of FDI restriction, averages across the countries covered in the OECD FDI Regulatory Restrictiveness Index in that particular year. Country coverage varies from year to year: from 12 in 1997 to 36 countries in 2018 for the non-OECD sub sample, and from 34 in 1997 to 36 countries in 2018 for the OECD sub-sample.

Source: author's calculations based on the OECD FDI Regulatory Restrictiveness Index, available at: <https://www.oecd.org/investment/fdiindex.htm>

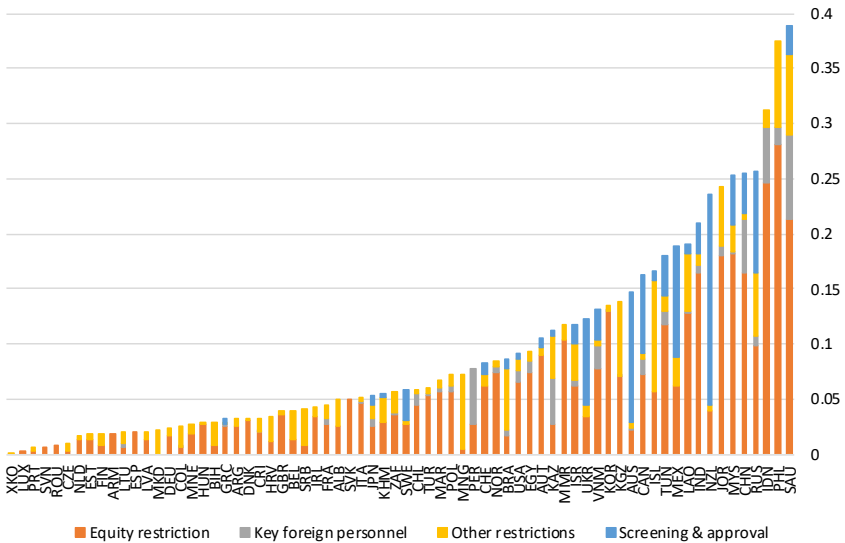
Screening and approval measures, which are the kind of restrictions introduced or re-introduced by some countries as a part of their response to the COVID-19 crisis, are the second most restrictive category of FDI restrictions in the OECD countries, while other operational restrictions seem more important in non-OECD countries. In countries that currently have some of the most restrictive inward FDI regimes, such as Russia, China, New Zealand, and Australia, screening and approval measures account for a significant part of overall FDI restrictiveness (Figure 3).

Figure 2 UNCTAD: Changes in national investment policies, 2003 – February 2020



Source: UNCTAD (2020).

Figure 3 OECD FDI Regulatory Restrictiveness Index, by restriction type and country, 2018



Note: countries are marked by three-digit ISO codes.

Source: author's calculations based on the OECD FDI Regulatory Restrictiveness Index data, available at: <https://www.oecd.org/investment/fdiindex.htm>

Interestingly, while the series currently stops in 2018, it does not indicate a significant increase in the screening and approval measures that might be expected from the more anecdotal discussion of FDI-related policy interventions in the run-up to, and during, the COVID-19 crisis. That discussion follows in this section and the next.

The question is whether the methodology at hand is capable of picking up changes that do not necessarily involve the introduction of new mechanisms but a tightening of existing ones. In their remarks on evidence for FDI protectionism stemming out of the OECD data, Thomsen and Mistura (2017) point out that while the data shows little evidence on reversing of investment policy reforms, *“the gradual re-imposition of screening mechanisms, often tied to national security considerations, could provide the means for backtracking in the future if the notion of national security is later stretched to encompass strategic sectors or firms. Governments are increasingly concerned about the potentially non-commercial objectives of investments by state-owned enterprises or sovereign wealth funds and about the lack of potential reciprocity in terms of the market for corporate control in the country of the investor.”*

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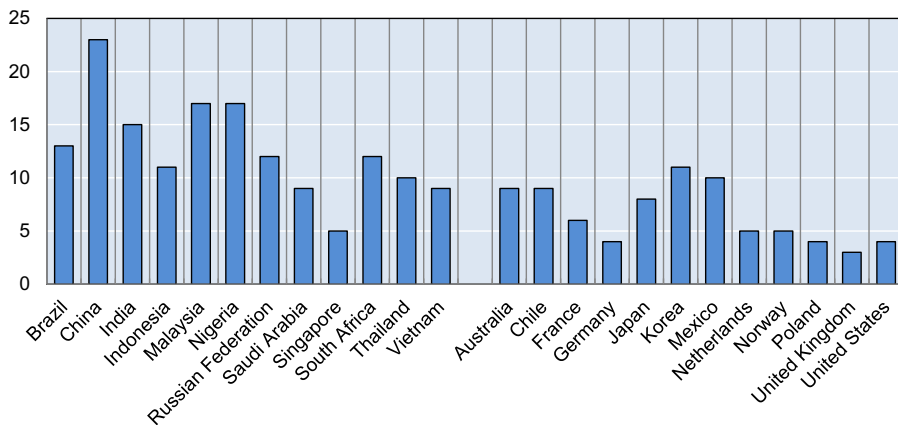
But why might countries want to ‘restrict’ FDI in the first place? First and foremost, very few FDI ‘restrictions’ are really just that. As is the case with the so-called non-tariff measures (NTMs), in the case of goods trade, many FDI measures are introduced to pursue other public policy objectives.

Technology transfer objectives

Maximisation of gains from FDI, particularly of FDI-related international technology transfer, is one such policy objective that has been gaining currency in recent years. FDI and multinational enterprises (MNEs) are thought to have superior technology and know-how, which allows them to undertake risky but profitable international investments. But technology transfer and diffusion are subject to significant market imperfections and externalities, and these are thought to be important enough to justify public intervention. The rapid changes in the nature of technology and the means of its

storage and transfer, the amplified stakes associated with new opportunities to apply and transfer technology in GVCs, and more insistent tech-transfer policy stances of countries such as China, have all contributed to a renewed interest in these measures. It is in this context that some countries have put in place various FDI-related requirements and conditions to maximise tech-transfer while other countries have suspiciously observed these trends.

Figure 4 FDI-related international technology transfer measures by country, 2017



Note: This figure graphically summarises the regulatory information on FDI-related international technology transfer measures classified and documented in Kowalski et al. (2017). These include: FDI promotion measures; FDI restrictions and FDI screening; performance requirements; and investment incentives. When interpreting the figure, it should be remembered that the different measures can have very different impacts on technology transfer, the quality of such transfer, and competition. Some measures may be more important than others. Therefore, the number of measures that a country has adopted is only a rough measure of that country's commitment to attracting foreign technology and facilitating its spillover.

Recent empirical work on FDI-related tech-transfer measures shows that in 2017, many developed and developing countries maintained measures to encourage tech-transfer, although these were more frequent in developing countries (Figure 4; see also Kowalski et al. 2017). Most countries had investment promotion policies, which nevertheless often targeted investments in advanced technology sectors. FDI restrictions (e.g. on extent of foreign equity) and FDI screening were much rarer and, when present, were motivated by competition law and national security concerns. Nevertheless, some of the screening measures could have been motivated by strategic technological interests.⁶ A small number of countries also had joint-venture requirements in technology-intensive sectors and these sometimes mandated transfer of technology to local partners. The so-called performance requirements (such as local content requirements) were still

⁶ As might be expected from obligations, for example, to reveal IP-sensitive information during screening.

common in developing countries, but were rare in developed countries, and investment incentives were used more equally across the two country groupings. In this exercise, China recorded the largest number of FDI-related tech-transfer measures of all countries, including in the category of FDI restrictions and FDI screening.⁷ Technologically advanced OECD countries such as the US and Germany maintained relatively few measures, and these concerned mainly FDI promotion and FDI incentives.

National security and competition concerns

The second category of public policy objectives that seem to motivate FDI requirements and restrictions encompasses two sets of concerns: first, national security and public order concerns; and second, competition and “level playing field” concerns. While they differ in principle, the two sets are similar in that they focus less on maximising the benefits of FDI (although these are certainly an important broad context) than on potential threats. They are also similar in that both often evoke issues of state ownership and other strategic policy considerations.

The need to manage national security and public order concerns related to inward FDI has long been recognised in international instruments and agreements. Where policies addressing such concerns existed, they were concentrated until the mid-2000s on the military hardware and traditional defence sectors (OECD 2018). In the late 2000s, these concerns were evoked in the context of a surge in foreign investment of sovereign wealth funds (SWFs) and, later, state-owned and state-controlled entities (SOEs). It was in this context that OECD developed “Guidelines for recipient country investment policies related to National Security in 2009”.⁸ More recently, some countries have been updating their instruments in this area to tackle national security threats related to digitalisation and sensitive technologies (OECD 2018, 2019).

The OECD (2018) has estimated that the share of countries⁹ with dedicated policies related to national security increased from around 10% in the early 2000s to 30% in 2017; based on analysis of announced or planned policies, this share was predicted to increase to above 40% in 2019. The share of global FDI estimated to be subject to cross-sectoral screening procedures has likewise grown from around 30% in the early 1990s to around 70% in the late 2010s (OECD 2019). Among the countries that introduced policies to manage foreign investment-related national security risks, there

7 In the category of screening, China scored positively on five out of six categories of measures, including on having a requirement to submit IPR-related information to regulators to gain FDI approval.

8 Available at <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0372>

9 These were the 58 countries that participated in OECD-hosted dialogue on international investment policies (OECD 2018).

was a large heterogeneity as to scope, approaches, and resources devoted, and this heterogeneity did not seem related to countries' structural characteristics (OECD 2018). However, four common trends in these policies have been identified: (1) the scope of national security-related policies was being extended beyond 'acquisition of assets' to, for example, changing business orientation of previously acquired firms; (2) there was a greater focus on the nature of acquired assets rather than solely on acquisitions by 'foreigners'; (3) the ownership thresholds that trigger screenings were being lowered, below the notion of 'controlling stakes'; and (4) application of national security was being extended to include outward investments as well (OECD 2018, 2019).

The OECD (2019) further classified national security-related measures into two policies. 'First generation' policies involved relatively rudimentary mechanical caps on ownership, which came with little guidance on how to apply them and are rarely activated. 'Second generation' policies cover a broader range of sectors, use more abstract concepts such as 'national security', and tend to be much more elaborate, sometimes involving hundreds of pages of legislation (OECD 2019). An initial quantitative stocktaking showed that while the first generation policies were still being introduced, the second generation policies had become more popular since the mid-2000s.

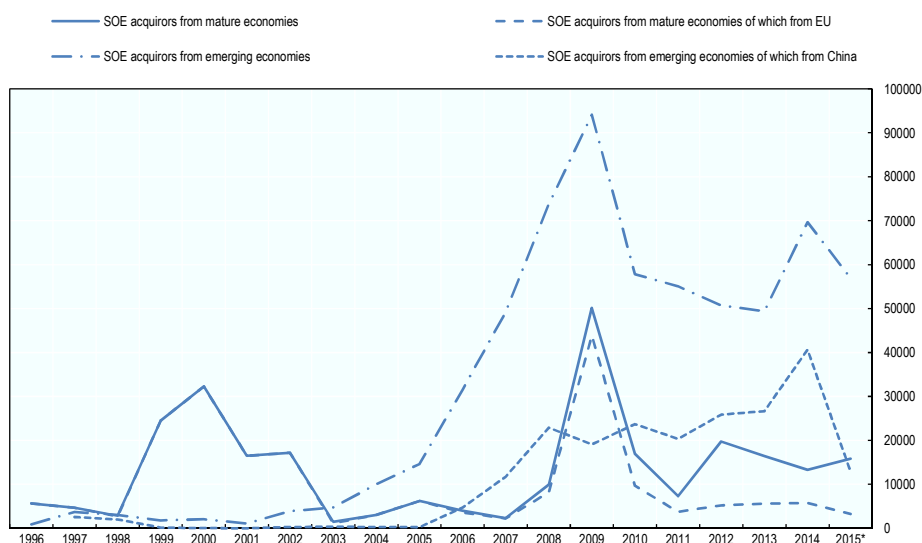
Maintenance of healthy competition and a level playing field are the other concerns often evoked in the context of FDI. These are legitimate concerns, as FDI is often conducted by large firms, which are sometimes also owned or controlled by states (SOEs) and might be bringing economic distortions to host economies instead of the expected economic benefits. State ownership of foreign investors, as well as other links they may have with foreign governments, have become an important concern shaping trade and inward FDI policies in recent years.

The world's largest enterprises owned, controlled, or otherwise linked to the state (commonly referred to in the literature as 'SOEs') originate from the large and fast growing emerging economies that also have the largest share of SOEs among their enterprises, most notably China, India, and Russia (Kowalski et al. 2013, OECD 2017).¹⁰ Mounting evidence shows that, since the late 2000s, SOEs have been competing increasingly with private firms, including through FDI; in some cases, they have benefited from government-granted advantages unavailable to their private peers or pursued government objectives (e.g. OECD 2016, Kowalski 2019).

¹⁰ But some advanced economies, such as Norway and France, also have important state-owned enterprise sectors.

A notable example of an attention-attracting activity of SOEs was the surge in the share of international mergers and acquisitions accounted for by SOEs before and after 2008-2009. Emerging economies (China in particular) played an important role, but SOEs from mature economies (including the EU) have also been acquiring internationally more than prior to the crisis (Figure 5). This and the surge in presence of SOEs engaged in cross-border trade have led to concerns about ‘state capitalism’ and the erosion of a ‘level playing field’, which have been raised in media and policy statements since the start of the last decade. Among other issues, this has led to an increase in new trade and FDI policy initiatives focused specifically on disciplining SOEs.

Figure 5 SOEs as acquirers in international mergers and acquisitions post 2008-09 crisis



Source: OECD (2016) based on Deloitt IM&A data.

National FDI laws and their application is an area that arguably has seen the most development in terms of new SOE-focused disciplines, possibly because in contrast to the WTO in the case of international trade in goods or services, the area of international investment has no multilateral rules that involve obligations on SOE behaviour as investors (or behaviour of investors generally) while simultaneously providing them with non-discriminatory market access (Kowalski and Rabaioli 2017). This trend is likely to continue amidst growing concerns about the role of states and FDI in international technology transfer in the post-COVID-19 era.

Indeed, already in the late 2000s and early 2010s, FDI by SOEs was refused in a number of prominent cases¹¹ (e.g. Kowalski et al. 2013). Countries such as Australia, Canada, the Russian Federation, and Vietnam also introduced new inward FDI policies specific to SOEs (Kowalski and Perepechay 2015). These largely drew on existing ‘national security’ or ‘net benefit’ tests and stricter approval requirements for investment in ‘strategic sectors’, and tightened them for FDI conducted by SOEs.¹²

More recently, the new EU Foreign Investment Screening Regulation, which has been in force since April 2019 (EU 2019, EU FDI Screening Regulation) set certain common requirements and co-operation arrangements for the EU Member States for screening mechanisms and for determining whether investments pose a threat to national security or public order. It stipulated that in determining whether a foreign direct investment is likely to affect security or public order, Member States and the Commission may take into account, *“in particular”, “whether the foreign investor is directly or indirectly controlled by the government, including state bodies or armed forces, of a third country, including through ownership structure or significant funding”*.

Since its first presentation by then European Commission President Jean Claude Juncker during the 2017 State of the Union, the framework has been portrayed as the EU’s response to imperfections in the world’s commercial relations (“we are not naïve free traders”) and in particular as a response to the need to defend EU’s strategic interest (European Commission 2017, 2019). This is another recent example of the growing importance that countries have been attaching to strategic interests and state influence in the context of FDI.

FDI measures introduced already during the COVID-19 crisis

At the time of writing this chapter, a number of new FDI-related policy measures have already been adopted by national governments as part of their response to the COVID-19 crisis. Some were announced only a few days ago, suggesting that the situation is changing dynamically. The new measures mainly fall in the category of new approval and screening procedures. They are being justified with concerns about

11 In 2009, concerns over national security were cited as a key reason for the collapse of an acquisition deal between the Anglo-Australian mining company Rio Tinto—an owner of iron-ore and copper mines in Australia—and Chinese state-owned Aluminium Corp. of China (Chinalco).

12 In 2012, for example, in the light of a growing interest of foreign SOEs in Canada’s natural resources, the Canadian government tightened criteria against which it reviews investment by foreign SOEs by expanding the definition of government influence and tightening the threshold for a SOEs net benefit review under the Investment Canada Act. In Australia, in the case of a private foreign investor, prior approval was required (until the COVID-19 crisis) only beyond a certain monetary threshold of investment (see the next section); already in the mid 2010s, any investment by foreign governments or their related entities required a prior approval irrespective of the value of investment.

the potential strategic, opportunistic, or unruly foreign takeovers of assets at times of undervalued asset prices in sectors related directly to the management of the health crisis (health services, biotech companies), or with national security and public interest concerns related to the acquisition of assets in a broader range of ‘strategic’ sectors. Some of the policies that were identified at the time of writing are summarised below.

Policy changes in the EU

In its 19 March 2020 Communication on “Coordinated economic responses to the COVID-19 outbreak” to key other EU institutions, the European Commission outlined its assessment of the emergency and described its immediate response to mitigate the associated economic impact (European Commission 2020a). The impact on financial markets and specifically on equity and other high-risk assets was listed among the most important economic impacts of the COVID-19 pandemic. While many of the policy tools identified in the document, such as financial assistance to distressed EU firms or state aid measures, are relevant for EU’s inward and outward FDI in a more general sense, the Communication specifically called on Member States to “be vigilant and use all tools available at Union and national level to avoid that the current crisis leads to a loss of critical assets and technology”. It further specified that this included tools like national security screening and announced that the Commission will guide Member States ahead of the application of the EU’s Foreign Investment Screening Regulation (FDI Screening Regulation,¹³ EU 2019, see also the preceding section).

Such direction was provided in the European Commission’s “Guidance to the EU Member States concerning FDI, free movement of capital from third countries, and the protection of Europe’s strategic assets” of 25 March 2020 (European Commission 2020b). The guidance recalls the pervasive effects the COVID-19 emergency is having on the EU economy and ‘singles out’ the issue of FDI screening as part of the overall response to the COVID-19 crisis. The document states that the COVID-19 crisis poses an increased risk to strategic EU industries, “*in particular but by no means limited to healthcare-related industries.*” This risk is further described as “*increased risk of attempts to acquire (for example for the productions of medical or protective equipment) or related industries such as research establishments (for instance developing vaccines) via foreign direct investment*”. In the Annex, the Commission also “*urges Member States to be particularly vigilant to avoid that the current health crisis does not result in a sell-off of Europe’s business and industrial actors, including SMEs.*”

13 Originally, the EU FDI screening Regulation was to be applied as of 11 October 2020.

Overall, the guidance encourages the active use of the new FDI Screening Regulation specifically in the context of the COVID-19 crisis and calls for its application before the originally envisaged application date. While the 'Communication' status of the guidance implies that it provides direction as to the interpretation of the FDI Screening Regulation but does not confer any rights or obligations on those to whom they are addressed, some interpretations in the guidance seem to add substantively to the content of the original Regulation.¹⁴ While it is not clear whether the guidance will effectively encourage greater use of the new investment screening framework beyond what would have been used without it, it certainly sends an important signal to potential investors that they may face an even closer scrutiny in the COVID-19 era.

The guidance also elaborates on further specific issues that should be taken into account when undertaking such screening. In particular, it recites the FDI Screening Regulation's broad provisions, which can be used to interpret the criterion of security or public order in the context of a public health emergency, as well as the Regulation's direct reference to risks to critical health infrastructures and supply of critical inputs. It also reiterates the Commission's right to issue its opinion as regards a specific investment in any Member State and the right of other Member States to require information and provide comments. As per the FDI Screening Regulation, in cases where an investment does not undergo a national screening process, the Member States and the Commission can provide comments and opinions within 15 months after the foreign investment has been completed.^{15,16} The guidance also discusses the types of measures that can be taken to restrict non-FDI capital movements when justified.¹⁷

14 For example, Member States currently without a screening mechanism are to set up a fully-fledged screening mechanism and in the meantime to "use all other available options to address cases where the acquisition or control of a particular business, infrastructure or technology would create a risk to security or public order in the EU, including a risk to critical health infrastructures and supply of critical inputs." The FDI Screening Regulation states explicitly that "The decision on whether to set up a screening mechanism or to screen a particular foreign direct investment remains the sole responsibility of the Member State concerned" (European Union 2019). As of 15 April 2020, the screening mechanisms are in place in 14 EU Member States (Denmark, Germany, Spain, France, Italy, Latvia, Lithuania, Hungary, the Netherlands, Austria, Poland, Portugal, Romania, and Finland) and the UK (European Commission 2020c).

15 These comments and opinions should be given due consideration and can lead to the adoption of measures by the Member State where the investment has taken place, including mitigating measures.

16 The guidance reaffirms that foreign acquisitions affecting projects or programmes funded by the EU, such as those funded within the EU research and innovation programme Horizon 2020, are subject to a closer scrutiny by the Commission. The guidance also reminds the Member States of certain interventions related to FDI, such as compulsory licences on patented medicines, which can be used outside the screening mechanisms.

17 Portfolio investments can already be screened by Member States on the basis of the Treaty provisions on free movement of capital; the guidance states that application of these provisions might be relevant in terms of security or public order concerns in cases where investments represent an acquisition of at least qualified shareholding that confers certain benefits to shareholders or connected shareholders under the national company law of a Member State. Besides screening, Member States may also retain 'golden shares', which may enable Member States to block or set the limits to certain types of investments. The guidance also notes that any restrictions in this area need to be suitable, necessary, and proportionate to attain legitimate policy objectives and that the latter cannot be purely economic but must include public policy, security, or health considerations. These latter considerations can however be invoked in cases of predatory buying of strategic assets by foreign investments. In addition, the guidance states explicitly that "in case of foreign investment from third countries in companies with valuations on capital markets that are considered well below their

Germany

That the COVID-19 crisis might have an important impact on restrictiveness of FDI regimes in Europe is illustrated by the debate that emerged in March 2020 in the context of an alleged foreign bid to secure exclusive rights for the work of CureVac, a German-based biopharmaceutical company that is currently working on developing a vaccine against the novel virus. The bid reportedly sparked reactions by German politicians, who called for application of Germany's foreign trade law which already has provisions for examining foreign investments from non-EU countries on national security grounds (Dunn 2020). Declarations have also been reported by the German Government that the country will protect domestic firms from foreign takeovers in times of diminished asset valuations.¹⁸

Under current German law, the government may review, restrict, or prohibit the acquisition of a direct or indirect interest of 25% or more of a domestic company by a foreign investor if the transaction poses a threat to the country's public order or security, and even stricter rules can be applied to developers of the software used to control critical infrastructures. Even before the COVID-19 crisis hit Europe with full force, the German government had begun work on a new bill that, among other things, aims to further tighten rules on inward FDI control. Published on 30 January 2020,¹⁹ analysts say the bill contains a number of new and stricter rules likely to be approved quickly, and potentially even sharpened in light of the COVID-19 crisis. These new rules include: the lowering of the threshold for screening; increasing the discretion for authorities in determining the likelihood of public order and security threats; implementation of the EU's FDI Screening Regulation's provisions related to the security of another EU Member State or EU-wide interests; stricter acquisition reporting requirements; and development of a list of specific technologies (such as artificial intelligence, robotics, semiconductors, biotechnology, and quantum technology) where investment will be subject to even lower thresholds for screening and reporting (Gibson and Dunn 2020).

true or intrinsic value, the possibility to introduce restrictions could be considered taking into account the actual or potential impact of those investments on the safeguard of the abovementioned public interests (for instance whether they may lead to over-reliance on foreign investors from third countries for the provision of essential supplies or essential services)". The guidance adds, however, that "In terms of appropriateness of those measures, their potentially adverse impact on companies and the economy at large should also be considered and possibly mitigated." It is also recalled that investments from outside the EU take place in a different legal context than those within, and that permissible grounds for justification of transactions involving third countries may be interpreted more broadly than for intra-EU transactions.

18 For example, the State Premier of Bavaria was reported to have said that: "If most of Bavaria's and Germany's economy ends up in foreign hands once this crisis is over ... then it's not only a health crisis but a profound alteration of the global economic order" (source: https://www.reuters.com/article/us-health-coronavirus-germany-fund/germany-will-block-foreign-takeovers-to-avoid-economy-sell-out-idUSKBN21717T_20 March).

19 https://www.bmwi.de/Redaktion/DE/Downloads/E/erstes-gesetz-zur-aenderung-des-aussenwirtschaftsgesetzes.pdf?__blob=publicationFile&v=6

Spain

Spain introduced new measures on FDI in its decrees of 17 March 2020 and 31 March 2020 responding to the social and economic consequences of the COVID-19 crisis.²⁰ These measures introduced an *ex ante* authorisation mechanism for inward FDI originating from outside the EU or EFTA which involves acquisition of 10% or more of the share capital of a Spanish company (or where the acquiror effectively participates in the management or control of the said company) in the following sectors: critical infrastructure (e.g. health, communication); critical technologies and dual use products (e.g. artificial intelligence, robotics) supply of fundamental inputs, in particular energy; sectors with access to sensitive information. In addition, similar *ex ante* authorisation must be obtained when: (1) the foreign investor is directly or indirectly controlled by the government; (2) the foreign investor has already made investments or participated in business sectors affecting security, public order, and public health; and (3) if the investor is facing administrative or judicial proceedings for criminal or illegal activities.

Italy

On 8 April 2020, the Italian government introduced new measures that expand the strategic sectors governed by the so-called “Golden Power” law on the review of foreign investments in Italian assets.²¹ The new law refers to the European Commission’s guidelines of 25 March 2020 (European Commission 2020b) and determines the sectors in which the government has jurisdiction to review any transaction which pose a threat to Italy’s fundamental interests to be: defence and security sectors; energy, transportation, communication and high-tech sectors; and, in the case of involvement of non-EU actors, 5G technology infrastructure and 5G technology-related components (White&Case 2020). Reviews concern a wide range of transactions, including stocks and asset purchases, M&As in which the foreign partner is investing in Italian assets, transactions that may change the target company’s ownership structure or business purpose, as well as any contracts or agreements with non-EU persons relating to the supply of 5G technology. The government enjoys a relatively wide margin of discretion when it comes vetoing a transaction or imposing special conditions on its completion, including ways of interfering in corporate governance of firms targeted by investments

20 See: (1) Royal Decree-Law 8/2020, of 17 March, on extraordinary urgent measures to face the economic and social impact of COVID-19 (<https://www.boe.es/buscar/doc.php?id=BOE-A-2020-3824>) and (2) Royal Decree-Law 11/2020, of 31 March, which adopts urgent complementary measures in the social and economic field to deal with COVID-19 (<https://www.boe.es/buscar/doc.php?id=BOE-A-2020-4208>).

21 See the Decree-Law 8 April 2020, n. 23. "Urgent measures regarding access to credit and tax obligations for businesses, special powers in strategic sectors, as well as interventions in the field of health and labour, extension of administrative and procedural terms." Art. 15-16 (<https://www.gazzettaufficiale.it/eli/gu/2020/04/08/94/sg/pdf>).

being reviewed. Golden Power filings must be made within certain strict timelines from key events, and penalties for the breach of these rules have been established and differentiated by sector of activity (White&Case 2020).

Australia

On 29 March 2020, Australia announced changes to its foreign investment review framework that became effective on the evening of the same day. The changes concern monetary thresholds and timeframes for reviewing applications. The threshold amounts that apply in determining whether particular investments by ‘foreign government investors’ and private acquisitions in Australian media businesses, residential land proposals, mining and production tenements, and vacant commercial land proposals, are subject to Australia’s foreign investment framework were lowered to AUD 0.²² In addition to lowering the threshold, the decision-period for approvals has been extended for up to six months. At the same time, the government announced that it will prioritise applications for investments that directly protect and support Australian businesses and Australian jobs, taking account of any commercial deadlines related to those proposed investments.²³

India

On 17 April 2020, the Government of India announced a change to the existing FDI policy in order to curb “opportunistic takeovers and acquisitions of Indian companies due to the current COVID-19 pandemic”.²⁴ Until now, only the citizens of Bangladesh and Pakistan, or entities incorporated in these countries, were subject to go through the ‘Government route’²⁵ when investing in India, and in the case of Pakistan this was only possible in sectors or activities that were not prohibited for foreign investment. Now the status afforded earlier to Bangladesh has been extended to any “entity of a country, which shares land border with India or where the beneficial owner of an investment into India is situated in or is a citizen of any such country”. Furthermore, as of now, any change in ownership (direct or indirect) of any existing or future FDI in an entity in India resulting in the beneficial ownership falling within the mentioned restriction will also require government approval.

22 As pointed out by Baker McKenzie (2020), this lowered the special monetary threshold that applied to these types of investments while the other criteria of ‘significant action’ and ‘notifiable action’ which must also be met did not change. This means that acquisitions by private foreign investors of less than 20% in an Australian entity will generally not require approval, with the exception of Australian agribusinesses and land entities, which normally require approval for acquisitions of more than 10%.

23 <https://firb.gov.au/about-firb/news/changes-foreign-investment-framework-0>

24 <https://pib.gov.in/PressReleasePage.aspx?PRID=1615711>

25 Under the Government Route, prior to investment, approval from the Government of India is required. Proposals for foreign investment under the Government route are considered by respective ministries or departments.

Other countries

At the time of writing, to the best of my knowledge, other countries have not announced additional restrictions on FDI, as suggested by a relatively large number of announcements made in the last month or so. But this could change at any time. Also, as already discussed, many countries have had national security-related or other screening and approval-related mechanisms for a long time, and some others have only recently updated them.

In the US, for example, the Committee on Foreign Investment in the United States (CFIUS) is authorised to review certain transactions involving foreign investment in the United States and certain real estate transactions by foreign persons, in order to determine the effect of such transactions on US national security. Notably, the Foreign Investment Risk Review Modernization Act of 2018, which entered into force on 13 August 2018, extended CFIUS' powers to address national security concerns by extending the scope of its reviews to non-controlling investments and real estate transactions involving foreign persons.²⁶ According to BakerMckenzie (2020), given the increasing awareness of vulnerabilities in the US medical supply chain, foreign investments in this sector could attract more CFIUS scrutiny in the future.

France has also not introduced any specific changes to its FDI regime in response to the COVID-19 crisis. But the French FDI review regime has been revised recently, in a process completed before the COVID-19 crisis spread to Europe. The new laws, which took effect on 1 April 2020, widen the scope of investments covered by the regime, and include requirements to provide substantial information in order to receive approval.²⁷

Concluding remarks

FDI can play a valuable role in the post-COVID-19 economic reconstruction. Long term trends in regulation of inward FDI in the run up to the crisis suggest that countries had recognised the benefits of FDI and had been continually opening themselves to it. However, over the past decade or so, inward FDI policies were being reviewed and tightened in many countries, particularly in the area of screening and approval in the context of increasing concerns related to FDI's potential impact on technology, competition and level playing fields, and national security. A review of these long-

²⁶ <https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius>

²⁷ Order of 31 December 2019 relating to foreign investments in France available at <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000039727569&dateTexte=20200418>

term trends and the new FDI measures adopted since the start of the COVID-19 crisis suggests that the pandemic is likely to accelerate trends towards less openness of the type that has been reshaping the FDI policy landscape for some time.

... the world had recognised the benefits of FDI and had been continually opening itself to FDI. However, over the past decade or so, inward FDI policies ... were being reviewed and tightened in many countries in the context of increasing concerns related to FDI's potential impact on technology, competition and level playing field, and national security. ... these long-term trends as well as of the new FDI measures adopted since the start of the COVID-19 crisis ... suggests that the pandemic is likely to accelerate the trends towards less openness...

Screening and approval of FDI, when non-discriminatory, predictable and transparent, proportional and accountable²⁸ can minimise any potentially negative effects on FDI flows and, in principle, increase its quality. In this sense, the recent measures introduced prior to and during the COVID-19 crisis are not bound to have permanently negative effects on FDI.

The current, dynamic policy environment may also lead to adoption of suboptimal ad hoc measures which might later be maintained. This risk seems more significant as far as FDI policies are concerned: in contrast to the WTO in the case of international trade in goods and services, there are no comparable multilateral rules that set obligations on investors while guaranteeing them market access at the same time.

The evolution of FDI policies, and its impact on FDI and broader policy objectives, will be a particularly important area to monitor during and after the COVID-19 crisis.

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²⁸ For an elaboration of these principles in the context of national security concerns, see the OECD Recommendation of the Council on Guidelines for Recipient Country Investment Policies relating to National Security, available on-line at: <https://legalinstruments.oecd.org/en/instruments/OECD-LEGAL-0372>

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11 An unintended crisis in sea transportation due to COVID-19 restrictions

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Almost 80% of trade is carried by sea, so disruptions to sea transport can damage trade flows and disrupt supply chains. As it turns out, COVID-19 containment policies have had unintended consequences. Many key ports have imposed restrictions on vessels and crew including prohibitions that have stopped crew changes. As these changes are essential, shipping has been disrupted. Satellite data for ships shows that sailings to destinations with crew-change restrictions are down by almost 20% for container ships compared to previous years. More flexible regulations based on screening and discretion are needed to ensure the continuity of freight distribution.

International trade has contributed immensely to the rise in welfare since the end of WWII. Global trade is facilitated through worldwide transport networks. These networks are the catalysts for production linkages that allow for a more efficient allocation of resources through international labour division and exploitation of comparative advantage and economies of scale.

However, the same transport networks are also responsible for the transmission of diseases. Over the last 300 years, ten major influenza pandemics have occurred – not counting COVID-19. The 1918 Spanish flu pandemic is considered the most severe to date: around 30% of the world's population became ill and 40–50 million people died. One important reason the Spanish flu was so much more deadly than previous pandemics was its quick and extensive spread, enabled by the global transport system (see e.g. Rodrigue et al. 2020). The virus spread around the world through infected crew and passengers on ships and trains.

Recognising that transportation is an important vector of transmission, it comes as no surprise that as COVID-19 hit, the sector was one of the first to face significant restrictions. However ... we are entering a phase where ensuring the continuity of freight distribution should be given priority.

Recognising that transportation is an important vector of transmission, it comes as no surprise that as COVID-19 hit, the sector was one of the first to face significant restrictions. However, as the pandemic has now spread to more than 200 countries and infected around 2 million people (as of 15 April), we are entering a phase where ensuring the continuity of freight distribution should be given priority. Needless to say, disruptions in the continuity of trade flows can damage vital supply chains.

Here we take a closer look at seaborne transportation, which carries 80% of world merchandise trade. We use real-time satellite data to investigate what has happened so far to sailing routes and networks, and discuss the impact of the restrictions implemented in response to the outbreak of COVID-19.

The global shipping network

The global shipping network carries the majority of internationally traded goods. It consists of different market segments such as container, bulk, tankers, and passenger ships. In a recent study (Heiland et al. 2019), we use satellite data on container ships to establish a set of key facts about the transportation network.¹ Container ships account for 60% of the value of all seaborne trade and are of particular importance for merchandise trade.

Based on the near-universe of port calls made in 2016 by container ships globally, we develop a set of stylised facts describing characteristics of the shipping network.

- Container ships typically operate on fixed routes.
- A few ports act as major hubs in the shipping network.

While the median port only serves around 200 ships per year, the top ports serve close to 15,000 ships per year.

- There is great variation between ports in how well connected they are.

¹ The rapid advent of the global Automated Identification System (AIS) over the last years has made it possible to construct data sets that cover the worldwide movement of all significant vessels. Vessels send out AIS signals identifying themselves to other vessels or coastal authorities, and the International Maritime Organization requires all international voyaging vessels with above 300 Gross Tonnage and all passenger vessels to be equipped with an AIS transmitter. AIS messages include information regarding vessel identity, physical appearance, and voyage-related information such as draught and destination.

Table 1 provides an overview of the ten best-connected ports in the world. Even the port that tops the list, the Port of Singapore, is directly connected only to around one-sixth of the global set of 515 container ports that are allocated across 151 countries. Only 6% of the 22,650 pairs formed by these countries entertain a direct shipping connection. Trade between these countries accounts for only 54% of world trade. The implication is clear.

- A large share of global trade does not travel on direct routes but rather on routes that involve multiple legs.

A fastest-path calculation reveals that 52% of all country-to-country connections involve more than two stops at intermediate ports. Besides adding to the distance travelled by a container, indirect routes expose bilateral flows to the efficiency and rules of the port facilities of other countries.

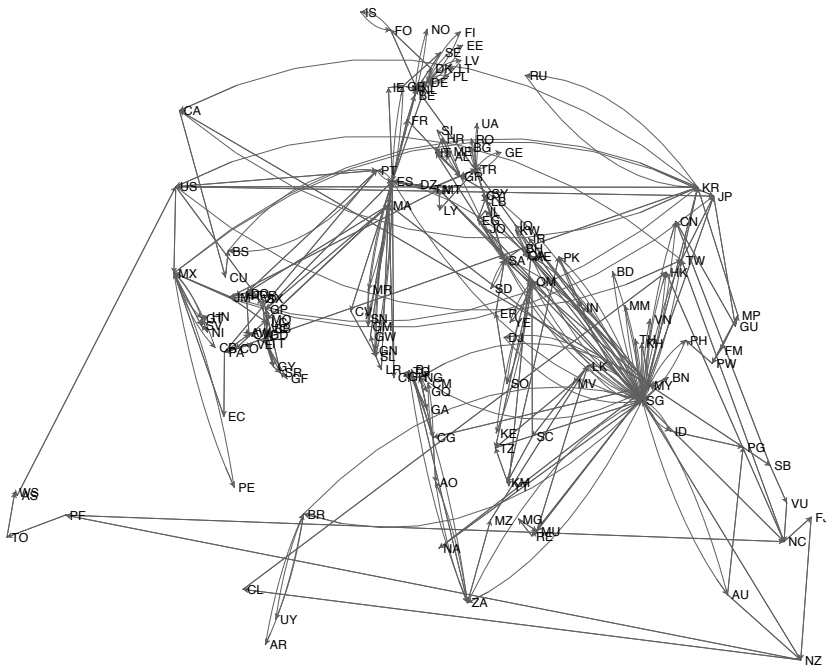
Table 1 Top 10 ports in terms of direct connections and their importance for global trade

Port name	Country name	Connected ports	Number of country pairs shipping through	Share of global trade passing through
Port of Singapore	Singapore	158	3,517	.32
Port Klang	Malaysia	109	1,172	.13
Port of Algeciras	Spain	98	3,351	.18
Busan New Port	Korea	95	1,526	.32
Port of Hong Kong	China	88	989	.20
Port of Shanghai	China	87	420	.18
Port of Antwerp	Belgium	86	1,831	.19
Port of Shekou	China	83	558	.19
Port of Tanjung Pelepas	Malaysia	82	1,719	.17
Rotterdam Maasvlakte	Netherlands	78	2,268	.21

Figure 1 depicts the Port of Singapore's position in the global shipping network. It shows the shipping routes of all country pairs whose fastest connection in the network of active shipping lines involve a stop at the Port of Singapore. The figure underlines the aforementioned prevalence of indirect shipping routes and shows that nearly all countries' exports to at least a subset of their destinations involves Port of Singapore as a way station. Column 4 of Table 1 shows that for 3,517 trade relationships (a pair of

one exporter and one importer located anywhere on the globe) the fastest connection within the network of active shipping routes passes through the Port of Singapore. Trade between these countries accounts for 32% of global trade (Column 5).

Figure 1 Fastest global shipping connections passing through the Port of Singapore



Notes: The figure shows all fastest shipping connections involving a stop in the Port of Singapore that connect the 151 countries with container ports. Fastest routes are computed based on the travel times of all container ships observed through AIS in 2016.

The upshot of all this is straightforward and import for world trade in the time of COVID-19. Local COVID-19-related restrictions on sea transport do not just affect the country imposing the restrictions; it also affects all of its trading partners. The more central a port is in the shipping network, the more wide-ranging are the consequences of its restrictions for international trade. This is especially true for Singapore given its central in world sea shipping. As we write in the week of 14 April 2020, all countries in the top-ten list had tightened the rules governing the mobility of sailors on incoming ships.

Local restrictions on sea transport do not just affect the country imposing the restrictions; it also affects all of its trading partners. The more central a port is in the shipping network, the more wide-ranging are the consequences ... As we write in the week of 14 April 2020, all countries in the top-ten list had tightened the rules governing the mobility of sailors on incoming ships.

COVID-19 restrictions towards sea transport

In response to the COVID-19 outbreak, ports are imposing various restrictions on vessels and crew. These restrictions are typically related to whether the vessel's previous port call was from a COVID-19 high-risk country, to crew who embarked from COVID-19 high-risk countries, and to crew changes and shore leave.

Changing crew is essential for a shipping company to comply with work contracts and labour regulation. In normal times, around 100,000 crew changes take place every month (Daniel 2020). Currently, however, 120 of 126 countries have implemented restrictions on crew change: in 92 countries crew change is prohibited, while in 28 countries crew change is subject to screening and approval from the authorities (Inchcape Shipping Services 2020).

Due to these restrictions, vessels have become 'floating quarantined zones', as countries such as Australia refuse to allow ships that have called at Chinese ports to enter their own until the crew has been declared virus-free. In most countries, the normal quarantine time is 14 days.² On 16 April, there were 14,851 cargo ships on their way around the world. Only one-third of these ships were on voyages estimated to take 14 days or more. Hence, there is little doubt that port restrictions have a severe impact on transportation and supply chains.

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² Reported by CNN Business, London, 20 February 2020.

What satellite data tells us about the impact of COVID-19 on sea transport

While there is mounting anecdotal evidence on cancelled – blanked – sailings and disruptions to the maritime transportation network, there is still scarce systematic evidence. To fill this gap, we use rich satellite data for Norway. Being a small open economy with a long coast and supply chains heavily relying on sea transport, Norway lends itself as a natural case to study the effect of COVID-19 on sea transportation.

We used satellite data for ships from the Norwegian Coastal Administration to investigate the impact of the COVID-19 outbreak and the restrictions introduced to impede transmission. The Norwegian Coastal Administration is unique in that they provide public access to real-time satellite data covering the Norwegian coastal areas.

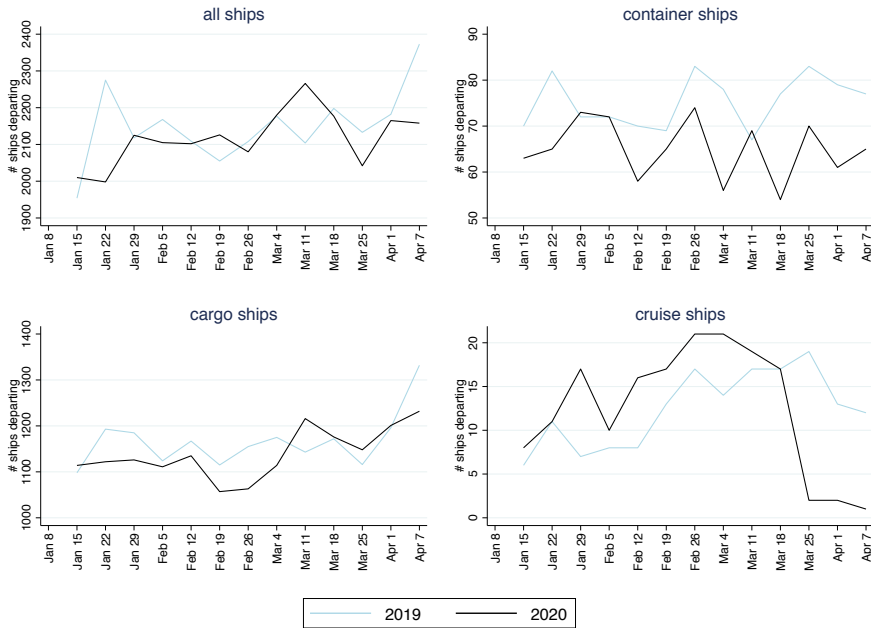
In Figure 2, we show the number of weekly departures from Norwegian ports year-to-date (7 April)³ for 2019 and 2020 for all ships in three well-known market segments: container ships, other cargo ships, and cruise ships. The first two categories of ships are the main cargo ships and thus the primary focus of our analysis. Cruise ships, which have received the most attention in the popular media, may serve as a useful benchmark.

Figure 2 shows the seasonality and volatility that is a general characteristic of shipping activity through the year. This is driven by external factors such as holidays, weather, and orders. However, we observe that the COVID-19 pandemic had a clear effect on sea transportation for all ship types. Focusing on cargo ships, sailings are down in 2020 already from the beginning of the year. This is most likely due to the outbreak in China and the shutdown of production that followed. As COVID-19 reached the western hemisphere and triggered lockdowns across the globe from mid-March, the picture becomes grimmer for container ships, carrying merchandise goods, and even more so for cruise ships.

In mid-April, after a few weeks of global lockdown, the cruise industry stands out with a dramatic fall, but sea transportation of cargo has also been substantially hit. The departure of all ships in the first week of April 2020 was down 20% compared to 2019, while the decrease in container-ship departures was 29%.

3 Week 15 starting on April 8 was dropped since it included the Easter holidays in 2020, but not in 2019.

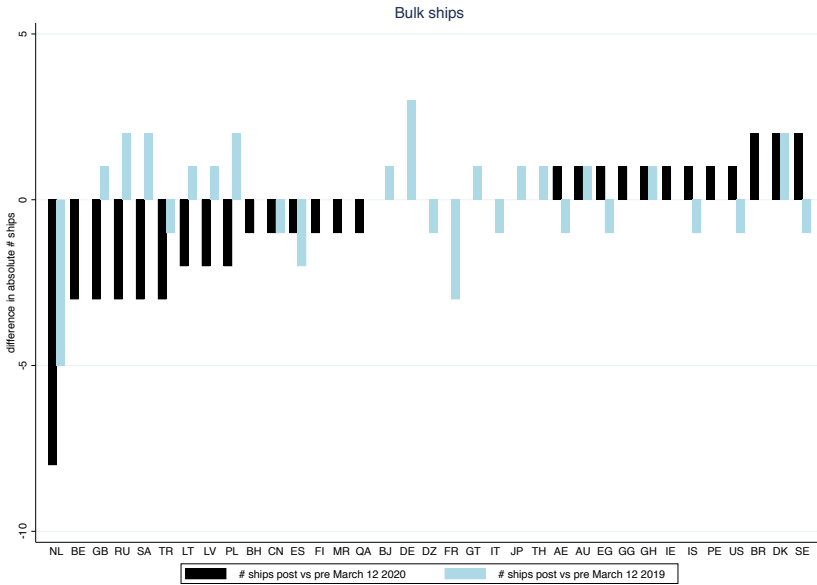
Figure 2 Weekly departures from Norwegian ports, 2020 vs 2019



Notes: The figures show the number of ships departing from Norwegian ports in the week ending with the date displayed on the horizontal axis. Cargo ships in the lower-left panel refer to non-containerised cargo ships.

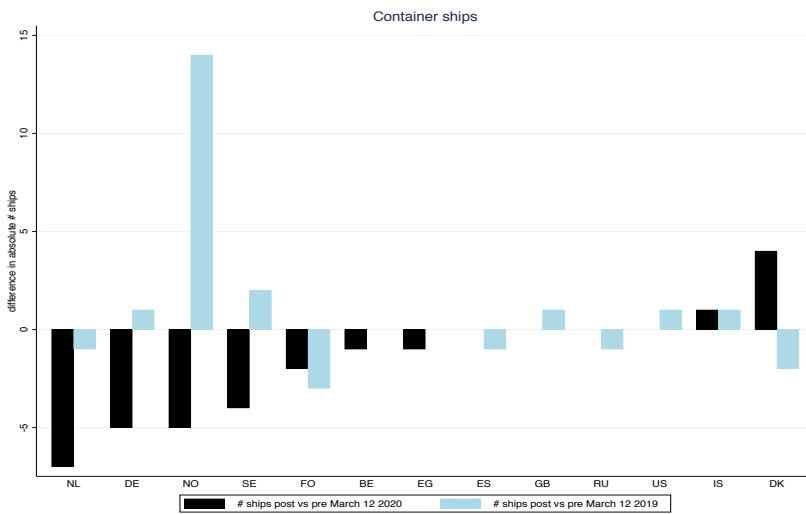
Next, we use information on ships’ destinations. Figures 3 and 4 illustrate the change in the number of sailings for bulk and container ships before and after 12 March 2020, which was the day the Norwegian government introduced restrictions on movement and activity, unprecedented in times of peace. The date of the Norwegian lockdown coincides roughly with the dates a majority of western countries entered lockdown – some more relaxed, some stricter than Norway. We observe that for the majority of destinations, sailings are down after mid-March.

Figure 3 Change in departures of bulk ships post vs pre COVID-19 restrictions



Note: The pre (post) period spans 35 days prior to (starting on) March 12. Source: <https://kystdatahuset.no/avganger-per-dag>. Accessed 16/04/2020.

Figure 4 Change in departures of container ships post vs pre-COVID-19 restrictions



Note: The pre (post) period spans 35 days prior to (starting on) 12 March 2020. Source: <https://kystdatahuset.no/avganger-per-dag>. Accessed 16 April 2020.

In order to establish causality, we proceed with a simple empirical analysis based on a difference-in-difference regression model. The results, reported in Table 2, confirm that there was a significant decline in sailings for all cargo ships. Comparing the change in the number of departures in the five weeks prior to and five weeks after 12 March across the years 2020, 2019, and 2018, we find that in 2020 the number of ships dropped by 6% compared to the change observed in previous years. For container ships, the difference is -8%; for cargo ships, the drop is 3%. Tanker traffic, which also suffers from the concurrent turbulences in the oil market, is down 16%.

Table 2 The impact on COVID-19 on sea transportation

	(1) All	(2) Container	(3) Other Cargo	(4) Tankers
[Date>Mar12] X [year=2020]	-.055*** (.010)	-.078* (.044)	-.033** (.010)	-.158*** (.038)
Pseudo R ²	.98	.89	.98	.91
Observations	2590	290	1230	1070

Note: Results are based on a difference-in-difference model comparing the change in the number of departures occurring around 12 March across the years 2020, 2019, and 2018. The dependent variable is the number of departures per week by destination. The data spans five weeks before and five weeks after 12 March for each of the three years. The independent variable is an indicator for weeks after 12 March interacted with an indicator for the year 2020. The model is estimated with a Poisson Pseudo Maximum Likelihood estimator including week x ship-type and year x destination x ship-type fixed effects. Standard errors clustered by destination. ***, **, * indicate significance at the 1,5,10% level.

We ran additional estimations using only 2018 as a control to check for a confounding effect of the Easter holidays. In 2019, in contrast to 2020 and 2018, Easter happened after the end of our sample period. Dropping the year 2019 yields statistically significant negative effects, which are, however, slightly smaller.

... Sailings to destinations with crew-change restrictions have dropped significantly more than sailings to destinations with less binding or no crew-change restrictions. Sailings to destinations where crew changes are prohibited are down by almost 20% for container ships, as compared to a decline of 6% to destinations which have imposed milder restrictions, such as screening rules.

Finally, we assess the hypothesis that countries' restrictions towards sea transportation are responsible for the decline in shipping activity. As pointed out above, countries' approaches to the outbreak have varied in their extent to which restrictions hamper sea transportation. We therefore combine information on sailings departing from Norway with the cross-country information on crew change restrictions (Inchcape Shipping Services 2020), which are perceived to be one of the most challenging restrictions faced

by shipping companies. The results from the empirical analysis, which is based on a difference-in-difference approach but now also exploits differences across destinations, are reported in Table 3.

Table 3 The role of crew-change restrictions to seaborne trade in the COVID-19-response

	(1) Container	(2) Other Cargo	(3) Tankers
[Date>Mar12] X [year=2020]			
X [no restrictions]	.066 (.374)	-.036 (.121)	-.083** (.035)
X [restrictions]	-.061** (0.029)	-.031*** (.009)	-.147*** (.046)
X [prohibited]	-.198*** (.038)	0.24 (.068)	-.272*** (.089)
Pseudo R ²	.89	.98	.91
Observations	290	1230	1070

Notes: the results are based on a difference-in-difference model comparing the change in the number of departures occurring around 12 March across the years 2020, 2019, and 2018. The dependent variable is the number of departures per week by destination. The data spans five weeks before and five weeks after 12 March for each of the three years. The independent variable is an indicator for weeks after 12 March interacted with an indicator for the year 2020 and interacted with an indicator distinguishing between countries that have imposed no restrictions, some restrictions, or fully prohibited crew changes at their ports. The model is estimated with a Poisson Pseudo Maximum Likelihood estimator including week and year x destination fixed effects. Standard errors clustered by destination. ***, **, * indicate significance at the 1,5,10% level.

The results are striking, in particular for container ships and tankers. Sailings to destinations with crew-change restrictions have dropped significantly more than sailings to destinations with less binding or no crew-change restrictions. Sailings to destinations where crew changes are prohibited are down by almost 20% for container ships, as compared to a decline of 6% to destinations which have imposed milder restrictions, such as screening rules. For other types of cargo ships the picture is less clear, suggesting that other types of restrictions, as well as demand and supply conditions, also play a role.

Concluding remarks

About 80% by volume of world goods trade is carried by sea. International trade and global production networks are thus completely reliant on the smooth operation of maritime transport. As the world faces the COVID-19 pandemic, operations are anything but smooth.

There are two sources of disruptions: the Great Lockdown, as the IMF has named it, has led to a massive shutdown of production across sectors and countries worldwide. As a result, the demand for transport services has collapsed. The lack of demand has, in turn, led to a high number of cancelled sailings and an increased number of ships in layup. But there is also a second source of disruptions: government restrictions implemented to slow down the transmission of the virus.

The lack of demand has led to a high number of cancelled sailings ...
But there is also a second source of disruptions: government restrictions implemented to slow down the transmission of the virus ...

Sea transport weathered many crises in the past. According to Stopford (2007), seaborne trade experienced deep but v-shaped contractions in all major global economic crises, respectively dropping by 6 and 7% during the first and second oil crises of the 1970s and halting growth along a steadily upward-pointing trajectory during the financial crises of the 1990s. In the most recent global economic crisis of 2009, seaborne trade fell by 4.5% (UNCTAD 2011).

Is the current crisis different? It certainly is unprecedented in that it attacks the shipping industry on two fronts at the same time. Besides a steep contraction in demand, the industry is also faced with regulatory constraints disrupting its operations in almost all ports. The detrimental effects of local disruptions are multiplied as they spread through the network of interconnected shipping lines. Shocks to the network of shipping routes can have long-lasting effects. Feyrer (2009) finds that the negative shock of the Suez Canal closure in 1967 took 3–4 years to materialise, cumulating in a 30% drop in trade for countries relying heavily on the Canal. After its reopening in 1975, it took another 3–4 years for trade to recover.

Adding to the massive amount of anecdotal information on how regulations are disrupting maritime networks and thus supply chains, our empirical analysis of satellite data shows that the restrictions on crew changes have severe effects. Our results suggest that more flexible regulation that relies on screening and discretion have less disruptive effects than strict bans.

The International Maritime Organization has urged countries to facilitate crew changeovers around the globe in order to ensure the availability of shipping services [and] The EU has followed up by taking steps to facilitate and coordinate efforts of EU member states to enable crew changes. Our analysis underscores the importance of the EC's initiative.

The International Maritime Organization has urged countries to facilitate crew changeovers around the globe in order to ensure the availability of shipping services (IMO 2020). The EU has followed up by taking steps to facilitate and coordinate efforts of EU member states to enable crew changes (EC 2020). Our analysis underscores the importance of the EC's initiative.

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12 Exposing governments swimming naked in the COVID-19 crisis with trade policy transparency (and why WTO reform matters more than ever)

Robert Wolfe¹

Queen's University

To avoid unnecessary harm and conflict, G20 trade ministers stressed the importance of transparency in the current environment and their commitment to notify the WTO of any trade related emergency measures designed to tackle COVID-19. This chapter reviews the actual practice and finds that it is failing. The WTO urgently needs to step up its role in providing transparency on what governments are doing.

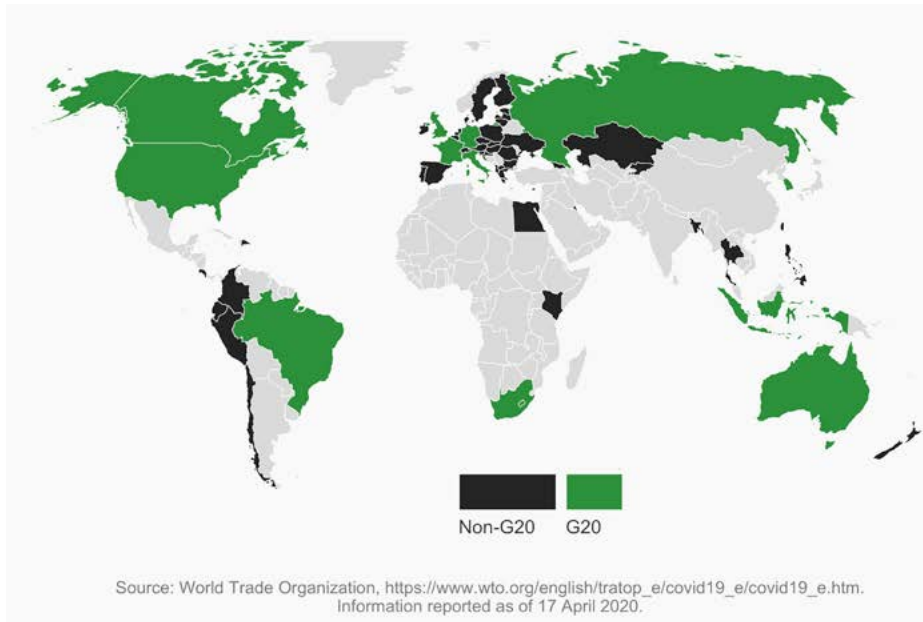
“Only when the tide goes out do you discover who’s been swimming naked”. - Aphorism attributed to Warren Buffet

One of the important roles that trade policy monitoring can play in a crisis is to make clear that the emperors have on no clothes. Governments are taking action to restrict trade or in some way discriminate against other countries: these measures need to be exposed and compared. Exposure provides essential information for policymakers and economic actors. When governments do not have to guess what others are doing, trust is enhanced. And when everyone is shown to be swimming naked, nobody can pretend that they are not complicit.

¹ I am grateful to Simon Evenett for the initial work on Table 1 and for providing Figure 1 and 2; and to Samantha Kieffer for timely research assistance.

G20 trade ministers said on 30 March 2020 that they had started monitoring and assessing the impact of the pandemic on trade. They stressed the importance of transparency in the current environment and their commitment to notify the WTO of any trade related emergency measures designed to tackle COVID-19. Only 12 of the 20 have done so, as shown in Figure 1.

Figure 1 COVID-19 notifications to the WTO as of 17 April 2020



G20 trade ministers also called on international organisations for analysis of the impact the pandemic has had on trade. They ought to have requested analysis of the impact on trade made by government responses to the economic crisis provoked by the pandemic. Trade fell off a cliff when governments told people to stay home. It may also be harmed by good faith measures intended to support families without jobs and firms without customers.

The urgent transparency task already underway (see Table 1) is simply tracking health-related responses to the crisis. Only slightly less urgent will be tracking the trade effects of all the money being spent to sustain economies during the shutdown. Emergency actions have discriminatory elements that will be made much worse if these elements are needlessly maintained as the programs are unwound. There is a risk that borders strengthened to slow the pandemic will stay hardened when no longer necessary. Governments need information to assess where the trade response to the crisis has

been counter-productive; later, they will need to understand whether the trading system, starting with lengthy supply chains, has been permanently altered in ways that might expose weaknesses in the rules.

Analysis of the effects of crisis trade measures is one thing, and we will get it from the OECD, the World Bank, and the IMF; but governments need to hold themselves to account, and the public needs information to ensure that they do.

Analysis of the effects of crisis trade measures is one thing, and we will get it from the Organisation for Economic Co-operation and Development (OECD), the World Bank, and the IMF; but governments need to hold themselves to account, and the public needs information to ensure that they do. Countries have varying susceptibility to systemic norms, and to the effects of transparency on policymakers. Are big traders more or less susceptible to institutional constraints than small traders? In 2009, did governments notice the publicity given to the independent and highly critical reports by Global Trade Alert (GTA), or was policy more likely to change because leaders were aware they might be exposed in front of their peers by the reports prepared for the G20 by international organisations? Did the availability of detailed information from the WTO inspire confidence that trading partners were playing fair? Whatever the answers, it is surely better to have a variety of monitoring reports utilising multiple channels of influence. Given the inherent caution shown by official monitoring, it is valuable to have other sources, like GTA, highlighting problems in starker terms than the official line.

International organisations rapidly launched new or enhanced trade monitoring as the economic dimensions of the COVID-19 crisis became apparent. After surveying the results, I turn to a discussion of how WTO reform is needed to ensure better reporting and better use of the information it generates.

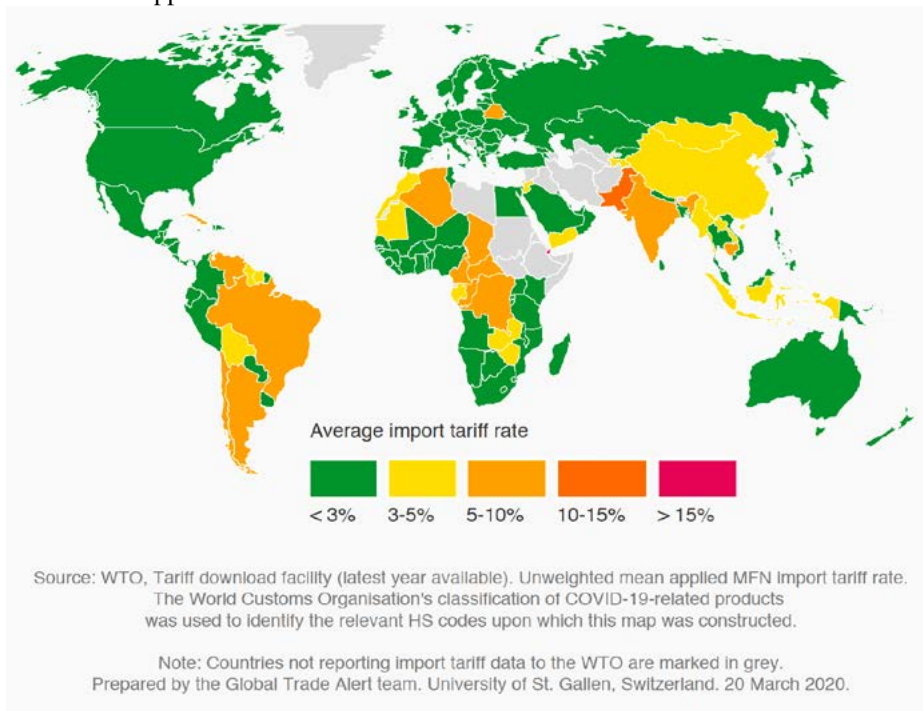
Trade policy monitoring in the COVID-19 crisis

Governments need to know what's going on before they can respond or plan appropriately. Just knowing the facts helps countries avoid an over-reaction. They need to understand both the measures taken to improve the flow of supplies needed for fighting the pandemic and the measures that restrict the availability of necessary supplies. Trade policy ought to facilitate, not impede, the fight against the pandemic. Knowing what others are doing increases trust and allows countries to learn from each other's experiences. Within WTO bodies, countries will want to use that information

simply to seek clarification—they often ask how a measure works and how long it will be in place. Committees can also provide opportunities to apply peer pressure: is this the best measure, or is there another way to solve the problem?

Initial analyses took stock of existing measures that restrict or liberalise goods needed to respond to the crisis. The WTO issued an information note on trade in medical goods in the context of tackling COVID-19 in order to provide factual information on how these goods are traded globally.² GTA's first report, *Tackling COVID-19 Together: The Trade Policy Dimension*, shines a light on the existing trade measures that are counterproductive (see Figure 2).

Figure 2 110 WTO Members still tax imports of COVID-19 test kits and related apparatus



A number of significant efforts are underway to track trade policy interventions in the crisis. Illuminating rapidly evolving trade policy measures in near real time is a challenge. The monitoring efforts summarised in Table 1 rely on slightly different sources and report the results in different ways using variations of both active and

2 See https://www.wto.org/english/news_c/news20_c/resc_03apr20_c.pdf

passive transparency. Passive transparency requires waiting for regular notifications consistent with existing obligations—which is a problem in the WTO at the best of times, and more so now when governments are responding to the crisis in ways poorly captured by the rules. Active transparency involves looking for official documents describing new measures, sometimes motivated by press reports. The differing ways that the organisations look for measures is reflected in the number of measures each reports.

Column 4 shows that GTA is reporting 165 measures, while WTO is only reporting 111, even though it seems GTA is naturally not as fast as WTO in reporting new notifications. Note that GTA does not include Technical Barriers to Trade (TBT) and Sanitary and Phytosanitary Measures (SPS), but WTO does. Depending the page consulted as many of as 57 of the WTO measures were SPS and TBT,³ which implies that GTA is finding a great many more measures than WTO (which is usually the case for reasons extraneous to this chapter). The discrepancy is partly due to GTA's use of media sources, which is a crucial contribution because of the lag times in what governments reveal as well as the things governments are not reporting. Sometimes the lack of reporting is conceptual, such as de facto export bans that are not notified to WTO because they do not easily fit existing obligations.

One element that needs monitoring is things that have affected trade but are not captured in the rules; that ought to be central to the forward agenda of every WTO body in assessing how the trading system can recover from the crisis. GTA's automated web searches may also pick up official documents that WTO has not found, or that are not yet notified, or that WTO is unable to include because of government reluctance to have a measure reported. What seems evident is that governments are much more willing to notify the WTO about TBT and SPS changes, and trade reforms, than they are to draw attention to export curbs (which are more sensitive).

3 On 19 April 2020 we found differing WTO numbers when comparing the information at https://www.wto.org/english/tratop_c/covid19_c/covid19_e.htm and https://www.wto.org/english/tratop_c/covid19_c/trade_related_goods_measure_e.htm

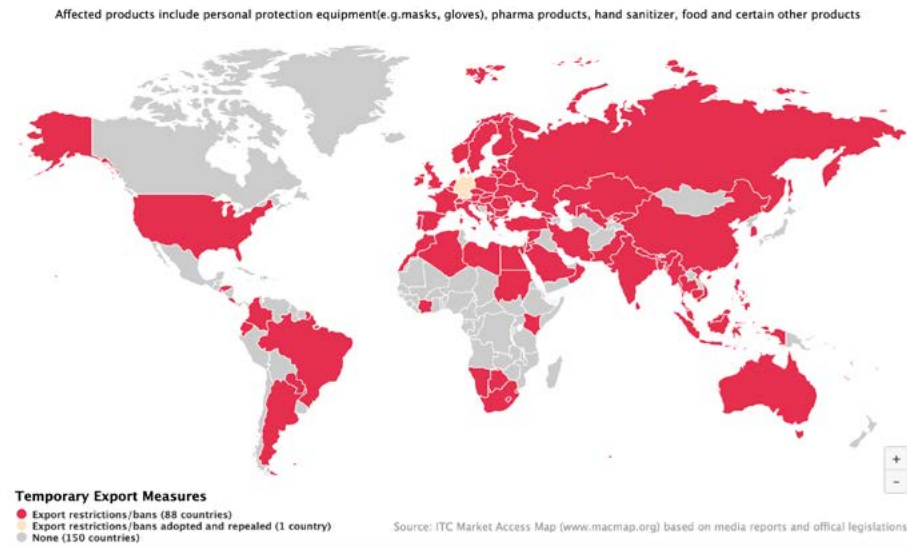
Table 1 Comparison of coverage of COVID-19 trade policy monitoring initiatives as of 18 April 2020

Resource	Coverage	Sources used	Extent of coverage	Notes
World Customs Organization	Export curbs on certain categories of critical medical supplies	Legislation provided by countries	36 customs territories covering 58 economies. 46 export curbs documented.	Does not include de facto export bans.
World Trade Organization	Policies affecting trade in medical products	Regular and crisis-related notifications by WTO member governments and official state acts	111 measures by 47 WTO members. Includes liberalising measures as well as 18 export restraints or quantitative restrictions.	Includes TBT and SPS measures
International Trade Centre	Temporary trade and regulatory policies affecting export of food and medical coverage, with HS codes	Official state acts and media sources	92 customs territories included. Information on 92 export-related measures included and 67 tariff changes. 129 entries refer to medical products and 36 to food. Also includes liberalising measures.	Includes TBT and SPS measures
Global Trade Alert	Export curbs on medical products	Official state acts and media sources	115 export curbs (including de facto export curbs) introduced by 76 governments.	Does not include TBT and SPS measures
Global Trade Alert	Import policy reforms on medical products	Official state acts and media sources	52 import liberalising measures (at least 41 of which are tariff reductions and eliminations) introduced by 79 governments.	Does not include TBT and SPS measures

Source: GTA/Simon Evenett.

How the information is presented also matters. Some ways might have more impact on the public through the press (e.g. GTA) or be more useful for firms (e.g. International Trade Centre, or ITC). Maps, such as those generated by the ITC (see Figure 3), can dramatize the extent of crisis-related measures more effectively than a dry summary table or an extensive list of new measures—but it is that detailed list that can become the basis for peer pressure in the G20 Trade and Investment Working Group or in WTO committees.

Figure 3 Global map of COVID-19 temporary trade measures (18 April 2020)



Firms need something else, which is what the ITC has been providing with a searchable database of new measures by product and by country. Firms always need information about markets they are attempting to navigate. Intensive margin firms, especially larger firms, know very quickly if new measures have been introduced that hurt their existing market access. But at the extensive margin, firms trying to enter new markets with new products have different and more urgent information needs.

What Table 1 does not show is the monitoring measures needed to support people and firms in the economic crisis, and then to stimulate the economy and facilitate the return to growth. From a trade standpoint, we need to know whether discriminatory policies are put in place; whether policies are having an effect on trade (intentionally discriminatory or not); and whether or not policies remain consistent with WTO rules. As the crisis passes, are those measures being unwound in a timely way? This vital task will require enhancements to existing WTO monitoring, as discussed in the next section.

Reform of WTO working practices is needed in real time⁴

Long discussed reforms to WTO working practices are taking place on the fly, as COVID-19 closed the WTO building while enhancing the need for WTO action. The response of international organisations to the COVID-19 crisis already demonstrates that a forum need not be physical to be valuable. G7 leaders and finance ministers, as well as G20 leaders and trade ministers, have held virtual meetings, which means their officials have held virtual preparatory meetings. WTO heads of delegation apparently support the use of virtual meetings for information exchange, with some hesitation about taking formal decisions remotely (Wolfe et. al. 2020).⁵

More action on the WTO reform agenda will be needed to ensure that in the crisis members can:

- Keep each other informed
- Review implementation of existing obligations
- Monitor new trade measures
- Use informal opportunities to share experiences
- Coordinate responses

The necessary reforms need leadership by the General Council and enhanced collaboration with other organisations. They do not need action by ministers.

Notifications are a central issue for WTO reform

The WTO is seeking two kinds of notifications.

- The first kind of notification is always required under the existing agreements when new measures are introduced.⁶

In the current context it can be especially helpful to have timely notification of all new measures.

- The second kind of notification is the special request made by the Director-General for information on measures taken in response to the crisis that is to be provided

4 This section expands on three recent Bertelsmann Stiftung papers on WTO working practices by Robert Wolfe; see <https://ged-project.de/allgemein-en/wto-studies/>

5 https://www.wto.org/english/news_c/news20_c/hod_17apr20_e.htm

6 For a helpful overview of the WTO transparency system posted in early April 2020, see https://www.wto.org/english/tratop_c/covid19_c/transparency_report_e.pdf

to the Trade Policy Review Body (TPRB) for inclusion in its regular monitoring reports.

Everyone knows that compliance with the notification requirements of the various WTO Agreements remains very uneven. If the reason for a poor notification record is bad faith, as implied by some reform proposals, then penalties may be appropriate. If the real difficulty is outdated and overly complex notification requirements, then a thorough review is warranted. Where is the information available to members objectively inadequate for surveillance of legal obligations and understanding responses to the crisis? Each body should ask how members can provide essential information in a way that lessens the burden.

Members already submit notifications about their trade policy electronically. Under the TBT and SPS agreements, such notifications of new or changed regulations are also pushed out to national officials and thousands of firms through the ePing system,⁷ which allows firms to tell officials when a new measure might be harmful to their interests—the fire alarm principle. Something analogous could be extended to other WTO agreements.

WTO deliberative bodies can be better used

In the COVID-19 crisis, countries need police patrols (in the form of monitoring), and fire alarms (in the form of “specific trade concerns”, or STCs, raised in WTO committees). Police patrols are centralised and find all sorts of measures, not all of which have negative spillovers for other countries. Given the universe of government action, such monitoring cannot find everything. Fire alarms are pulled by individual governments, often after having been prodded by firms directly affected by a measure.

In this crisis countries need both police patrols, in the form of monitoring, and fire alarms, in the form of “specific trade concerns” (STCs) raised in WTO committees.

Discussion of STCs can lead to clarification and even resolution of trade irritants before recourse to dispute settlement. Discussing trade concerns expeditiously is especially important when the trade landscape has been upended by a health crisis, but procedural improvements are needed.

⁷ ePing <https://cpingalert.org/en> is a collaboration of WTO, ITC and UNDESA

The leading proposal⁸ begins with clarifying timelines for convening documents and other meeting arrangements. Such improvements would facilitate the work of small Geneva delegations who need to consult capitals. The proposal might go further to include a requirement for annotated agendas, which would help capital-based officials to prepare by explaining why an issue was on the agenda and whether it had been discussed previously in this or other bodies. The TBT committee already has an eAgenda system that allows members to pose written questions about each other's policies in advance of a meeting, and to post written answers. If questions and answers are available online ahead of a meeting, officials in capitals can interact through the WTO without having to visit Geneva, which could be especially helpful for officials in developing country capitals, or those responsible for committees where capital-based participation is infrequent. Such an innovation is even more important when physical participation is constrained.

Virtual meetings are proving a challenge, but could allow broader participation in WTO discussions for officials who may not have opportunities to come to Geneva even in the best of times. Developing country officials would not need to rely exclusively on small, over-stretched delegations, often staffed by generalists, to engage in WTO discussion. A degree of confidentiality is needed for all WTO work, but it ought to be possible to use such online documents to enhance public transparency and hence accountability. Perhaps the most important proposal, therefore, is the creation of an integrated database in which all WTO documents pertaining to trade concerns are recorded, with a search facility. Such a database will be especially useful to those, including small delegations, who must follow more than one area of WTO work.

Some developing countries fear proposals might require them to respond to concerns on short timelines, but these proposals would actually make it easier for officials in capitals to engage with the WTO and their trading partners. Information technology technical assistance might be needed in some capitals.

Improved trade monitoring

The TPRB provides the platform for discussions among WTO Members of the monitoring reports produced by the Secretariat each year, including the Director-General's annual report on the trading system. The situation pre COVID-19 was not equivalent to the global financial crisis, but trade restrictions were growing, and the reports were not sufficiently capturing responses to the uncertainty associated with the rhetoric of

8 <https://docs.wto.org/dol2fc/Pages/SS/directdoc.aspx?filename=q:/WT/GC/W777R5.pdf>

trade war. The Secretariat's commitment to being merely factual makes it harder to provide a full analysis of this new and more political threat to the trading system. For example, though the reports no longer include a section on "general economic support" – originally meant to cover measures taken in response to the financial crisis – subsidies remain large, as documented in successive GTA reports. New approaches are needed (Hoekman et al. 2020).⁹

In the current context, we see a growing resort to things that look like subsidies: grants, soft loans, tax relief, equity stakes by governments, and pre-emptive purchasing. The WTO Secretariat should expand its collaboration with the OECD to draw on that organisation's work on industrial subsidies, as well as working with the GTA to draw on its extensive database of state aids.

Another weakness of the WTO monitoring reports is now critical. The WTO trade forecast suggests that services trade may be the component of world trade most directly affected by COVID-19 through the imposition of transport and travel restrictions and the closure of many retail and hospitality establishments. But hitherto the data on services measures reported [are] hard to compare, with no assessment of the trade coverage or significance of what is reported.

Another weakness of the WTO monitoring reports is now critical. The WTO trade forecast suggests that services trade may be the component of world trade most directly affected by COVID-19 through the imposition of transport and travel restrictions and the closure of retail and hospitality establishments. But the data on services measures reported in Section 4 and Annex 4 of the report is complex and hard to compare, with no assessment of the trade coverage or significance of what is reported. Indexes could help compare the incidence and effects of crisis-related measures, perhaps using the OECD services trade restrictiveness index (STRI), which includes large emerging economies using publicly available data. OECD, the World Bank, and WTO could work together to report a new index.

⁹ See three recent Bertelsmann Stiftung papers on the issue by Bernard Hoekman, Douglas Nelson and Robert Wolfe at <https://ged-project.de/allgemein-en/wto-reform-industrial-subsidies/>

Enhanced opportunities for dialogue and improved crisis coordination

The WTO should hold more “thematic sessions” aimed at enhancing committee member’s understanding of the novel trade policy challenges posed by the crisis. Such informal meetings are sponsored by or associated with a WTO body but are not part of its formal meetings. Policy dialogue in WTO bodies is important for considering what works well under agreements, what is not working, and what is next on the agenda. Committees also need to hear from stakeholders who use their agreements – including regulators, other international organisations, and the private sector. Such informal sessions can be an opportunity for members to ask whether measures being taken in the crisis expose gaps or weaknesses in WTO rules.

■ The WTO should hold more “thematic sessions” aimed at understanding by committees of the novel trade policy challenges posed by the crisis.

Here too, video conferencing technology can lessen the cost of participation. The Secretariat should make it possible for officials to make presentations, follow thematic sessions from capitals, and ask questions.

In normal times, discussion of trade concerns in periodic meetings of the relevant committees is sufficient, though discussion in the TPRB is too often perfunctory: ambassadors do not engage in detailed systematic review of the monitoring reports. In these extraordinary times, a single crisis coordination committee, as suggested by a US think tank, might be the best place to discuss the results of police patrols and fire alarms. Such a committee, acting directly under the General Council with engagement by capital-based officials, would provide focus for work underway across WTO bodies and the Secretariat. Its task would be to ensure coordinated assessment of new measures and a consistent approach to crisis related STCs. It should use the full set of enhanced procedures suggested above, including virtual meetings. The mandate of this new body should cover all trade measures implemented in response to the crisis, including measures designed to re-start economies. Just as the virus may hit in waves, so too the policy responses may cascade, which increases the need for robust and sustained monitoring.

Summary of recommendations to improve WTO trade policy monitoring

Governments may be swimming naked in the crisis, but a collective response is only possible if the lights are turned on so that everyone can see the emperors have no clothes: all are complicit in varying degrees. The WTO is the central organisation for managing the trading system. Everyone acknowledged the need for reform before the crisis. That need is now urgent if the WTO is to fulfil its mission to illuminate what governments are doing and manage trade conflicts in challenging circumstances.

The following General Council *decisions* are needed, because they imply central action:

1. Every committee to review notification obligations
2. Integrated database
3. More support for technology to allow virtual meetings
4. Stronger mandate for trade policy monitoring under the TPRB, including better collaboration with other international organisations and the GTA
5. New crisis coordination committee under the General Council.

The following General Council *guidelines* would require each body to consider its own practices:

1. Advance documentation and agendas
2. Annotated agendas
3. Written questions and answers.

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13 What's next for protectionism? Watch out for state largesse, especially export incentives

Simon J. Evenett

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In the past century, each major global downturn has been associated with a rise in discrimination against foreign commercial interests. Keeping in mind trade-policy developments since the onset of the 2008–9 Financial Global Crisis, this chapter aims to assess the likelihood that governments resort to discrimination against foreign commercial interests in the near to medium term as economies deal with the economic impact of the COVID-19 pandemic. The evidence so far points to little generalised threat to world trade from new import restrictions or export restrictions. However, we cannot rule out the potential for state financial support to extend and become a pervasive trade distortion.

Among trade policymakers and diplomats, it is a maxim that sharp economic downturns engender protectionism.¹ Given the scale of this year's forecasted GDP reductions in the major trading nations, concerns have arisen that governments will resort to protectionism and that economic policy will take a decisive inward turn.

Consequently, the cry has gone out – most recently by former US Treasury Secretary [Hank Paulson](#) in the *Financial Times* article of 17 April (Paulson 2020) – that a key building block of globalisation is at risk as the COVID-19 pandemic unfolds. Based on trade-policy developments since the onset of the Global Financial Crisis of 2008–9, this chapter aims to assess the likelihood that governments resort to discrimination against foreign commercial interests in the near to medium term.

¹ Never mind that this view has been contested by academic researchers, most notably by Rose (2013).

A new crisis, a new dominant form of protectionism

Comparisons of previous sharp economic downturns are instructive and contain a warning for analysts and policymakers. The Great Depression, the global downturn in the early 1980s, and the Global Financial Crisis of 2008–9 and the global economic recession it engendered were all associated with widespread resort to discrimination against foreign commercial interests. The maxim mentioned earlier would seem, then, to contain more than an element of truth.

In the case of the 1930s, import restrictions (both tariff increases and import quotas) and exchange-rate depreciations were pervasive. In the early 1980s, governments restricted exports through voluntary export restraints. During the economic downturn that followed the Global Financial Crisis, governments resorted to widespread subsidisation of manufacturers and farmers, even though this state aid was far less prominent than the bailouts of banks and insurance companies. From this it follows that each new economic crisis has been associated with a new pervasive form of discrimination against foreign commercial interests.

The finding concerning the Global Financial Crisis is less well known and, as will become clear, it is worth dwelling upon. Whether through sins of omission or commission, when it comes to contemporary discussions of protectionism, many trade diplomats, officials at international organisations, and academic researchers are like those army generals who insist on fighting the last war. A backwards-looking definition of protectionism would emphasise import restrictions (tariffs in particular) and beggar-thy-neighbour currency devaluations. In fact, we should know better. The long torturous road to eliminating agricultural export subsidies taught us the world markets can be distorted by policies incentivising shipments abroad. So which trade distortions were deployed ten years ago in the wake of the Global Financial Crisis?

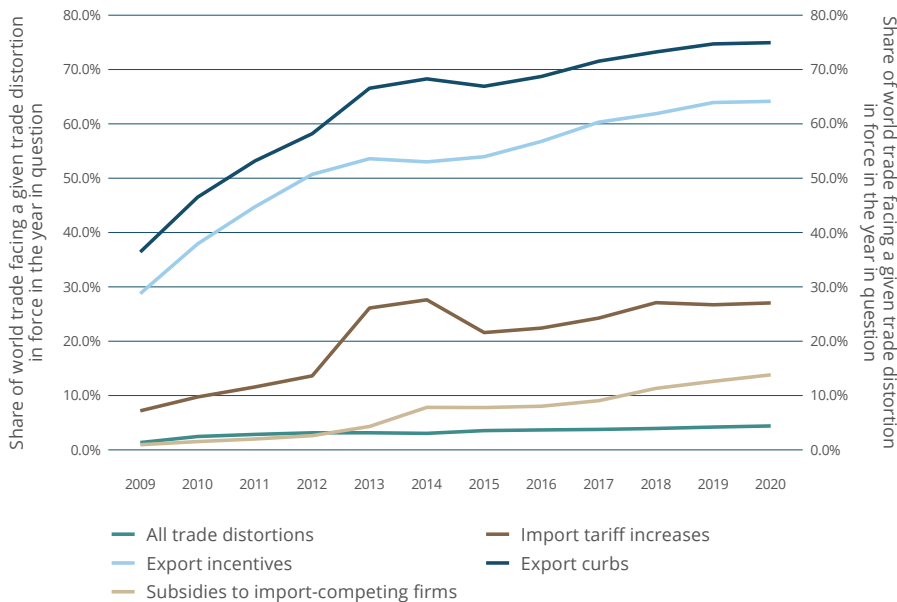
Given the paucity of high-quality data on services trade, the focus here is the frequency and scale of policy-induced distortions to goods trade implemented since November 2008. The Global Trade Alert database of commercial policy interventions² includes 14,353 policy interventions involving discrimination against foreign goods producers and 5,795 reforms that benefited them. From November 2008 to December 2009, the

² For an account of the policies reported in the Global Trade Alert database and the methodology employed more generally, see Evenett (2019). The large number of technical barriers to trade and sanitary and phytosanitary measures implemented every year do not count towards any of the Global Trade Alert statistics presented in this chapter. Nor does the implementation of regional trade agreements, another source of discrimination in international trade.

total number of the former (1,233) far exceeded the latter (425). On average, then, at the start of the last global economic crisis, a commercial policy harming foreign goods suppliers was implemented every eight and a quarter hours.

Where possible, for each policy intervention affecting foreign goods suppliers the Global Trade Alert database identifies (conservatively) the goods implicated using product costs from the UN Harmonized System. Combined with the most fine-grained international trade data available that has global coverage, it is possible to estimate the share of world trade that is covered by each major class of trade distortion. Figure 1 does so for all trade distortions affecting world goods trade, export-incentive policies, policies restraining exports, import-tariff increases, and subsidies awarded to local firms where there is import competition.

Figure 1 Measures to grab market share for exporters rather than restrict imports were the most far-reaching policy interventions in 2009 and subsequently



Source: Policy interventions extracted from the Global Trade Alert database. International trade data at the six-digit level of disaggregation extracted from the United Nations COMTRADE database.

Figure 1 confirms that import tariff increases were resorted to much at the start of the last global economic crisis. Nor were export limitations. So the salient forms of protectionism of yesteryear were, as one observer put it, like dogs that did not bark. It turns out that the action, so to speak, was in forms of state largesse. During 2009, subsidies to import-competing goods manufactures were so widespread that they

covered over 7% of world goods trade. On top of this, new state-provided export incentives implemented from November 2008 to December 2009 covered over 28% of world goods trade.

Therefore, the crisis-response ten years ago was directed primarily towards expanding exports rather than restricting imports. Given how cash-constrained firms were at the height of the Global Financial Crisis, they sensibly asked their governments for cash rather than tariff increases. The latter can generate cash if sufficient expenditure is switched from imports to domestic sales, but this process is both uncertain and takes too much time. Requesting state largesse (cash) is both more direct and faster.

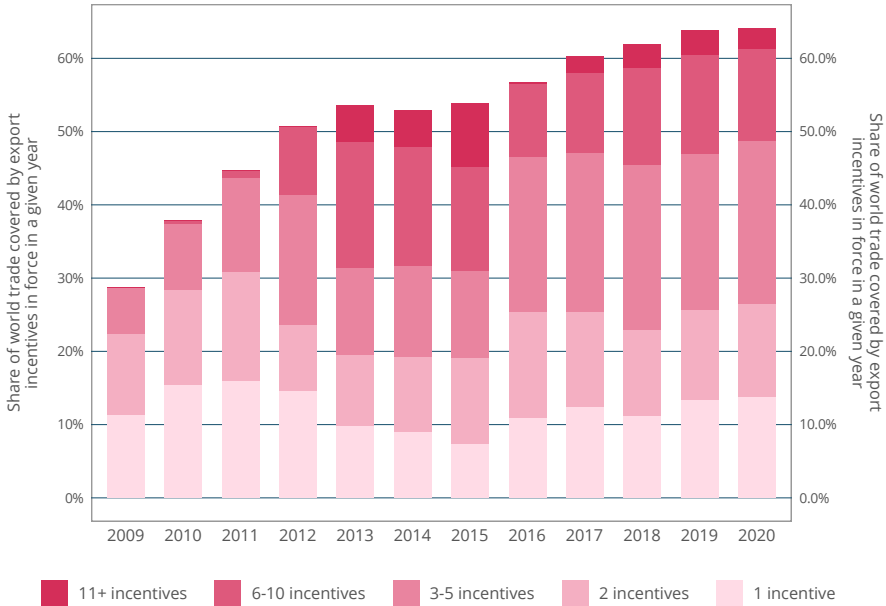
The risk of governments raising tariffs above their bindings and violating part of the WTO rule book at the start of the Global Financial Crisis was minimal. That part of the WTO rule book was never stress-tested – the subsidy part of the rulebook, however, did not cover itself in glory.

As Figure 1 makes plain, resort to export incentives was not confined to the start of the Global Financial Crisis. The share of world goods trade implicated by these policies rose through to 2013, by which time over half of such trade was implicated. The latest estimate is that over 64% of world goods trade involves shipments of products to markets where one or more firms still receive some form of export support from governments.

A total of 2,909 export incentives have been given by 72 governments since November 2008. This contrasts with the 75 reductions or elimination of export incentives over the same timeframe. Consequently, as state support for exports has built up over time, many bilateral trade flows have been affected by multiple export incentives. Figure 2 shows the build-up of world goods export shares affected by more than one export incentive: from 17.1% of world goods trade in 2009 to 43.8% in 2013.

Interestingly, the percentage of world trade affected by one or more export incentives has risen since 2016 (from 56.7% in 2016 to 64.1% in 2020), suggesting that this form of trade policy competition became more prevalent during what might be termed the recent 'populist' era.

Figure 2 Over half of world goods trade now benefits from, or competes against firms benefitting from, multiple export incentives



Source: Policy interventions extracted from the Global Trade Alert database. International trade data at the six-digit level of disaggregation extracted from the United Nations COMTRADE database.

To conclude, the maxim that each sharp global downturn is associated with a rise in discrimination against foreign commercial interests is confirmed. It is also the case that each new major downturn has been associated with a new prominent form of discrimination. Policymakers, diplomats, and analysts are therefore cautioned not to congratulate themselves or anyone else when a form of protectionism used in the past does not recur. Nor it is wise to associate protectionism with a specific set of public policy interventions. Better to keep a beady eye on all of the ways in which governments can discriminate against foreign commercial interests, just in case a new form of market-distorting, resource-misallocating protectionism emerges.

Will this time be different? Protectionism during the COVID-19 pandemic

The argument above suggests we should look out for new forms of trade discrimination as the economic consequences of the COVID-19 pandemic unfold. With forecasted reductions in world trade this year ranging from 11% (IMF) to up to 32% (in one scenario from the WTO secretariat), a serious jolt is going to be felt in the world trading system.

Based on what is known now (25 April 2020), what can be discerned about global trade policy dynamics? First, as noted in the chapter on export curbs on medical products in this eBook, this year has already seen 122 policy interventions worldwide that de jure or de facto curb the export of medical consumables including personal protective gear, medical equipment (such as ventilators), and medicines. At least 75 jurisdictions have export curbs that deny access to essential medical kit to trading partners. While it is true that resort to this form of export restraint was not witnessed in the 1930s, the early 1980s, and at the time of the Global Financial Crisis, it is worth recalling that these recent measures implicate a small number of admittedly sensitive sectors of world trade. Export curbs have not yet become a generalised threat to world trade.³

Second, import restrictions, another bogeyman from the past, have not become a significant threat to world trade this year. According to the Global Trade Alert database, from 1 January 2020 to 25 April 2020, a total of 184 import restrictions have been imposed this year, compared to 323 over the same timeframe last year. Indeed, one would have to go back to 2015 to find a year when as few import restrictions were imposed in the first 117 days of the year. All in all, these statistics suggest that, so far at least, the pandemic has not resulted in an unusually high level of policy-induced curbs on imports.

Third, the nature of the pandemic and resulting lockdown of economic activity needs to be taken into account. With the massive adverse demand and supply shocks being experienced in many economies, it is far from clear whether import-competing firms are currently facing much aggressive competition from foreign suppliers. The latter may not be able to produce in the first place and, even if they can, the collapse in air cargo and container ship delivery likely frustrates delivery to foreign markets – to say

3 At the time of writing, approximately 36 governments have imposed export curbs on food exports in recent months. Without in any way diminishing the health or other societal consequences of food export curbs, to date such curbs have not become a generalised threat to world trade.

nothing about distribution within the exporting and importing nations. As long as these conditions prevail, it is difficult to see where the pressure for protection from imports will come from.⁴

Fourth, the nature of government-imposed lockdown and its knock-on effects through national economies have meant that many firms have seen their revenues dry up overnight. Consequently, those firms with credit lines have drawn them down. Others able to tap capital markets have frequently done so. But many firms – in particular, the small and medium-sized firms – have required financial support from government. Not to be outdone, many larger firms have sought the state's financial largesse as well.

There are inexact parallels to developments in 2008–9, when commercial paper markets dried up and governments sought to advance cash to firms, principally through national banking systems. Such measures have been witnessed in many economies during recent weeks. So have sector-specific bailouts, also seen during the Global Financial Crisis. Such considerations imply that this time around may not be so different.

Fifth, another parallel with the crisis response ten years ago is that governments have taken steps to ramp up trade finance (typically by making more funds available to export credit agencies and national development banks). Some governments have also eased taxes on exporters and provided other favours. One current example is the decision by the Chinese government to offer larger tax rebates to exporters of 1,464 products from 20 March 2020.⁵ Separately, the Government of India has increased tax breaks for mobile-phone exporters for 1 January to 31 March 2020.⁶

More generally, a number of governments have announced measures to favour exporters as part of national stimulus packages. Table 1 lists the government initiatives that the IMF has documented. Public policy interventions to ginger up exports is not confined to countries of any particular region or any stage of development. These government responses strongly echo those from the onset of the Global Financial Crisis.

4 This is not to say that some sectors with excess capacity, such as steel, will not plead for state support.

5 For details, see Global Trade Alert, "China: Ministry of Finance raises export rebate tax on almost 1,500 goods".

6 For details, see Global Trade Alert, "India: Export incentive on mobile phones temporarily increased (extended due to the COVID-19 pandemic)".

Table 1 Initiatives benefiting exporters announced as part of COVID-19 stimulus packages (reported by the IMF)

Government	Initiative and, where available, additional funds committed
Angola	Central bank alters regulations on private banks to encourage lending to firms who advance export-promotion and import-substitution goals.
Austria	€9-billion fund for guarantees for firms, including exporters
Bangladesh	\$588 million to support trade finance at Bangladesh Bank; funding of Export Development Fund increased to \$5 billion
Egypt	Increased 'subsidy payout' to exporters
Finland	€4.2 billion more to the Export Credit Agency for lending and guarantees for SMEs
Germany	€100 billion for national development bank that also grants trade finance
Hungary	Three new export credit programmes introduced
India	Reserve Bank relaxed repatriation limits for exporters
Jordan	Certain activities of export-oriented industries, such as pharmaceuticals, potash, and phosphates, exempted from lockdown
Myanmar	Two percent advance income tax on exports waived until the end of the fiscal year
Pakistan	Accelerated tax refunds to export industries (outlay approximately \$600 million)
Spain	Up to €2 billion for guarantees to exporters given by the Spanish Export Insurance Credit Agency.
Sweden	Expansion of the credit guarantee framework of the Export Credit Agency
Turkey	Three new distinct programmes for exporters
Zambia	Export duties on metals suspended

Source: International Monetary Fund, "Policy responses to COVID-19," accessed on 19 April 2020.

Concluding remarks

While it is hazardous to speculate, the evidence so far points to little generalised threat to world trade from new import restrictions or export restrictions. In contrast, we cannot rule out the potential for state financial support – initially advanced on liquidity grounds – to extend and become a trade distortion. Moreover, the state largesse for exporters already granted by governments during the pandemic will, if not reversed, almost certainly influence trade flows. It remains to be seen if export support becomes as pervasive as it was in 2009 and the years that followed.

Overall, while some new forms of state discrimination may emerge, the available evidence on government response suggests that this time may not be that different – which would call into question the rule of thumb, “A new crisis, a new dominant form of protectionism.” Sustained monitoring of pandemic-era government intervention will be necessary. Focusing monitoring on the more salient forms of trade distortions would, history suggests, be a blunder of the first-order. A global trading system further riddled with subsidies is the last thing the world needs.⁷

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7 Hence the inclusion of a chapter on policy transparency in this eBook.

The COVID-19 pandemic sparked broad-ranging resort to export restrictions on medical supplies and food. This eBook asks: Should governments react to the COVID health crisis and collapse of incomes and trade by turning inward? The authors provide an unequivocal answer: No. Turning inward won't help today's fight against COVID-19. It won't foster economic recovery, and it won't nurture the collaborative spirit that the human race will need to defeat this threat. National trade barriers in a world of internationalised manufacturing processes make it harder for every nation to get vital supplies.

The export restrictions and a slide into protectionism following the impending collapse of world trade risks triggering a 1930s-style retaliatory vortex that ultimately destroys the world's ability to produce vital medical supplies – to say nothing of the billions of doses of vaccine that we will soon need to produce and distribute and the liberal trading system our living standards depend on.

Turning inward would be a great folly. There is still time to reverse course. World leaders should embrace the cooperative spirit adopted in 2009 when G20 leaders declared: "A global crisis requires a global solution..."

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