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### 1AC — Advantage

#### The Advantage is Megaships —

#### The United States is expanding antitrust enforcement of international shipping

Seward & Kissell 3/2/22, Law firm specializing in antitrust. (Federal Maritime Commission and Department of Justice Announce New Steps to Strengthen Antitrust Enforcement Efforts in the Shipping Industry, <https://www.sewkis.com/publications/federal-maritime-commission-and-department-of-justice-announce-new-steps-to-strengthen-antitrust-enforcement-efforts-in-the-shipping-industry/>)

Building on our July 2021 alert regarding the signing of the first interagency Memorandum of Understanding (“MOU”) entered into by and between the Federal Maritime Commission (“FMC”) and the Department of Justice (“DOJ”), the DOJ and FMC on February 28 issued a joint release announcing additional steps that each agency would take to strengthen their partnership and support efforts to enforce the antitrust laws of the United States, reflecting their ongoing focus on promoting competition in the shipping industry. In press releases posted to each agency’s website, the Antitrust Division of DOJ and the FMC disclosed that “the Justice Department will provide the FMC with the support of attorneys and economists from the Antitrust Division for enforcement of violations of the Shipping Act and related laws” and that “the FMC will provide the Antitrust Division with support and maritime industry expertise for Sherman Act and Clayton Act enforcement actions.” This interagency initiative highlights an increasing level of sophistication and an ongoing focus by both DOJ and FMC to investigate and enforce violations of the Shipping Act and the antitrust laws of the United States. Simultaneously, the White House also on February 28 released a companion fact sheet that highlights ongoing enforcement efforts by the Executive Branch, with a particular focus on ocean carrier companies and alliances that operate in the container shipping industry. The fact sheet includes criticism of ocean carrier detention and demurrage fees and price increases, and contends that certain ocean carrier business practices have contributed to supply chain disruptions and port congestion. The fact sheet also notably states that the FMC will continue ramping up oversight of the global ocean shipping industry, and seeks additional reforms that “address the current antitrust immunity for ocean shipping alliances.” As shipping industry participants have speculated that supply chain pressures may last well into 2022, we expect that the government’s focus on fair competition in the shipping industry will continue.

#### They’re targeting all major shipping alliances

Consadine 21, Attorney with Seward & Kissell LLP. (Michael, Shipping Companies Beware: Antitrust Challenges Ahead as DOJ Focuses On Industry, <https://www.sewkis.com/publications/shipping-companies-beware-antitrust-challenges-ahead-as-doj-focuses-on-industry/>)

On July 12, 2021, the FMC and DOJ signed its first interagency MOU to foster cooperation in the enforcement of antitrust and other laws related to the maritime industry. Key provisions of the MOU provide that the agencies will: i) share information and materials relevant to the competitive conditions in the U.S.-international ocean liner shipping industry, including terminal services provided to ocean liners, and ii) confer, at least annually, to discuss and review enforcement and regulatory matters. Unlike the FMC, DOJ has the authority to bring criminal charges against alleged offenders of antitrust laws. In the past, DOJ has made its presence known by issuing statements regarding certain alliance agreements (vessel-sharing agreements); this MOU raises the stakes as it suggests more intense scrutiny by DOJ. FMC Activity, Audit Program and Recent Litigation On July 19, 2021, within days of the Executive Order and the signing of the MOU, the FMC also disclosed the Vessel-Operating Common Carrier Audit Program to review carrier compliance with FMC’s detention and demurrage rule. As part of this new audit program, the FMC will audit the top nine carriers by market share ― i.e., Maersk, MSC, CMA CGM, COSCO Group, Hapag-Lloyd, ONE, Evergreen, HMM and Yang Ming. Initially, the FMC will request information from the carriers to create a database of quarterly reports on detention and demurrage practices, and will follow with individual carrier interviews. The audit may also focus on other aspects of these companies’ practices and operations, such as billing, appeals procedures, penalties assessed by the lines, and any other restrictive practices. Significantly, the FMC has already been auditing carriers to address issues concerning intermodal congestion related to COVID-19 and to identify operational solutions to cargo delivery system challenges. The FMC is apparently poised to investigate eight carriers ― CMA CGM, Hapag-Lloyd, HMM, Matson, MSC, OOCL, SM Line and Zim ― that were identified as having implemented congestion-related surcharges. In August, the FMC requested information about these surcharges from these carriers. The FMC’s inquiry may focus on whether surcharges were implemented following proper notice, if their purpose was clearly defined, and whether there were clear events or conditions that triggered or terminated the surcharges. The FMC suggested enforcement action may occur if tariffs are improperly established. Shipping customers are also imploring the FMC to investigate shipping practices. On July 28, 2021, MCS Industries, a Pennsylvania-based home furnishings manufacturer, filed an administrative proceeding against COSCO and MSC, alleging that the carriers had violated provisions of the Shipping Act and refused to honor their service contracts, calling for the FMC to conduct an investigation of these companies’ shipping practices. COSCO and MSC have denied the allegations and noted, among other things, that MCS’s complaint should be heard in the fora specified in its respective service contracts with the carriers. An administrative law judge was appointed to hear the matter, the outcome of which should be closely watched by industry participants. DOJ Antitrust Landscape DOJ’s coordinated efforts with the FMC have implications for the shipping industry as DOJ antitrust prosecutions have been both expansive and punitive. DOJ’s jurisdiction includes foreign business activities that have a “substantial and intended effect in the U.S.” That broad reach has impacted numerous companies throughout the world in various industries ranging from auto parts to air cargo. Companies in such industries have paid millions of dollars in penalties and many of their employees have been imprisoned. The shipping industry has not been spared. In a long-running investigation, a Norwegian shipping company and its executives were indicted for their participation in an antitrust conspiracy focused on the allocation of customers and routes, rigging bids, and fixing prices for the sale of international ocean shipments of roll-on, roll-off cargo to and from the United States. The company pled guilty and was sentenced to pay a $21 million fine; four individuals have already been sentenced to serve prison terms. Four other companies also pled guilty for their roles in the conspiracy, leading to the assessment of more than $255 million in criminal fines.

#### BUT the Shipping Act creates immunity for vessel-sharing agreements

UNCTAD 18, UN Conference on Trade and Development – Report of Intergovernmental Group of Experts on Competition Law and Policy, (Challenges faced by developing countries in competition and regulation in the maritime transport sector, https://unctad.org/system/files/official-document/ciclpd49\_en.pdf

The Federal Maritime Commission [FMC] is the independent regulatory agency responsible for the regulation of seaborne transportation in the foreign commerce of the United States for the benefit of United States exporters, importers and the United States consumer. 25 Its mission is to ensure competitive and efficient maritime transportation services for shippers, by monitoring agreements among carriers and service contracts with regard to their effects on prices and services. The amendment of the Shipping Act (1916) in 1961 established the Commission and gave it the power to disapprove agreements between liner shipping carriers that were not in the public interest. In this regard, a violation of antitrust laws would be considered against the public interest. The Shipping Act (1984) removed both the public interest clause and the requirement for approval by the Commission for agreements between liner shipping carriers. Vessel-sharing agreements and other cooperative agreements are also permitted under the Act. 23. The United States has a statutory antitrust exemption for liner conferences. The Shipping Act, as amended by the Ocean Shipping Reform Act (1998), provides an alternative competition enforcement regime and includes limited antitrust immunity for agreements between liner shipping carriers from competition law. The Act introduced reforms that ended the authority of liner conferences to regulate the service contracts of members. In addition, the Act allows conference members to negotiate independent confidential service contracts with shippers and prohibits other members from retaliating against shippers or carriers that do so. Prior to the Act, such contracts had to be made public, potentially reducing the incentive for participants to enter into them. The annual report of the Commission in 2014 stated as follows: “Conference or price-fixing agreements have become largely irrelevant to United States liner shipping. No new carrier conference agreements have been filed with [the Commission] since fiscal year 2000. The remaining three conferences cover only government cargoes.” 26 All conduct that does not fulfil antitrust exemption requirements is subject to competition law and investigated by the Department of Justice if it involves cartel-like practices, including price fixing, bid rigging and market allocation.

#### That allows for the continuous acquisition of larger and larger megaships

O’Connor 14, Cozen O'Connor Law Firm, (A New Era For Vessel Sharing Agreements – FMC Allows P3 and G6 Alliances To Go into Effect https://www.jdsupra.com/legalnews/a-new-era-for-vessel-sharing-agreements-23682/)

Perhaps the first true vessel sharing agreement was called, appropriately enough, The Vessel Sharing Agreement (which led to use of the term “VSA” to describe such arrangements) among Sea-Land Service, Inc., Nedlloyd Lijnen, B.V., and P&O Containers, Ltd. This agreement was intended to maximize the utilization of the then very large and fuel efficient containerships (the so-called Econships) that Sea-Land had acquired from the estate of the bankrupt U.S. Lines. The P3 and G6 agreements have a similar purpose — maximizing utilization of large, efficient vessels as a means to reduce carrier costs. In other words, some of the basic reasons lines enter into VSAs have remained unchanged over the years. The use of space charter and vessel sharing agreements increased through the late 1980s and early 1990s, although the vast majority of these agreements were (like the original VSA) often focused on a single trade lane. During this period, relatively few lines were considered “global” carriers and those that were often offered service through a combination of stand-alone strings that did not involve partners, trade-specific vessel sharing agreements, and space charter arrangements. As world trade increased and the phenomenon of globalization emerged, carriers sought to meet the transportation needs of their increasingly global customer base. Hence, carriers moved to geographically broader cooperations that the FMC labeled “global alliances,” most notably The Grand Alliance, The New World Alliance, and the CKYH alliance. These agreements, although not truly global, were often broader in geographic scope and involved a more integrated, long-term cooperation than many of their predecessors. However, the objective was still the same: to provide a service superior to that which could be offered alone while reducing operational costs and capital risks. In many respects, the P3 and G6 agreements represent the next logical step in the evolution of carrier agreements: geographically broader, more operationally integrated, long-term vessel sharing arrangements that come closer to being truly global. As in the past, these arrangements help carriers hedge against the risk of the investment required to build the large, fuel-efficient ships necessary to provide service at a competitive cost. They also allow improved utilization, a key to achieving cost savings. The difference between these agreements and past VSAs is primarily one of degree rather than kind — the cost advantage offered by new tonnage is necessary to remain competitive, but the size and cost of new ships has reached the point where it may no longer be feasible for carriers to operate outside an alliance that helps reduce the risk of such an investment to the point that it is acceptable. Indeed, some are questioning whether it is possible for a line to remain competitive on a global scale following a 1990s model of offering a patchwork of stand-alone and cooperative services rather than being a member of a global alliance.

#### The size of those megaships are about to explode, drastically shaking up the entire industry

Fickling 21, Reporter for The Print. (David, March 30, 2021, Get ready for future, giant next-gen cargo vessels will make ‘Ever Given’ look like bath toy, <https://theprint.in/opinion/get-ready-for-future-giant-next-gen-cargo-vessels-will-make-ever-given-look-like-bath-toy/630839/>)

If you think the ultimate reason the Suez Canal got blocked last week is because container ships are getting too big, get ready for the future. The next few generations of cargo vessels are going to make the Ever Given look like a bath toy. Big enough to carry 20,124 twenty-foot equivalent units, or TEUs — the standard measure for cargo, representing a single shipping container — the Ever Given was one of the world’s largest such vessels when it was launched in 2018. The first container ship to break the 20,000 TEU mark had been at sea for less than a year. One famed 1999 study, written at a time when the largest boats carried less than 8,000 TEUs, argued it would prove impossible to build craft bigger than 18,000 TEUs. The Ever Given, finally floating on its way again, is now distinctly in the second class of mega freighters. There are nearly 100 ships carrying more than 20,000 TEUs on the seas or under construction, and the bigger vessels being assembled in Chinese and South Korean shipyards are mostly around the 24,000 TEU mark. A quarter of the capacity moved by the world’s largest container line, AP Moller-Maersk A/S, is on boats above the 17,500 TEU mark. That’s unlikely to be the end of it. Chinese shipyard Hudong-Zhonghua Shipbuilding Group Co. has already registered designs for a 25,000 TEU vessel, and it has become relatively commonplace to predict that 30,000 TEU monsters will be plowing the oceans before the decade is out. Such enormous hulls may cause problems that will put the Ever Given’s mishap into the shade. At Rotterdam, the largest ships already have to arrive at high tide to ensure there’s enough clearance for them to get through the channel, according to a 2019 study by Nam Kyu Park of South Korea’s Tongmyong University. Larger vessels will soon be unable to berth at Shanghai, Busan and Hong Kong even at high tide, unless channels are dredged out further, Park wrote. There are similar problems with infrastructure on dry land. Modern ports are astonishingly efficient at unloading, and can turn around a fully laden 20,000 TEU vessel in a couple of days. But the time spent waiting for a berth can cut deep into the wafer-thin economics of a container line. Longer quays may have to be built to accommodate the larger ships, as well as cranes that can reach across wider decks, larger loading yards for tens of thousands of containers, and faster rail and road terminals to take cargo to its next destination. Current vessels are already at the limits of what can fit along major shipping lanes. The Ever Given is too bulky to squeeze through the Panama Canal, where boats must be lifted over its mountainous spine with massive lock gates. At 24 meters (79 feet) deep, the Suez Canal has more capacity — but it’s roughly as deep as the Straits of Malacca and Singapore, so dredging it further to accommodate bigger ships won’t help much. The binding constraint on East-West trade at this point isn’t engineering, but geology. Extending 15.7 meters below the water line, the Ever Given shouldn’t, on paper, have trouble making it through any of those channels, which typically require 3.5 meters of clearance from the bottom. Next-generation ships with a 20-meter draught, on the other hand, would be at constant risk of grounding. How have container ships managed to defy expectations that their size would hit fundamental limits? A large part of it is because the economies of scale are so compelling. Bigger vessels use more fuel, but relative to the number of boxes stacked on their decks they’re far more efficient. They can also turn around a larger number of containers at a time and serve a wider array of feeder ports, ensuring they can defray their massive capital costs quicker. There’s little sign that this is about to change. New International Maritime Organization regulations against the burning of sulfur-intensive fuel oil introduced last year mean current ships are using costlier diesel, putting more pressure on naval architects to come up with yet more efficient designs. Beyond that, the IMO now has plans to reduce carbon dioxide emissions by 40% in 2030 compared with 2008, and by 70% by 2050. Even with a switch to cheaper, less polluting liquefied natural gas as the main fuel, that’s going to mean further drastic improvements in efficiency, not to mention propulsion technologies that don’t exist yet. To date, the best way to chip away at fuel consumption and emissions is by increasing size. It’s hard to know how the industry is going to cope with this. Perhaps Suez, Malacca and Singapore can be dredged to accommodate even bigger vessels. Perhaps shipyards will find ways to squeeze a few more inches out of existing channels. If not, alternative routes around the Cape of Good Hope and through the deeper Straits of Sunda and Lombok between Indonesia’s islands may prove the only viable way to accommodate such massive boats. Should that happen, those economies of scale will have to be drastically larger to make up for the longer sailing time. We’ve seen container ships leap from 10,000 TEUs to 24,000 TEUs. Don’t be shocked to see 50,000 TEU vessels plying the sea in your lifetime.

#### Those ships are inherently anticompetitive

Veitch 16, Head of Policy for the Global Shipping Foundation, (Alex, Nov 2016, Report by Global Shipping Foundation, “The Implications of Mega-Ships and Alliances for Competition and Total Supply Chain Efficiency: An Economic Perspective”, <https://paperzz.com/doc/9427398/the-implications-of-mega-ships-and-alliances-for-competit>...)

The container shipping Market is undergoing considerable change. The development of the mega ship has had a profound impact. They have led to the creation of new strategic Global alliances and quickened the pace of consolidation in the industry. This paper analyzes the impacts for shippers, the customers of container ship operators, and in particular the Wider supply chain implications of Mega ships and the potential impact on competition between competitors and their shipper customers. This paper comes in two parts: the first provides an economic assessment of megaships, alliances and consolidation of the container ship industry; the second part, in the form of an Annex (Annex 1) takes a competition policy analysis of megaships, strategic alliances in the impacts of consolidation in the industry. the paper draws on various detailed studies and sources, including the recent Organization for Economic Cooperation and Development (OECD) International Transport Forum report on Mega ships and the oecd competition committee report on competition issues in liner shipping , but it also provides its own independent economic and competition assessments. The following key findings, conclusions, and recommendations for carriers, regulators and competition authorities, and shippers are summarized below. Economic Issues: Mega ships and the associated commercial practices of strategic alliances and mergers are driving consolidation in the container shipping sector. This is harmful to shippers because megaships and strategic alliances reduce supply chain efficiency and rivalry unimportant parameters of competition, including capacity, sailing frequency, de transit times, ports of call and Associated service quality. The higher economies of scale associated with megaships mean that fewer ships can operate in a market of a given size. Higher barriers-to-entry are likely to reinforce the trend towards fewer independent operators, with smaller operators being driven out of the major trades into niche markets faced with a trend towards consolidation and cooperation due to Mega vessels. It is unlikely competition problems associated with consolidation and megaships will be solved by new entrance into liner shipping. The report asks whether the time is right to question the received wisdom that shipping alliances and Consortium are preferable to consolidation between carriers because Shipping Lines operating common capacity cannot compete amongst themselves with regards to the Consortium has agreed capacity, sailing frequency, transit times, ports of call and Associated service quality.

#### There are three scenarios —

#### The first scenario is Accidents —

#### Megaships drastically increase harms to the Arctic

Baker & Harris 16, Chairman of Marsh Marine Practice, and, Senior Vice. (Marcus & Stephen, Marsh Report: "PLUMBING THE DEPTHS" OF MEGASHIP SUPER-SIZED RISK, In Navigating a Shifting Risk Landscape Expert Perspectives on the Marine Industry, file:///C:/Users/sharris/Downloads/Navigating%20a%20Shifting%20Risk%20Landscape%20Expert%20Perspectives%20on%20the%20Marine%20Industry.pdf)

Navigation routes, such as those leading to or from the Panama Canal, have been the same for many years, with commercial cargo vessels following tried-and-tested pathways through the sea; however, the known safe depth for the navigation of many is only as much as the draught of the largest, deepest vessel ever to have used it. An extra four meters of depth that the newest megaships can draw could be the vital difference between uneventful navigation and a serious grounding or stranding, with all the perils of ship damage, crew endangerment, cargo loss and marine pollution that could result. As container ships are the largest users of both the Suez and Panama Canal systems, these are the vessels that, having the ability and commercial reasons to navigate new parts of the world’s oceans, are of most concern. Governments seeking to have large vessels use their ports and terminals will often be the first to blame the shipping industry when a serious grounding or stranding accident occurs in their waters. But how much of that blame should actually lay at a government’s own doorstep, when it comes to ensuring hydrographic surveys meet modern standards (and, where necessary, the funding to do so), especially when it is known that increasingly larger vessels will be using their waters? Let us not forget that the attempted—and ultimately unsuccessful—salvage of the MV Rena after it grounded on Astrolabe Reef in New Zealand in October 2011 resulted in one of the largest-ever protection and indemnity losses to the market. And the MV Rena was a very small container ship in comparison to the modern generation. Many vessel operators have been viewing, with great interest, the increasingly viable Arctic routes between Asia and Europe as an alternative to the much longer (both in time and distance) routes via Singapore and the Suez Canal; however, the vessels that have, to date, successfully transited the Northern Sea Route (NSR) around northern Russia have been relatively small in size. Marsh has already voiced concerns about the potential risks of larger vessels using this route with greater frequency, but the knowledge that so few of the waters have been adequately surveyed for depth to modern standards adds to those concerns. In addition, there is increasing talk of commercial use of the Northwest Passage (NWP) around northern Alaska and through the many islands of northern Canada, which still poses considerable risk, as some of the waters are even less bathymetrically assured than parts of the NSR. Only a handful of commercial vessels have ever successfully transited the NWP, yet some operators are already heralding those few successes to prove the NWP to be a major route for the future. The lack of hydrographic data for that whole region should remain a major concern for any sensible operator, echoed by similar warnings in the new Polar Code.

#### They make accidents inevitable

Waterson 19, Senior Vice President - Marine Hull and Liability for Lockton Companies LLP World’s Largest Insurance Broker. (Robert, Re-evaluating the risk of mega ships, https://www.locktoninternational.com/gb/articles/re-evaluating-risk-mega-ships)

“A consolidation process in the shipping transport market has contributed to a trend towards fewer but bigger ships,” says Robert Waterson, Senior Vice President - Marine Hull and Liability at Lockton. “Fleet operators have ordered larger ships and because they are newer this tends to have a positive effect on all costs including insurance premium levels. However, this does not necessarily mean claims volumes will be lower,” Waterson notes. With larger and more sophisticated vessels entering the sector – and more hazardous areas such as polar waters being explored – this is aggravating the risk of ever larger single losses, insurer AGCS warned in its “Marine claims trends 2018” report. “A major incident involving a fully loaded ultra-large container ship will easily result in a $1bn to $2bn insurance claim including damage to cargo, hull, salvage and wreck removal costs,” the report added. A number of container ship casualties recently fuelled a discussion about the growing risks associated with fires on mega-containerships. Ship fires are one of the major loss drivers in the shipping industry: In March 2018 a fatal fire on the new 15,252 TEU Maersk Honam. The incident is believed to have been triggered by mis-declared chemical cargoes causing a blast and fire which resulted in 130 people being taken to hospital. “The cargo description is often not clear and containers may contain chemicals and hazardous goods that were not supposed to be there or that were incorrectly described and thus loaded in the wrong part of the vessel,” says Waterson. Insurers’ apprehension focuses not only on large container ships but also on large passenger vessels, especially after Costa Concordia off the Tuscan holiday island of Giglio in Italy set off a chaotic evacuation of 4,229 passengers and crew, and 32 people died, according to the May 7, 2019 presentation “Megaship Challenges: The P&I Perspective” by Joe Hughes from the The American Club. Large vessels are more difficult to navigate, and grounding and/or collisions are harder to deal with as there is more cargo and fuel to salvage. Where salvage/wreck removal is required, the costs are vastly influenced by the type of cargo that has to be removed and how hazardous this cargo is. Very often this has to be accomplished in remote and difficult environmental conditions, and always within the requirements of both the local and international law. As environmental regulations tighten globally, these costs will only rise further and more cover will be required. A discussion in the insurance industry about whether large container ships might require a specific insurance rating, previously under consideration but not implemented, may now re-open as more data is available. As some underwriters withdraw from underwriting large container fleets this may affect renewals pricing and available capacity in the short term. “In hull and cargo, the specific risks attached to large ships are not being addressed. Ratings do not take this into account,” Waterson says. “Mega-ships carry higher risks and are not necessarily safer. While the claims frequency may fall, the size of a loss is likely to be much higher,” he notes.

#### They independently increase drastic amounts of pollution in the Arctic AND risk massive oil spills

Shavley 21, Reporter for Business Insider. (Kevin, May 1, 2021, The Ever Given crisis put mega ships under the spotlight. As vessels get bigger and more automated, a long-serving captain and other experts are weighing up the risks., <https://www.businessinsider.com/ever-given-suez-canal-blockage-mega-ships-sea-captain-2021-4>)

Shipping vessels have grown larger by multiples in just a few years, adding to worries among some industry insiders that a single mistake made by a massive ship could cause a global supply chain disruption, as the world saw with the Ever Given. That ship, which was stuck in the Suez Canal for about a week in March, slowed or stalled shipping traffic around the world. It was estimated to cost the global economy about $400 million per hour, and its effects have still been rippling through the economy in recent weeks. As ships like the Ever Given have grown over the last few decades, their crews have been shrinking because they're using more automated processes, said Captain Rahul Khanna, global head of marine risk consulting at Allianz Global Corporate & Specialty, whose team publishes an annual safety review. "Decades ago, the ships with 3,000 TEU — that's the number of twenty-foot containers that can fit onboard — were considered the big ones," said Khanna. Now, ships like the Ever Given carry maximum loads of more than 20,000 containers. Boat-building technology could in the years and decades ahead produce ever-larger ships, perhaps growing to 50,000 containers or more. If there's demand for such ships, modern technology could allow for such builds, Khanna said. Between 2006 and 2020, the largest shipping vessels in the world grew by 155%, according to a January report from the United Nations Conference on Trade and Development. The biggest ships are loading or unloading 125% more at each port they visit. With bigger boats, there could be more impactful accidents. "While seemingly efficient, they are too large to fit in some ports, increase dangers in storms, and highly piled containers are falling, causing product and the corresponding financial losses," said Cheryl Druehl, associate professor of operations management at George Mason University. Even the Ever Given debacle, which grabbed hold of the worldwide news cycle, could have been worse. If that ship's hull had broken, say, it would have taken even longer to fix the issue, Khanna said. It's likely that a crane would have had to have been constructed nearby to remove some or all of its load. Refloating it would have been a more complex task, likely stretching into months. As the shipping industry gets back to its normal routine, Khanna and other shipping industry insiders walked Insider through their concerns about the next big disaster. The most obvious answer was that another ship could get stuck in the Suez or Panama canals. The risk of a situation similar to the Ever Given's crash in one of those waterways was "unlikely but high impact," said Ambrose Conroy, founder and CEO of Seraph, a consulting and turnaround firm. The risk was lower at other heavily travelled shipping lanes, including the Singapore Strait, and the Strait of Hormuz, although it has geopolitical risks of its own, said Khanna. Ports in the future may also have trouble handling larger ships, but that's an issue that can be fixed with proper planning, Conroy said. Instead, it's the "black swan events" like the Ever Given that the industry needs to look out for. One concern is a shipping route that's becoming more popular. In decades past, a lane through the Arctic would open in summer months, giving ships a more direct path between Europe and Russia. As the climate crisis has reduced the amount of ice in those northern regions, that passageway is now increasingly being used in the winter. It's become so popular that the International Maritime Organization issued a revised Polar Code. As the Ever Given stalled global shipping in March, Moscow officials pointed to the Northern Sea Route through the Arctic as an alternative. But Arctic travel comes with its own risks. While it's unlikely that modern ships, with all their technology, would hit an iceberg, smaller ice floats can still damage hulls, Khanna said. An oil spill in the Arctic would also be devastating to marine life. And rescue crews might have difficulty reaching a stranded ship in such inhospitable waters.

#### That risks global species and ecosystem destruction

Tewari 17, IIASA Science Communication Fellow. (Parul Aug 16, 2017, What would an oil spill mean for the Arctic?, https://blog.iiasa.ac.at/2017/08/16/what-would-an-oil-spill-mean-for-the-arctic/)

While it can never be good news, an oil spill in the Arctic could be particularly dangerous because of its sensitive ecosystem and harsh climatic conditions, which make a cleanup next to impossible. With an increase in maritime traffic and an interest in the untapped petroleum reserves of the Arctic, the likelihood of an oil spill increases significantly. Maisa Nevalainen, as part of the 2017 Young Scientists Summer Program (YSSP), is working to assess the extent of the risk posed by oil spills in the Arctic marine areas. “That the Arctic is perhaps the last place on the planet which hasn’t yet been destroyed or changed drastically due to human activity, should be reason enough to tread with utmost caution,” says Nevalainen Although the controversial 1989 Exxon Valdez spill in Prince William Sound was quite close to the Arctic Circle, so far no major spills have occurred in the region. However, that also means that there is no data and little to no understanding of the uncertainties related to such accidents in the region. For instance, one of the significant impacts of an oil spill would be on the varied marine species living in the region, likely with consequences carrying far in to the future. Because of the cold and ice, oil decomposes very slowly in the region, so an accident involving oil spill would mean that the oil could remain in the ice for decades to come. Yet, researchers don’t know how vulnerable Arctic species would be to a spill, and which species would be affected more than others. Nevalainen, as part of her study at IIASA will come up with an index-based approach for estimating the vulnerability (an animal’s probability of coming into contact with oil) and sensitivity (probability of dying because of oiling) of key Arctic functional groups of similar species in the face of an oil spill. “The way a species uses ice will affect what will happen to them if an oil spill were to happen,” says Nevalainen. Moreover, oil tends to concentrate in the openings in ice and this is where many species like to live, she adds. During the summer season, some islands in the region become breeding grounds for birds and other marine species both from within the Arctic and those that travel thousands of miles from other parts of the world. If these species or their young are exposed to an oil spill, then it could not only result in large-scale deaths but also affect the reproductive capabilities of those that survive. This could translate in to a sizeable impact on the world population of the affected species. Polar bears, for example, have, on an average two cubs every three years. This is a very low fertility rate – so, even if one polar bear is killed, the loss can be significant for the total population. Fish on the other hand are very efficient and lay eggs year round. Even if all their eggs at a particular time were destroyed, it would most likely not affect their overall population. However, if their breeding ground is destroyed then it can have a major impact on the total population depending on their ability and willingness to relocate to a new area to lay eggs, explains Nevalainen. Due to lack of sufficient data on the number of species in the region as well as that on migratory population, it is difficult to predict future scenarios in case of an accident, she adds. “Depending on the extent of the spill and the ecosystem in the nearing areas, a spill can lead to anything from an unfortunate incident to a terrible disaster,” says Nevalainen. It might even affect the food chain, at a local or global level. “If oil sinks to the seafloor, some species run the risk of dying or migrating due to destroyed habitat – an example being walruses as they merely dive to get food from the sea floor,” adds Nevalainen. As the walrus is a key species in the food web, this has a high probability of upsetting the food chain. When the final results of her study come through, Nevalainen aims to compare different regions of the Arctic and the probability of damage in these areas, as well as potential solutions to protect the ecosystem. This would include several factors. One of them could be breeding patterns – spring, for instance, is when certain areas need to be cordoned off for shipping activities, as most animals breed during this time. “At the moment there are no mechanisms to deal with an oil spill in the Arctics. I hope that it never happens. The Arctic ecosystem is very delicate and it won’t take too much to disturb it, and the consequences can be huge, globally,” warns Nevalainen.

#### Extinction

Petersen et al 4, Director @ Icelandic Institute of Natural History (Aevar, “Circumpolar Biodiversity Monitoring Program,” CAFF, http://library.arcticportal.org/309/1/CircumpolarBiodiversityFramework.pdf )

The circumpolar Arctic region, as defined for the purpose of CAFF at its inaugural meeting (see Figure 1 - CAFF map of the Arctic), covers some 14.8 million km of land and 13 million km of ocean. It plays a key role in the physical, chemical and biological balance of the globe. The Arctic region encompasses relatively pristine environments, compared to the rest of the globe. Vast wilderness areas are crucial for the preservation of the Arctic’s unique biological diversity, and the Arctic is additionally of much cultural, economic, and recreational value. The CAFF overview report (2001) highlighted such diverse actual and potential importance of Arctic biodiversity as for fuel, food (e.g. fisheries), fodder, nature tourism, ecosystem functioning, feedbacks f rom ecos y s tems to the global atmosphere, future genetic recombinations and adaptations, fiber pharmaceuticals, anti-microbial drugs and industrial enzymes (from extremophiles). The Arctic is unique in biological, physical, and chemical properties. Life in the Arctic has adapted to extreme conditions of darkness, cold and a brief summer season where food becomes plentiful. Arctic ecology is shaped by the severity of the climate and its variability in space and time. Arctic species must survive long periods when food is limited or unavailable, or otherwise migrate to more southerly latitudes, as many do to all corners of the globe. Arctic species must be adapted to respond quickly when conditions improve. The growing season is brief and intense. When sunlight reaches the oceans in the spring, plankton bloom. On land, the growth of plants begins the summer feast for the terrestrial species, allowing the breeding, raising of young, and storage for the upcoming winter. At the foundation of the intricate marine food webs are highly specialized species of phytoplankton and sea ice algae, especially adapted to the extreme conditions of darkness and cold, and the freshwater-brine conditions of the sea iceocean interface. Terrestrial and freshwater food webs are usually simpler than those in the marine environment, but are closely linked to the marine ecosystem, e.g. through run-off and many creatures which move between the different ecosystems. The complexity of Arctic biodiversity stems in part from the interplay between the terrestrial species, habitats and ecosystems, with those in the marine environment. In the overlapping structure of ecosystems, all species in a system depend to some degree on the ecological functions of other species such as good production, competition, and predation; and species behavior such as reproduction and migration are closely linked with these functions. With an integrated, ecosystem-based approach to monitoring, the impacts of stressors to these ecological functions are better identified and understood, as this type of monitoring bridges ecosystems, habitats and species. For example: seabirds nest on land but may feed in the ocean or in lakes and rivers on fish and invertebrates. Salmon, Arctic Char and certain other fish species are anadromous – crossing from the marine ecosystem to the freshwater ecosystem to breed. Polar bears den on land in snow banks, but hunt almost exclusively out on the edge of the sea ice. Seals make their homes in and on the sea ice and hunt in the ocean. Indigenous Peoples hunt across all ecosystems and habitats in the Arctic, marine, terrestrial and freshwater. Monitoring of the natural and anthropogenic impacts to the food webs and the ecological func t ions of the Arc t i c env i ronment and ecosystems provides critical information about the status and trends of Arctic species and the integrity of the food webs on which they depend for their survival. For humans, this directly relates to the socio-economic stability of their societies. The Arctic has high genetic diversity among its species. Many migratory species breed in the Arctic but spend the non-breeding season at more southerly latitudes. As a polar region, greater and faster impacts are being seen in the Arctic from climate change. Consequently Arctic biodiversity is experiencing both greater and earlier impacts than many other parts of the globe. These issues, vulnerabilities and impacts are more fully documented in Arctic Flora and Fauna: Status and Conservation (2001), and Impacts of a Warming Arctic: Arctic Climate Impact Assessment (2004). Of the approximately 450 species of birds, which breed or have bred in the Arctic region, 279 breed in significant numbers within the Arctic and spend the boreal (northern hemisphere) winter in significant numbers outside the CAFF member states. Migratory birds from the Arctic reach every part of the world except the interior of Antarctica. Thirty species reach southern Africa, 26 species reach Australia and New Zealand, 22 species reach southern South America and several pelagic species reach the southern oceans. Virtually all the world’s major ecosystems support some Arctic breeding birds during the boreal winter, with Arctic migrants occupying every major habi tat in ever y major region. The c o n s e r v a t i o n o f a l l A rc t i c b re e d i n g b i rd s throughout their migratory ranges is a global challenge, covering virtually all of the world’s major terrestrial and marine ecosystems, and requires a high level of international cooperation which can be achieved in part through the CBMP. In addition to the migrating birds, several species of land and marine mammals migrate to the Arctic in search of rich food resources. Migration routes link Arctic species to marine and terrestrial ecosystems throughout the world including the Antarctic. The Arctic’s nutrient-rich coldwater feeding grounds are crucial to the survival of many species of whales and are the foundation for the huge numbers of Arctic fish stocks. Northern waters, particularly the North Atlantic and the Bering Sea, are some of the world’s largest and most important marine fisheries. The link between the survival of humans and sustainability of the living environment is therefore obvious and of paramount importance.

#### Independently, megaships decimate phytoplankton populations

Xue et al 21, State Key Laboratory of Estuarine and Coastal Research, School of Marine Sciences, East China Normal University, (Chengfang, with Yang Yang, Peipei Zhao, Dongyun Wei, Jianhua Gao, Peng Sun, Zhiyang Huang and Jianjun Jia, Impact of Ship Traffic on the Characteristics of Shelf Sediments: An Anthropocene Prospective, https://www.frontiersin.org/articles/10.3389/fmars.2021.678845/full)

Marine vessels are undoubtedly one of the most prominent symbols of human activities in the ocean. Large ships cause significant disturbances in sediment dynamic processes mainly in three ways: (i) the jet flow generated by ships’ propellers causes resuspension of sediment on the bed of shipping lanes (Soon and Lam, 2014; Hong et al., 2016); (ii) the propagation of ship-induced waves may cause erosion of the channel slope and shoal (Rapaglia et al., 2011); and (iii) prolonged and frequent ship shuttle services enhance seabed sediment activity and increase the thickness of the active layer (Hong et al., 2013). Consequently, suspended sediment concentration increases significantly during ship navigation, and can be 30 times higher than the average background concentration (Rapaglia et al., 2011). More than that, turbid water affects the growth of phytoplankton, which in turn affects marine productivity (Huang et al., 1986; Pan and Shen, 2009). Compared to known ship-related hydrodynamics (e.g., propeller-jet, ship wave, ship wakes, etc.), little is known about the impact of ship traffic on marine sedimentation records (e.g., the characteristics of shelf sediments), largely due to the scarcity of studies dedicated to this field. Considering that maritime transport is responsible for 80% of the total volume of international trade (Notteboom et al., 2021), this rising anthropogenic-force induced sedimentary process deserves more attention, and research related to this will be important for marine biogeochemistry, sedimentary dynamics, and geomorphology. Over the past 70 years, China’s maritime transport has experienced explosive growth. Shanghai Port and Ningbo-Zhoushan Port have become the world’s leading ports in terms of container and cargo throughput. Due to these two ports, the coastal shipping lanes along Zhejiang Province are particularly busy. This area represents an ideal place to analyze the effects of seagoing traffic on the shelf sedimentary record. In this study, a shipping lane suitable for 5,000 ∼ 50,000 tons ships along the Zhejiang coast of the East China Sea was selected as the study site, and two short sediment cores were collected from the centerline and the periphery of the lane to analyze their ages and sediment characteristics. We use an improved 210Pb dating model to establish a more accurate depth-age framework in regions with frequent ship disturbance. In combination with development of China’s offshore shipping lanes, we explore the possible linkage between ship traffic and the changes in sedimentation. Study Area The booming development of China’s coastal and ocean-going shipping began in the late 20th century, with coastal transport accounting for 60% of the total domestic transport [China Port Yearbook (1999–2019)]. After decades of development, Shanghai Port and Ningbo-Zhoushan Port have become the world’s leading ports in terms of container and cargo throughput. The coastal shipping lanes along Zhejiang Province are particularly busy due to these two ports and the coastal shipping lanes intersect. The north–south lanes throughout the East China Sea include four main lanes: the Outer Shipping Lane, the Eastern Shipping Lane, the Middle Shipping Lane, and the Western Shipping Lane (Figure 1). The eastern and western shipping lanes intersect outside Aiwan Bay, where shipping is well-developed and traffic is frequent in the north–south direction. The lanes can allow ships of 5,000- to 50,000-ton to pass through, even up to 100,000 tons on some sections. This area is close to the Wenzhou Port, where many passenger ship lanes lead to the surrounding islands (He, 2008). Therefore, it is an ideal area to study about the disturbance caused by ships. The tides are regular semidiurnal tides with an average tidal range of 4 m, and the maximum can be 7 m. The wave height is approximately 1 m. During typhoons, the wave height is up to 5 m, and the maximum can reach 10 m (China Gulf Annals, 1993). The bottom sediment is clayey silt and silt (Jia et al., 2018). Materials and Methods We obtained two cores off the coast of Aiwan Bay, Zhejiang Province, China, to analyze grain size and geochemical elements. Combined with the dating framework, we analyzed the changes in sediment characteristics over time. A literature review was conducted to understand the history of the marine transport industry and the shipping lanes where the cores have been located over the past decades, with a view to quantify the sedimentation effects of ship disturbance. Coring Two cores were collected in May 2018 using a gravity coring tube. Core Z7 (28°3′0″N, 121°33′36″E), 1.5 m long with a water depth of 13.2 m, was collected at the intersection of two main shipping lanes used by vessels of 5,000- to 50,000-ton. Core Z8 (28°5′21″N, 121°32′36″E), 1.5 m long with a water depth of 12 m, was collected outside the shipping lane at a distance of 4.7 km from core Z7 in the northwestern direction. The natural sedimentary environments in the region of two cores are nearly identical because of the short distance between the two cores, which will better ensure an accurate representation of the effects of disturbance on the sediment due to maritime traffic through contrast analysis. XRF Core Scan The cores were each split into two parts using a GeoTek Core Splitter. One half of the core was covered with a 4 μm thick Ultralene film to avoid the contamination of the X-ray fluorescence (XRF) core scanner (Avaatech 3RD, Netherlands) measurement unit and the desiccation of the sediment (Richter et al., 2006). Instrument settings were optimized to minimize the mean square error (MSE) values, and the step size was 0.5 cm. Count times for XRF analysis ranged from 10 to 30 s (Table 1). Reliable data were obtained for 29 elements. Four powdered standards were analyzed every day before and after the analysis of the sediment cores to monitor signal drift and indicated that the signal remained stable during the analytical runs. The experiment was completed at the State Key Laboratory of Marine Environmental Science, Xiamen University, Xiamen. Grain Size Analysis Grain size analysis of 1 cm sub-samples was conducted using a laser particle analyzer (Mastersizer-2000, United Kingdom), which has a measurement range of 0.02–2000 μm with a relative error of <3% for repeated measurements. The experiment was completed at the Key Laboratory of Coastal and Island Development, Nanjing University, Nanjing. The matrix formula of McManus (1988) was used to calculate the sample statistics of the grain size distribution, that is, mean grain size (Mz), sorting (S), skewness (Sk), and kurtosis (K). The above four parameters refer to: the average size, the spread of the sizes around the average, the symmetry or preferential spread to one side of the average, and the degree of concentration of the grains relative to the average, respectively (Blott and Pye, 2001). The grain size standard deviation at 10 cm intervals was calculated to extract the sensitive grain size fraction (Sun et al., 2003). The changes in the sensitive grain size fraction over time can reflect the evolution of sedimentary dynamic processes and depositional environments. Age Models Age models are of critical importance in interpreting sedimentary records. One of the most important means for dating recent sediments (0–150 years) is by 210Pb (half-life 22.3 years), a natural radioactive isotope of lead (Appleby, 2001). The dried sample was homogeneously pulverized, weighed, and then sealed in a plastic box (70 × 70 mm) for 3 weeks. The activities of 210Pbex and 137Cs in the sediment samples were measured following the method described by Du et al. (2010). The radioactivities of the above nuclides were measured using an HPGe γ-ray detector (Canberra Be3830, United States) with a relative counting efficiency of 35% and an energy resolution of 1.8 keV (at 1332 keV). The detector has multilayer shielding (ultralow cryostat and no peak background in the isotopes of interest). The activity of 210Pbex was calculated from the activity of total 210Pb (46.5 keV, 4.25%) minus the activity of 226Ra, determined using the γ lines at 351.9 keV (37.6%) for 214Pb and 609.3 keV (46.1%) for 214Bi. The efficiency calibration of the detector systems was conducted using LabSOCS (Baronson, 2003). The experiments were performed at the State Key Laboratory of Estuarine and Coastal Research, East China Normal University, Shanghai. The commonly used 210Pb data processing and computation mainly include the CIC dating mode and the CRS dating model (Appleby, 2001). Given the strengths and weaknesses of the two computational models, the 210Pb chronology of this study was determined using both models. Historical Documents To study the response of sediment characteristics to the disturbance effects of ships, it is necessary to be familiar with the shipping lanes near the study area and the frequency of ship navigation. Compared to bulk cargo ships, container ships have the characteristics of large loading capacity, fast speed, and fixed throughput, which are more representative indicators to better reflect the impacts of ship disturbance on sedimentation. The China Port Yearbook comprehensively and accurately recorded the development of China’s port navigation and shipping industry, and recorded the container throughput of China’s coastal ports from 1979 to date, which could reflect the intensity of disturbance by ship movement on the shipping lanes. Therefore, the container throughput of the whole country and three ports, namely Qingdao Port, Shanghai Port, and Guangzhou Port, were calculated for the period 1979–2018. These three ports are important coastal ports in the Yellow Sea, East China Sea, and South China Sea, respectively. Results Depth-Age Framework The excess 210Pb of Z7 and Z8 remained in the law of radioactive decay. The linear fitting result of the excess 210Pb of Z7 was good, with a correlation coefficient of 0.66 by the CIC model and a sedimentation rate of 1.09 cm/yr. The Z8 was better, with a correlation coefficient of 0.91 and a sedimentation rate of 1.54 cm/yr (Figure 2). Considering that the locations of the two cores were not far from each other, approximately 4 km—expecting a great difference in sedimentation rate would be unreasonable. According to sedimentation rate data of the mud area along the coast of Zhejiang and Fujian (Jia et al., 2018), the average sedimentation rate here is approximately 1.5 cm/yr. The entire 150 cm long sedimentation sequence was recorded from approximately 100 years ago, which was before the emergence of container ships navigation along the coast of China in the late 1970s. Thus, it would be inaccurate to use uniform sedimentation rates to infer the age of sediment before and after the emergence of shipping lanes. In theory, the CIC model of 210Pb dating is suitable for a stable sedimentary environment, but for a less stable sedimentary environment, the CRS model may provide more accurate dating results (Zhang et al., 2008). It was found that above 70 cm depth both models gave similar curves for Z8 (Figure 3D), whereas for Z7, the difference was extremely large, with some layers up to 24 years (Figure 3A). The CRS dating results of the two cores above a depth of 70 cm were almost identical, and the sedimentation records were from 1977 to 2018; below a depth of 70 cm, the CRS model algorithm led to older dating results, and increasing depth (Zhang et al., 2008), with a small sedimentation rate. Therefore, in this study, the CRS dating model was used at depths above 70 cm and the CIC dating model at depths below 70 cm. The sedimentation rate was assumed to be uniform below 70 cm, and the sedimentation rate at 70 cm was used as the sedimentation rate for the 70–150 cm section. On this basis, the dating framework was established for the two cores, and the age of sediment for each layer at the same depth were almost identical, with a mean time difference of 0.4 year. The two cores showed the sedimentation records of 1873–2018 (Figures 3B,E). The sedimentation rates of Z7 and Z8 were in the ranges of 0.77–2.76 cm/yr and 0.77–2.53 cm/yr (Figures 3C,F), respectively. Grain Characteristics of Sediments The grain size components of Z7 and Z8 were dominated by silt, followed by clay, with the least amount of sand (Figure 4). Overall, the content of the grain size component did not fluctuate significantly with time. The sediment type was mainly clayey silt, with an occasional silt layer. Through comparative analysis of the two cores, it was found that the grain size parameters were quite different below and above 70 cm. The sensitive grain size fraction was calculated at 10 cm intervals. Both Z7 and Z8 had two sensitive grain size fractions—the first between 4 and 6 Φ, and the second between 6 and 9 Φ. The peak heights (standard deviation values) of the two sensitive grain size fractions below and above 70–60 cm were very different for the two cores, with the 70 cm value corresponding to the year 1977 (Figure 3). Generally, before 1977, the standard deviation of Z7 was smaller than that of Z8, whereas after 1977, the standard deviation of Z7 was larger than that of Z8. To better illustrate the variation in the sensitive grain size fraction over time, the layer at 70–60 cm was selected and two layers below and above 70–60 cm were shown, such as 150–140 cm, 120–110 cm, 30–20 cm, and 10–0 cm (Figure 5). Here we can see the difference below and above 70–60 cm for the two cores (Table 2), which indicated that the sedimentary dynamics of the environment had changed considerably since 1977. Before 1977, the standard deviation of Z7 was smaller than that of Z8, which meant that the sedimentary dynamics of Z7 were more stable than those of Z8. However, after 1977, the standard deviation of Z7 was larger than that of Z8, which meant that the sedimentary dynamics of Z7 were more turbulent than those of Z8. Moreover, after 1977, both the first and second sensitive grain sizes of Z7 were finer than those of Z8, which assumed that the finer particles were more affected by ship disturbance (Table 2). The first sensitive grain size fraction of Z7 (4.50–5.75 Φ) did not change significantly in the 150–110 cm section, with a moderate increase in the 110–70 cm section, a sudden increase in the 70–60 cm section, and a moderate increase above 60 cm (Figure 6). The second sensitive grain size fraction of Z7 (6.75–8.25 Φ) did not change significantly in the 150–110 cm section, with a moderate decrease in the 110–70 cm section, a sudden decrease in the 70–60 cm section, and a moderate decrease above 60 cm. The first grain size fraction of Z8 (4.25–5.50 Φ) showed a significant change in the 150–70 cm section, a moderate increase and then a decrease, and it changed very little above 70 cm, with a moderate decrease. The second grain size fraction of Z8 (6.50–8.00 Φ) varied significantly in the 150–70 cm section, with a moderate decrease and then an increase, and it changed very little above 70 cm, with a moderate increase. The measured grain size distribution curve (in the range of 2–12 Φ) was divided into 40 small cells in units of 0.25 Φ. The difference between two cores at the same time in these small cells was calculated separately. The content of Z8’s grain size component was subtracted from that of Z7 on the same layer, with the difference shown on a two-dimensional contour plot (Figure 7). Here we can see the quantity of coarser or finer particles difference between two cores at the same time. The results showed that the sediment can be divided into two groups—coarse and fine—using 6.25 Φ as the boundary, and the sediment varied considerably over time. In the section of 150–140 cm, the difference in relative content between the two cores was approximately zero. In the section of 140–80 cm, the coarser particles (<6.25 Φ) of Z7 were significantly less than those of Z8, whereas the finer particles (>6.25 Φ) were significantly more than those of Z8. In the section of 80–0 cm, the opposite occurred, especially above 70 cm, where the coarser particles of Z7 were significantly more than those of Z8. This indicates that the sediment on the shipping lane showed an increase in the coarse particulate fraction and a decrease in the fine particulate fraction from 1977. Elemental Characteristics of Sediment Elements with specific indicators, including S, Cl, Br, Si, Ti, and Ca, were selected for comparative analysis. These elements have steady repeat scanning results and reliable detection, and have often been used by previous researchers (Thomson et al., 2006; Marsh et al., 2007; Agnihotri et al., 2008; Croudace and Rothwell, 2015; Grygar and Popelka, 2016). The content of elements is a relative value, and the data quality is influenced by several factors, such as grain size and water content variations, core surface imperfections, and the presence of organic matter (Croudace and Rothwell, 2015). In order to attenuate above effects, element-to-element ratios were used, which can allow comparison between the cores. Ti is a typical reference element used for normalization (Grygar and Popelka, 2016). The element ratios Br/Cl, S/Ti, Si/Ti, and Ca/Ti, were selected for the study (Figure 8). The Br/Cl ratio for Z7 ranged from 0.06 to 0.17, with a mean value of 0.12, and the element ratio decreased slightly in the 0–40 cm section, with a mean value of 0.11. The S/Ti ratio ranged from 0.12 to 0.38, with a mean value of 0.20, and the element ratio increased significantly in the 0–40 cm section, with a mean value of 0.24. The Si/Ti ratio ranged from 2.77 to 6.79, with a mean value of 5.01, and the element ratio decreased significantly in the 0–40 cm section, with a mean value of 4.87. The Ca/Ti ratio ranged from 2.86 to 4.32, with a mean value of 3.54, and the element ratio decreased slightly in the 0–40 cm section, with a mean value of 3.48. The element ratios shifted at approximately 40 cm. According to the established dating framework (Figure 3B), the year was estimated to be approximately 1999. For Z8, the most significant shift was Si/Ti, which transformed at 77 cm, with a decrease in the 0–77 cm section. The Br/Cl ratio for Z8 ranged from 0.08 to 0.21, with a mean value of 0.14. The S/Ti ratio ranged from 0.14 to 0.34, with a mean value of 0.21. The Si/Ti ratio ranged from 3.92 to 7.20, with a mean value of 5.50, and the element ratio decreased significantly in the 0–70 cm section, with a mean value of 5.17. The Ca/Ti ratio ranged from 3.05 to 4.73, with a mean value of 3.63. Discussion Development of China’s Offshore Shipping Lanes Containerized maritime transport plays an important role in global trade, accounting for 80% of international cargo trade and growing at an average annual rate of 4% (Ducruet and Notteboom, 2012). A country’s container transshipment capability and accessibility directly reflect its maritime transport capacity, as well as its level of maritime transport development. China’s container industry began in 1979, with a container throughput of 32,900 twenty-foot equivalent unit (TEU). The late 20th century was in a period of rapid growth (Figure 9). According to statistics, the average annual container throughput in 1979–1999 was 2.95 million TEU, and in 1999–2018 it was 127.18 million TEU, a staggering 42-fold increase. The Port of Shanghai has held the top position for container throughput of the world’s largest ports since 2010. The external and internal feeders of foreign trade from the Port of Shanghai pass through the outside of Wenzhou Port, where our cores were collected. Combining the model with global economic development scenarios, it is suggested that global maritime traffic will increase by 240–1,209% by 2050 (Sardain et al., 2019). In addition, the shipping industry entered the so-called megaship era in 2007 when a leading container shipping company deployed a fleet of mega-containerships with a carrying capacity of more than 10,000 TEUs (Imai et al., 2013). The development of megaships requires deeper draft depths and the sea areas affected by ship disturbance is expanding into deeper water accordingly, thus the disturbance effect of megaships will have an increasing impact on relatively deep waters. China’s coastal shipping lanes are traversed in dense networks, with frequent passenger and cargo lanes. Vessels with a container load of more than 5,000 TEU, bulk cargo of more than 100,000 tons, and tankers of more than 100,000 tons meet our definition of a megaship. The southeast coast of China, the Bohai Bay, the Changjiang Estuary, the Taiwan Strait, and the eastern side of Taiwan Island are all areas affected by the disturbance of megaships (Figure 10). The study of modern sedimentary dynamics and its products in these areas should consider the influence of megaships on shipping lanes. Differential Performance of Grain Size and Elements The element content in the sediment is mainly controlled by its mineral composition. In addition, hydrodynamic conditions, adsorption and flocculation of fine particles, redox conditions, and human activities all have an influence on the variation of element content (Dong et al., 2009; Singh, 2009; Ye et al., 2013; Grygar and Popelka, 2016). The grain size of marine sediment is closely related to geochemical elements, both of which are in accordance with the “law of elements controlled by grain size” (Zhao and Yan, 1994). Fine-grained sediment can be readily enriched in some chemical elements, either because they are present in the clay minerals or because of the adsorption effect of the fine-grained particles. This is due to the correlation between particle size and elements, which are often used as a proxy for particle size (Zhou et al., 2019). However, as mentioned above, the particle size changed significantly approximately 1977, whereas the elemental ratios of S/Ti, Ba/Ca, Si/Ti, and Br/Cl did not change significantly until approximately 1999. The behavior of particle size and elements was not identical, and it was therefore worthwhile to investigate the underlying mechanism. Correlation analysis was conducted between the element ratios selected in this study and the sand, silt, and clay contents. Both were found to be poorly correlated, with the correlation coefficient almost always less than 0.3 (Table 3). There was therefore no significant correlation between the grain size and the elements. The factors influencing the change in the grain size of marine sediments can be summarized into two categories: the first is the change in sediment sources (sources or sediment flux), and the second is the change of sedimentary dynamics environment, which is closely related to the coastal circulation system and extreme climate events (Liu et al., 2010). The study area is located in the distal mud of the subaqueous Changjiang River delta, and the sediment mainly comes from the Changjiang River. Thus, the annual sediment flux of the Changjiang River Datong Station was counted during the period 1953–2018 (Figure 11). Before 2000, the annual sediment load was more than 300 Mt. After 2003, due to the influence of the Three Gorges Reservoir, the annual sediment load was less than 200 Mt. In this study, the grain size transition occurred early before the drastic change in sediment flux, so the grain size transition was not influenced by the change of sediment source. Some studies suggest that the load, grain size and sediment composition deposited over the coastal and shelf water adjacent to the estuary have changed in response to the Three Gorges Dam. However, this phenomenon occurs mostly downstream of the reservoirs and estuaries, and after long-distance transport, the signal of changing grain size in the study area has been difficult to detect (Gao et al., 2019). Even in the downstream of the reservoir, the median grain size variation is only about 5 μm (Gao et al., 2015), which is smaller than the variation caused by the navigation channel. Therefore, the transition of grain size was caused by changes in the sedimentary dynamics environment, mainly due to disturbance by ships. Marine sediments are mainly composed of terrestrial debris, biogenic materials, and marine authigenic substances, whose relative content determines the distribution of elements in the sediment. The elements, especially the biogenic elements related to the ecological environment, can reflect the evolution of the sedimentary environment. The time of element ratios shift lags behind the time of grain size shift, which was most likely a response of the ecological environment to the effects of ship disturbance. This occurred approximately 1999, when the frequency of navigation began to increase rapidly (Figure 9). At the beginning of ship navigation, the effects of ship disturbance did not cause significant changes in elements, until the rapid growth in the maritime transportation of China in 1999. There are complex mechanisms behind this response, involving processes such as the migration and transformation of marine biological production, biogeochemical cycling of marine substances and elements, especially redox-driven processes (Schubert et al., 1998; Duan et al., 2010). All of these processes were influenced by the environmental characteristics include suspended sediment concentration, salinity, total dissolved organic carbon, temperature, depth, pH, Eh, phytoplankton, and water circulation (Marcussen et al., 2008). Only after the disturbance frequency reached a certain level, would the elemental variation manifest. Therefore, grain size variations were expressed soon after the start of navigation, whereas the biogenic elements did not change significantly until 1999. Sedimentary–Ecological Response to Ship Disturbance Quantitative studies on the impact of human activities on ecology are of vital importance. In recent years, global reductions in riverine sediment fluxes have become widespread (Syvitski et al., 2005; Milliman and Farnsworth, 2011). Studies to investigate the impact of human activities, mainly in terms of changes in the fluxes and sediment properties of the sea (Dai et al., 2008; Gao et al., 2014; Yang et al., 2019), have made good progress in quantifying these impacts. For example, Dai et al. (2008) argued that, for the Changjiang River, the contribution of climate change to the reduction of sediment flux into the sea was only approximately 3%, with anthropogenic contributions accounting for 97%. Ship navigation is an important anthropogenic agent. During navigation, ships alter the local hydraulic regime, i.e., the generation of currents and ship-induced waves (Rapaglia et al., 2011; Fleit et al., 2016). The highest near-bed velocities resulting from ship generated waves range between 0.1 and 0.4 m/s in Danube River of Hungary, which was obtained by computational fluid dynamics (CFD) modeling (Fleit et al., 2016). The average flow velocity with no ship is 0.02 m/s, which means an increase of an order of magnitude due to ship (Fleit et al., 2016). In situ measurement shows that the water velocity increases to 2.1 m/s when the ship passes by, which is more than an order of magnitude higher than the typical tide and wind driven current speed in the channels of Venice (Coraci et al., 2007). The increased current speed can increase bottom shear stress, which will cause the resuspension of sediment in shallow water areas and the erosion of the channel slope and seabed (Rapaglia et al., 2011; Ji et al., 2014; Fleit et al., 2016). It is found that the ship-generated waves (including drawdown and surge waves) have much more effects on sediment resuspension than wind waves (Houser, 2014). Once the shear stress generated by the ship is larger than the critical shear stress which is further determined by sedimentary characteristics, the seabed sediment would move in suspension, saltation, and creep (Liou and Herbich, 1976; Liao et al., 2015). The bottom shear stress caused by propeller scour is an important mechanism contributing to sediment resuspension and subsequent erosion (Liao et al., 2015). In the same situation, the resuspension of coarser particles requires a greater incipient velocity (Liou and Herbich, 1976). Finer particles are easier to resuspend. Ship-generated waves are capable of resuspending significant quantities of bottom sediment and suspended sediment concentration increases with increment of turbulent kinetic energy of the ship wakes (Houser, 2014; Ji et al., 2014). In situ observation showed that suspended sediment concentration rose from 12 mg/L to 400 mg/L in Venice Lagoon, Italy, after the ship had sailed (Rapaglia et al., 2011). The intensity of sediment disturbance by a ship is related to the speed, propeller rotation speed, water depth, and draft of the ship (Liou and Herbich, 1976; Hong et al., 2013). Generally, the faster the speed of ships, the shallower the water depth, and the deeper the draft, the stronger the intensity of the disturbance. Sediment resuspension caused by ship disturbance has led to a series of changes in both the sedimentary environment and ecology. In this study, when establishing the dating framework, it was found that in a relatively stable sediment environment (such as the location of core Z8), the dating results obtained by the CIC and CRS dating models were consistent. However, in an unstable sediment environment (such as the location of core Z7), the results of the two dating models differed greatly, and the age difference of the same layer could be up to 24 years. Because of the inherent shortcomings of the CRS model, the bottom age is biased toward aging, whereas the CIC model homogenizes the sedimentation rate, which is obviously not applicable in an unstable sediment environment. A single dating model cannot establish a convincing and comparable dating framework. The best approach is to combine the two models, using the CRS model in the layer affected by ships and the CIC model in the lower part, to establish a CRS–CIC dual dating model. Figure 3 shows that the CRS–CIC dual dating model can be used with reliable results to address sedimentation rates in an overall sedimentary environment, but locally influenced by frequent ship motion. Since the development of coastal shipping in China in 1977, the fluctuations of grain size has changed largely. Before 1977, the fluctuation of grain size of Z8 is wider than that of Z7, which shows an opposite trend after 1977. Core Z8 is located near a small bedrock island called “Pishan,” which will cause more complicated hydrodynamics (tidal and wave) compared to core Z7 before 1977. In this case, the fluctuation of grain size at Z8 is wider than that of core Z7. However, the hydrodynamic condition is more complicated at core Z7 than that of core Z8 after 1977 due to the disturbance of ships, causing the fluctuation of grain size of Z7 is wider than that of Z8. In addition, the sensitive grain size at Z7 has been finer (Figure 5A). With 6.25 Φ as the boundary, the grain fraction finer than 6.25 Φ decreased (Figure 7). It was calculated that before 1977, core Z7 had a significantly higher fine grain fraction (>6.25 Φ) than core Z8, with a mean value of approximately 6%, but after 1977, core Z7 had a significantly lower fine grain fraction (>6.25 Φ), with a mean value of approximately 5%. This indicated an 11% reduction in the grain fraction finer than 6.25 Φ at the shipping lane and a significant coarsening of the sediment. Ship motion affected the local sedimentary dynamic environment. Although the total sedimentary flux was the same as the flux outside the shipping lane, it has a selective modifying effect on the sedimentary record: in the sediment on the shipping lane, which was dominated by silt, all grain fractions became more active under frequent ship disturbance. Due to differences in sedimentation mechanisms, it was relatively slow for fine grain to settle, and a significant proportion of the fine grain fraction may leave the shipping lane, causing a reduction in the fine grain fraction entering the seabed sediment. It has been shown that vessel-induced wakes can increase the concentration of suspended sediment by a factor of 30 above background values, but this surge only lasts for a few minutes, and then the high concentration persists for almost an hour before returning to background values (Rapaglia et al., 2011). The sustained high concentration is due to the slow settling velocity of fine particles. Ship disturbance also caused ecological changes. After 1999, the value of Br/Cl in the Z7 core decreased from 0.12 to approximately 0.11, the value of S/Ti increased significantly from 0.20 to 0.24, the value of Si/Ti decreased from 5.01 to 4.87, and the value of Ca/Ti decreased from 3.54 to 3.48. The decrease in Br/Cl could indicate, to some extent, the decline of primary productivity in the region (Thomson et al., 2006). High S-levels tend to indicate a low oxygen zone (Croudace and Rothwell, 2015). Si/Ti is an important indicator of siliceous phytoplankton productivity. The principle of reduced Ca/Ti is the same as that of Si/Ti, both of which belong to the response of biogenic elements to the marine environment (Marsh et al., 2007; Agnihotri et al., 2008). Specific to the above individual indicator, small changes in value may not be evidence of significant changes in the ecological environment. However, the changes in the four indicators pointed to consistency, which may be related to the disturbance of ships in the waterway. For example, frequent disturbance by ships made the shipping lane waters turbid, and light became the most important factor limiting marine productivity. The turbidity and high concentration of suspended solids was not conducive to the growth and reproduction of phytoplankton, and this reduced primary productivity (Jiang, 1993; Pan et al., 2011). In addition, the amount of phytoplankton directly affected the dissolved oxygen content in seawater. The reduction of phytoplankton decreased the dissolved oxygen content in seawater, leading to the dissolution of iron oxides and the formation of pyrite (FeS2), which increased the amount of elemental S in the sediment (Jiang, 1993; Croudace and Rothwell, 2015). Frequent disturbance was detrimental to diatom growth and reproduction, and decreased the biotransformation rate of silicates in seawater and the “silicon fixation” effect, thus decreasing the Si/Ti value in sediment (Huang et al., 1986; Pan and Shen, 2009). Calcareous phytoplankton such as coccolithophores are widely distributed and abundant in the ocean, are well preserved in the sediment and are important sources of biogenic Ca in the sediment (Poulton et al., 2007, 2013). Frequent disturbance was also detrimental to the growth of coccolithophores, and made it difficult for biogenic Ca to adhere to the particulate matter, which can reduce the Ca/Ti ratio in the sediment. Overall, the quality of habitat conditions along the shipping lane was significantly different from those outside the shipping lane. The content of each element in the sediment of the shipping lane was controlled by a combination of physical, chemical, and biological interactions. Suspension of fine particles caused by physical disturbance affected the marine ecosystem and ultimately changed the elements in the sediment.

#### Extinction

Poddar 21, Director SafEarth Clean Technologies Pvt Ltd. (Harshit, How The Loss Of Phytoplankton Could Lead To Our Demise, <https://medium.com/climate-conscious/how-the-loss-of-phytoplankton-could-lead-to-our-demise-8f9c91b937a8>)

The base of the entire aquatic food chain is the phytoplankton. Essentially what plants do on land, phytoplankton does in the ocean. It is the foundation on which the entire aquatic life is built. Any threat to this species would ultimately lead to a complete collapse of aquatic life. Unfortunately, the phytoplanktons are dying, and we are the ones killing them. These microscopic algae have been critical in making life on Earth possible for a number of key reasons. Oxygen Phytoplankton are responsible for over 50% of all the oxygen in our atmoshpere. These microscopic algae in our oceans are some of the most laborious workers in our ecosystem. Day and night, they absorb the carbon dioxide in the atmosphere and convert it into oxygen through photosynthesis. Food All the food in the ocean is ultimately produced by phytoplankton. Through photosynthesis, they produce carbohydrates which are in turn consumed by small fishes. These fishes are then consumed by larger fishes and so on. Kill the phytoplanktons and the oceans will be left with no food.

#### The second scenario is Indian Ocean Conflict —

#### The continued growth of megaships will cut India off from global trade

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According to the ITF, direct port calls by ships are considered important because they reduce risks, feeder vessel costs, and turnaround time in comparison to the option of trans-shipment feedering[2] via other ports.[23] Ports are considered competitive when they are chosen more regularly for direct calls than other ports.[24] Maritime landside infrastructure limitations dictate direct call options. A terminal’s integration with the wider set of requirements in the supply chain decides the choice of routes.[25] Even if a terminal is large enough to handle the berthing of a mega-ship, it needs several large cranes, better yard management capability, increased automation, larger storage facilities, more inland connectivity, and enhanced labour productivity. Mega vessels seek speedy unloading of the large volumes they carry.[26] Most countries in the Indian Ocean have to deal with reduced direct port calls due to their inability to serve mega-ship port calls.[27] With the size of ships predicted to grow beyond 21,000 TEU after 2020, more countries could be increasingly cut off from direct calls unless they undertake extensive modernisation. India’s largest port, the Adani CMA Mundra Terminal Private Limited on its west coast, can currently accommodate ships only up to 18,000 TEU. The majority of India’s container traffic is therefore shipped through ports outside the country, mainly from Colombo and Singapore. India is developing six deep-water sea mega-ports for receiving mega-ships under its ambitious Sagarmala Project, though the project is still in its nascent stages.[28] Unless India invests in maritime infrastructure, it will be unable to attract direct port calls to its shores, and will be vulnerable to geopolitical risks emerging from the Chinese investments in Colombo’s Hambantota mega-port and Pakistan’s Gwadar mega-port.[29] Cities unable to manage land acquisition for mega-port complexes are in danger of becoming completely cut out of direct calls. Long-term market projections suggest that by mid-century, international trade could require container ships of up to 50,000 TEU capacity which are likely to sail exclusively between trans-shipment terminals and mega-port complexes.[30] Mega-ship port calls could therefore mark the beginning of the end for the link between cities and ports.[31]

#### Indian fear of global isolation causes lash out and conflict with China

Mukherjee 20, Researcher on Asian Security with the Stimson Center. (Tuneer, Sino-Indian Maritime Competition: Shadow Fighting In The Indian Ocean, https://www.stimson.org/2020/sino-indian-maritime-competition-shadow-fighting-in-the-indian-ocean/)

Sino-Indian conflict has historically been restricted to the land domain. However, as both Beijing and New Delhi have opened their economies to global commerce, their dependency on sea-borne trade has exponentially increased. Both have come to realize the importance of naval power in enabling them to secure their sea lines of communication (SLOC), their primary concern being undisrupted energy access from the Middle East. To this end, both nations have outlined ambitious force modernization plans to develop a “blue-water navy” that can operate at longer distances from their homeland for sustained periods of time. As Beijing’s maritime security interests intersect with India’s, there has been a linear escalation in the interactions between the two naval forces, leading to benign competition between them in the Indian Ocean Region (IOR). The Malaccan Dilemma As early as 1985, Chinese naval planners began deploying squadrons for routine port calls in the Indian Ocean. 1 Over the years, this has evolved into Chinese naval taskforces engaged in security missions. In fact, in September 2019, India’s naval chief Admiral Karambir Singh asserted that at any given time on an average, about seven to eight Chinese ships operated in the area. This escalation of Chinese naval presence has been gradual and can be linked to China’s security dilemma over its access to SLOCs west of the Strait of Malacca. The “Malaccan Dilemma,” first touted by Chinese President Hu Jintao in 2003, was predicated around a crisis scenario in which China would be denied access to its trade and energy routes in the IOR. Since then, Beijing has stepped up its diplomatic, trade, and naval efforts to secure a foothold in the Indian Ocean. According to some estimates, around 40 percent of Chinese trade passes through the choke point every year. China’s Indian Ocean Outreach To address the “Malaccan Dilemma,” President Hu Jintao in 2004 initiated the policy of “new historic missions,” which entailed Chinese naval forces being deployed in the far seas for military operations other than war. The deployment of Chinese naval forces to the Gulf of Aden in 2008 for anti-piracy operations marked an inflection point in Sino-Indian maritime dynamics. It signaled Beijing’s intention of building a robust presence in the IOR to safeguard its interests. Since then, China has increased its footprint in the IOR by weaving together a patronage network in the Indian Ocean littoral countries. China has undertaken massive port development projects in countries such as Sri Lanka, Pakistan, and Bangladesh, under its 21st Century Maritime Silk Road initiative, accompanied by bountiful transfers of naval equipment and technology. All this has affected India’s strategic calculus, triggering fears of encirclement in what it considers its backyard. Shifting the Status Quo Notably, these Chinese endeavors resulted in three significant developments that have challenged the status quo in the Indian Ocean maritime theater. The first was the frequent deployment of Chinese submarines for “anti-piracy operations” in the region. This highly unusual move made Indian strategists wary of Beijing’s bona fide intentions in the IOR. The second was the inauguration of China’s first overseas naval base in Djibouti in 2017, which made concrete the prospect of a Chinese logistical support network in the region. The third is that, since 2015, Chinese research vessels have routinely plied the area collecting data and improving China’s knowledge of the hydrography, topography, and bathymetry of the waters. Such civilian missions help improve China’s operational knowledge of the IOR, while making it increasingly difficult for Indian forces to monitor Chinese activities in the region. India naval strategists fear these missions are aimed at augmenting Chinese subsurface maneuvers to counter India’s theatrical superiority. India’s Naval PostureIn the backdrop of their strategic competition and both countries’ efforts to arm themselves with the latest technology, Sino-Indian maritime rivalry raises concerns about an impending altercation between them in the high seas of the Indian Ocean.[…] In a likely scenario of a maritime confrontation between them in the region, their naval power will be well-matched. India’s biggest strategic advantage lies in its central position in the Indian Ocean, and its familiarity with the operating environment of the IOR. The Indian Navy has always maintained that its primary focus of operations is providing security for the Indian Ocean – protecting the homeland against external actors and maintaining sea control over the various SLOCs and chokepoints of the IOR. Thus, considering China’s increased presence, India has recalibrated its bearings and sought to improve its maritime domain awareness (MDA) in the IOR. It has adopted a more vigilant constabulary role using anti-submarine warfare equipment. Beginning in 2017, India initiated a new pattern of mission-based deployments in various areas of the IOR, conducting patrols around key SLOCs all year round. Taken together, these moves have amplified the Indian Navy’s operational awareness of the region. India has also initiated closer maritime cooperation with nations that are likewise cautious of China’s naval expansion. On the sidelines of the 2017 East Asia Summit in Manila, India, Japan, Australia, and the United States, took part in consultative discussions, reinvigorating the once abandoned Quadrilateral Security Dialogue. What came out of that summit and subsequent discussions, which have since been elevated to the ministerial level, was a loose framework for how to manage issues pertaining to the maritime commons and the concept of a free and open Indo-Pacific. The brainchild of Japanese Prime Minister Shinzo Abe, the Indo-Pacific essentially represents a realignment of the strategic backdrop against which the maritime security dynamics of Asia are set, reimagining the Indian and the Pacific Ocean as a unitary maritime theater. The United States has also supported this alignment by means of strategic and diplomatic outreach in the region via the Free and Open Indo-Pacific strategy. Washington and New Delhi have correspondingly cultivated a closer maritime security relationship, cementing strategic cooperation via a logistics exchange agreement in 2016 and an information sharing agreement in 2018. Comparing China and India’s Naval Capabilities In the backdrop of their strategic competition and both countries’ efforts to arm themselves with the latest technology, Sino-Indian maritime rivalry raises concerns about an impending altercation between them in the high seas of the Indian Ocean. China and India have progressively strengthened their naval capabilities over the years, investing in high value platforms such as nuclear-powered submarines, aircraft carriers, and autonomous unmanned vessels. Beijing and New Delhi have also made sustainable efforts to develop their C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance) capabilities by launching their own navigation satellites. However, as Figure 1 & 2 below indicate, there is a growing gap between the blue-water naval capabilities of the two nations, with China clearly ahead. Yet, it is also important to note that China’s primary focus of naval strength has been in its near seas surrounding the first island chain. The Indian Ocean, while important, is a secondary focus for Beijing. Comparatively, India has not engaged China with a counter-theater presence in the Western Pacific and has focused its efforts instead on amplifying its naval defense of the IOR. The tri-services base at the Andaman & Nicobar Islands serves as an important component of this effort. In a likely scenario of a maritime confrontation between them in the region, their naval power will be well-matched. Anticipating Future Conflict In September 2019, a Chinese research vessel was forced to retreat by Indian forces for operating inside the exclusive economic zone of the Andaman & Nicobar Islands without prior permission. The incident reminded both sides of the delicate intricacies surrounding maritime engagement in the open seas. Specific confidence-building mechanisms and crisis management protocols are nearly non-existent between the two navies. Save for statutory procedures guiding interactions on the high seas, Sino-Indian maritime interactions remain unregulated. As both countries’ naval forces come in contact more frequently, tensions loom on the horizon. China and India have been engaged in a competitive embrace with one another for a while now. Both sides realize the importance of a cooperative bilateral relationship but are unwilling to cede any strategic ground. In the likelihood of a situation where Beijing gains an upper hand in the continental realm, strategists in New Delhi might be tempted to implement access-denial measures against Chinese naval assets in the region, to tilt the strategic balance back in India’s favor. While a confrontation along their international border could be isolated, a similar scenario in the maritime domain is likely to have multifaceted implications far beyond New Delhi and Beijing.

#### That goes nuclear

De Silva 21, Department of Strategic Studies, General Sir Johnkotelawala Defence University, Disarmament, Indian Ocean and Strategic Externalities: The Case of Sri Lanka, Journal for Peace and Nuclear Disarmament Volume 4, 2021 - Issue 2)

Frank Hoffmann’s “Pink Flamingo” concept is pertinently applicable to the South Asian region (Barner and Bensahel 2015) since it highlights a disaster that a state or an entity would have noticed emerging but ignored and that could cause catastrophic devastation. Hoffman is of the view that Pink Flamingo situations are patently evident but deliberately disregarded by policymakers for diverse reasons. South Asia is prone to dangerous nuclear trends and they are often ignored by the policymakers of non-nuclear states. This situation is worsened due to the tendency of avoiding adherence to the international disarmament mechanisms by the emerging nuclear powers in the region. Neither India nor Pakistan is a party to the Nuclear Non-Proliferation Treaty (NPT). It is understood that if an accident flares up in any of these states it could escalate into a worse pitch due to the public panic. In such an atmosphere nobody can guarantee that South Asia is suitably prepared to handle the transnational after effects of a nuclear catastrophe. Even though the threat is imminent, none of the non-nuclear states in South Asia has paid adequate attention to mitigate it. Apart from the direct danger of an accident or nuclear confrontation, the neighboring states of nuclear powers also face the threat of strategic manipulation of their assets by nuclear states. The worrisome factor is a blissful underestimation by non-nuclear states about the gravity of the emerging and persistent problem. The lack of awareness on how to face such situations could result in an abrupt collapse of the security well-being of non-nuclear states due to factors that operate beyond their control. This paper attempts to reveal the dangers of the existing “pink flamingo” situation in South Asia through the lens of a non-nuclear state.

#### Nuclear deterrence fails — conceptions of “limited war” are wrong

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The Ladakh crisis, still not over, has established an unpalatable reality: India’s nuclear weapons, whose raison d’etre is deterrence, have failed to deter China.

By reportedly occupying 1,000 square kilometre (sq km) of Indian territory in Ladakh, China not only walked through India’s conventional military capabilities, but also lobbed its purported nuclear deterrence out of reckoning. The Chinese message was loud and clear: China did not consider India’s nuclear weapons of any consequence.

Interestingly, Shivshankar Menon, former national security advisor, in his 2021 book India and Asian Geopolitics: The Past, Present – written after the 2020 Ladakh crisis began – says, “Since India became an overt nuclear weapon state in 1998, there has been no credible threat of using nuclear weapons against India nor attempt to use nuclear black-mail to change its behaviour. To that extent, India’s nuclear weapons have served their desired purpose.”

As NSA, Menon was responsible for India’s nuclear doctrine, posture, and operationalisation with the command of nukes vested in the prime minister-led National Command Authority.

To recall, after a series of five nuclear tests done on May 11 and 13, 1998, Prime Minister Atal Bihari Vajpayee wrote a letter to US President Bill Clinton citing China’s nuclear tests and the nuclear weapons nexus between China and Pakistan as the reasons for India’s tests. India also announced a nuclear ‘no first use’ policy, which meant that if deterrence failed, India would be prepared for an assured and credible second-strike capability after absorbing a first strike from the enemy – China, in the present case.

The second-strike capability is based on a triad of land, sea and air vectors. Given the paucity of combat aircraft for conventional war, especially when catering for a two-front war, aircraft availability for the nuclear role is merely theory. The land vector would be provided by the Agni-5 ballistic missile with a 5,000 km range meant to cover China. While this missile has yet to be operationalised, the Defence Research and Development Organisation (DRDO) has announced plans for Multiple Independent Re-entry Vehicles (MIRVs) which can deliver a number of warheads at different targets simultaneously instead of a single big bang.The DRDO awaits government clearance for MIRVs, which is the technology of the late 1960s.

The sea vector of the triad would be India’s indigenous ballistic missile submarines (SSBNs) INS Arihant and the follow-on vessel INS Arighat, which are expected to be armed with K-4 submarine launched ballistic missiles with a range of 3,500 km to hit China. The K-4s are still under development.

Incidentally, INS Arihant was commissioned in August 2016 and did its only deterrent patrol in November 2018. However, it was not clear what was meant by a deterrent patrol since SSBNs should carry its nuclear missiles, which was not done in this case.

Meanwhile, unsure about India’s assured second-strike capability, especially against China, some Indian analysts, writes Menon, “believe that India should change its no-first-use policy and begin to think of nuclear weapons as war-fighting weapons to compensate for India’s conventional inferiority against China.” The assumption is that since nuclear powers do not go to war there is very little possibility of a war between India and China. However, if war happens, it would, at best, be a limited border war.

The origin of this thinking that nuclear powers do not go to war lies in Cold War theology, where it was correctly believed that the presence of nuclear weapons with the US and Russia prevented war between the two blocs — NATO and Warsaw Pact — which had divided the world. Holding it as a truism for all times to come, Indian analysts – comprising policymakers, the military brass and retired senior officers – have superimposed this template on India. Hence, this popular narrative has emerged since the Ladakh 2020 stand-off between India and China.

These assumptions — no war, or a limited one between India and China — have neither been analysed nor war-gamed. The reality is that let alone the People’s Liberation Army (PLA), these assumptions do not even hold true against the Pakistani military, whose capabilities, with China’s support, have increased substantially.

Nuclear weapon powers

Before examining India’s case, there is a need to put into perspective the nuclear weapons of the US and the Soviets, and now the US and China.

In the 1950s, the Soviets had an overwhelming advantage over the US military in conventional forces. While the Soviets were not as technologically advanced as the US, they believed that quantity had a quality of its own. Instead of matching the Soviets’ quantity — tank for tank and gun for gun — US President Dwight Eisenhower introduced battlefield atomic or tactical nuclear weapons (TNWs) to thwart any Soviet conventional offensive in the European theatre. The TNWs worked because the US had superiority in strategic nuclear weapons (big yield bombs).

Called the ‘New Look’ strategy, the belief was that if the Soviets retaliated with their strategic nukes in response to the US’s TNWs, the latter could counter-retaliate with a bigger nuclear arsenal and perhaps control the nuclear escalation ladder. Since the Soviets did not put the US’s assumption to test as it would have resulted in Mutual Assured Destruction (MAD), the ‘New Look’ strategy, which came to be known as the US’s first offset strategy, worked.

However, by the early 1970s, two things happened. While retaining a formidable conventional arsenal, the Soviets managed to match the US in certain key conventional technologies. And their strategic nukes inventory matched the US’s nukes in range and yields, making an early use of TNWs extremely risky. With the Soviet or Warsaw Pact forces outmatching the US-led NATO in conventional forces’ size while maintaining near-technology parity, TNWs – without a superior strategic nukes arsenal – became too risky for use since the US’s control over the nuclear escalation ladder was no longer credible.

This led to the US’s second offset strategy where the reliance on nukes was abandoned. Instead, highly accurate and long-range conventionally guided munitions which could stop Soviet forces before they were arrayed for an assault were sought. Making use of battle networks and space for precision and stand-off attacks, conventional munitions which could achieve battlefield effects comparable with TNWs were fielded. This second offset strategy was used in the 1991 Gulf War against Iraq with spectacular success.

The central point of the US’s second offset strategy was that both conventional and nuclear forces had to be credible and strong for major powers to not go to war since neither side would feel confident of exercising war control. This line of thought holds good even today, as observed between the US and China with regards to military tensions in the Taiwan Strait and the South China Sea.

In both the Taiwan Strait and South China Sea, the PLA has built a formidable Anti-Access and Area Denial (A2AD) firewall, in addition to excellent cyber and electronic warfare capabilities comparable with the US military. So, while the US military can continue with its aggressive freedom of navigation patrols in both theatres, which are meant to signal its intent to China, Taiwan and ASEAN, it worries about crossing Chinese red lines since it is not confident of winning a conventional war.

For this reason, the Biden administration has, since coming to office, been seeking an appointment for defence secretary Lloyd Austin with Chinese senior vice-chairman of the Central Military Commission General Xu Qiliang to determine mutual red lines. China has repeatedly refused this meeting on the ground that Xu outranks Austin on the protocol front.

The US fear is that continued uncertainty over Chinese red lines worries ASEAN – and the group’s members may then request the US military to slow down, if not totally abandon, its sea and air combat patrols.

On the other hand, having achieved parity in conventional war in these two theatres with the US military, China worries about getting overwhelmed by the US’s massive nuclear arsenal and aggressive first-use posture. This, theoretically, could lead to a reprise of the US’s first offset strategy situation where, backed by a bigger strategic nuclear inventory, the US military could, if outdone in conventional war, use its tactical nukes.

While refusing to be a party to the Strategic Arms Reduction Treaty (START) between the US and Russia on the plea that its nuclear weapons arsenal is comparatively small, and unwilling to change its no-first-use posture since it could affect its peaceful rise, China has decided to increase its strategic weapons inventory to build credible nuclear deterrence to discourage the US military from any nuclear misadventure.

This explains the building of an additional 120 missile silos for its DF-41 and DF-31 Inter Continental Ballistic Missiles (ICBMs). From its de-alert status — with separate launchers, missiles, and warheads — the PLA seems to be moving towards keeping a part of its nuclear arsenal on a launch on warning (LOW) nuclear posture. This refers to initiating a nuclear strike on detection of an incoming hostile missile. China’s early detection system comprising ground and space-based components, a control centre and data processing system has been provided by Russia. This strategic early warning, command and control, and rapid reaction system is available with only three nations — the US, Russia and China.

China has also deployed lower yield nuclear weapons for use against campaign targets to reduce collateral damage. Its DF-26 ballistic missile which can conduct precision strikes is the likely vector for lower yield warheads.

India’s nuclear domain

Against this backdrop, the belief that abandoning no first use and using nukes for war-fighting could compensate for India’s conventional inferiority against China seems especially misplaced.

For one, a shift to a first-use policy would not diminish the need for conventional deterrence. For another, while not being able to match Chinese nuclear deterrence, it could compel the PLA, if required, to use any or all three options: destroy the Indian nuclear kill chain with its cyber, electronic, directed energy weapons or long-range precision hypersonic glide vehicles; use lower yield nukes in campaign as a warning signal; or resort to an LOW nuclear posture. Simply put, India’s first-use policy against China would be suicidal.

Moreover, the proposition of fighting a limited war with China is equally ill-informed. The genesis of the concept of limited war is the 1999 Kargil conflict between India and Pakistan which, at best, was an aberration on three counts.

First, with no participation of the Pakistan Air Force, the Indian Air Force had air dominance, which would not be possible in war. Second, since the Pakistan Army too did not participate — it was a combination of the mujahids and Pakistan’s Northern Light Infantry (then, a paramilitary and not a regular army) versus the Indian Army and the IAF — the Indian side could build an overwhelming superiority of land forces in a localised area with massive employment of artillery in a direct firing role; all this will not happen in a proper war. And third, the Nawaz Sharif government cracked under the US’s pressure to withdraw its forces and end the conflict.

Instead of learning the right lesson – that the Indian military needed to build credible counter-offensive capability – Army Chief General V.P. Malik formalised the limited war concept. Writing in the Indian Express newspaper of June 21, 2002, he said, “In the changed Indo-Pak strategic environment, there is a likelihood of limited wars than an all-out war. A limited war implies limited political and military objectives, not hurting excessively at any one time, limited in time, space and force levels.” The reality is that the complexion of war — whether it be limited or all-out — would be determined by the stronger side. In this case, China.

[marked]

Failure to develop deterrence against China

On the question of nuclear tests, what needs to be asked is this: Why did the Vajpayee government, which said its nuclear tests were to maintain balance with China, fail to develop nuclear deterrence against it?

The answer has been provided in US’s former deputy secretary of state Strobe Talbott’s book Engaging India: Diplomacy, Democracy, and the Bomb. According to Talbott, days before India’s tests, Jaswant Singh, who was close to the prime minister but held no office at that time, sought an impromptu appointment with the US energy secretary Bill Richardson, who was visiting India. Considered close to the US President Bill Clinton, Richardson was staying at the US ambassador’s residence in New Delhi. During their meeting, Singh told the US officials that should the US president wish to convey something urgent to the Indian prime minister, it could be done through him, bypassing the slow bureaucratic procedures. Confused at that time, the US understood the import of Singh’s secret mission when, within days, India did its nuclear tests.

Instead of strengthening national security by quickly covering the paces from nuclear tests to nuclear weaponisation, the Vajpayee government dawdled, working on close ties with the US by offering itself as a strategic counterweight to China. Singh’s meeting with Richardson led to 13 rounds of talks on non-proliferation between him and Talbott. The talks were not about China, which ostensibly was the reason for India’s tests, but on Pakistan. Since the Pakistan Army Chief, General Jehangir Karamat, had told Talbott that Pakistan would not compromise on its national security and would do its own tests to match India’s, the US’s hope on non-proliferation was to dissuade a willing India from credible weaponisation. Pakistan had made it clear that its nuclear programme was tied with that of India.

Fast forward to May 2020. India lacks both conventional and nuclear deterrence against China. With little possibility of catching up on either, the gap will only continue to grow. Specific to the nuclear domain, India has several tough questions on the table: How to develop nuclear deterrence? What should India’s nuclear policy and posture be? What to do with Agni-5 and SSBNs since nuclear deterrence had failed? How to develop conventional deterrence since the military leadership has shown little interest in understanding the PLA’s informatised and intelligentised wars to modify its own military reforms? Procrastination on these issues is not an option since China would soon be tempted to militarily reclaim its territories from India, including Ladakh and Arunachal Pradesh.

Sadly, the situation vis-à-vis Pakistan is not encouraging either. Reported to have more nukes than India, and with full spectrum nuclear capability (covering tactical, operational and strategic targeting), Pakistan has developed credible nuclear deterrence against India. Moreover, with increased interoperability (i.e. the ability of the PLA and Pakistan military to fight together against India) since the scrapping of Article 370 from Jammu and Kashmir – which brought the two friends in tight military embrace – operational surprises by the Pakistan military cannot be ruled out in conventional war.

The going, as the saying goes, has got tougher for India, both in the north and the west.

#### The third scenario is Hacks —

#### Megaships are unique targets for cyber attacks

PTN 16, (3 Ways to Tackle Piracy and Terrorism, <https://www.porttechnology.org/news/how_shipping_lines_can_tackle_piracy_terrorism_and_cyber_threats/>)

However, as ships become larger, and the volume of containers increases, this puts ships at a much bigger threat of piracy and terrorism; however, the motivations behind each are fundamentally different, since they both have a different aim in mind. So what are the motivations behind attacks on mega containerships? Peter Cook, Director of the Security Association for the Maritime Industry, argues: “Whilst there is a clear difference between the motivation for piracy and terrorism (piracy being a criminal act is predicated purely on financial gain, whereas terrorism has an ideological aim and is therefore designed to terrorise those involved and affected), it does not necessarily mean that they should be treated exclusively. “Whilst a pirate is looking at what he can make out of attacking a ship from a business perspective (weighing up the risk v return ratio) a terrorist group will be looking at how they can further their cause by attacking a specific type of vessel, perhaps due to its flag, company of ownership or national/international standing. The terrorist attacks listed above clearly demonstrate that terrorists want a sensational attack and therefore the bigger the better.” Technical Paper: Port Security and the Effect of Piracy As well as piracy and terrorist threats, cyber security is also a massive issue within the maritime industry. It is such that cyber security has a fluctuating level of severity within the industry and requires increased focus to effectively deal with potential threats. It is therefore important for shipping lines not to underestimate their exposure to risk and implement the appropriate solutions. A recent survey from Moore Stephens found that although risk management strategies are satisfactory in the shipping industry, the companies that do not implement sound practices for preventing security threats are at risk or paying a much higher price, with cyber security being one of the most pertinent threats. Peter Cook elaborates on the main types of cyber security threats facing mega ships: “Cyber-attacks fall into three main categories: a criminal using cyber as the facilitator to commit another crime such as fraud; a targeted cyber-attack when the systems of a shipping company/ship are attacked to get specific data/IP or cause the company to lose business and or revenue or a “Hacktivist” who may target a company for personal gratification (CIA hackers for example).

#### Terrorists have the means, motive and opportunity to hack and weaponize megaships

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The vast bulk of the world’s critical economic and military traffic passes through a handful of narrow strategic waterways known as “maritime chokepoints.” While these waterways have always been prey to pirates, weather, and maritime accidents, these perils are now joined by maritime cyber attacks — whether conducted for ransom, malicious disruption, piracy, or as part of larger geopolitical conflicts. When a commercial vessel or warship is strategically delayed via sea-hacking, critical shipments are delayed by days or weeks. The massive size of modern container ships such as the Ever Given makes hacking their steering systems or forward speed a means of weaponizing the vessel. It is worth a bad actor’s effort to experiment with grounding a major new container ship remotely from land-based cells. The Suez Canal could be one of the more lucrative cyber disruption targets due to the amount and expected speed of traffic flow through its two-lane and one-lane sections. 30 percent of the world’s shipping container volume carrying 12 percent of global trade passes through the canal. Ships, including the very largest container vessels, can cut an average 12 days off a three-week trip from India to Italy by transiting the canal. The 205-meter-wide canal is known to be challenging even at modest speeds for ships the size of the Ever Given. Its 120-mile-long narrow transit offers the opportunity for cyber-induced disruption, particularly if one wanted to stall oil and gas deliveries to the Mediterranean and Europe. If the canal is blocked companies must take the alternative route — around the Cape of Good Hope, adding 10 to 12 days transit time, fuel costs, and security costs. Comparatively, according to a 2006 RAND study, the closing of the Malacca Strait would increase transit time by only an additional three days. With the grounding of the enormous container ship — the Ever Given — on March 23, 2021, the world was reintroduced to the issue of “maritime choke points”. The giant ship blocked the Suez Canal for six days. The Ever Given was not a cyber target this time but its grounding demonstrated the potential impact on global trade when a ship blocks a chokepoint. For example, the BBC reported that fears that the blockage would tie up shipments of crude oil resulted in crude prices rising by 4 percent on international markets. The Ever Given was launched in 2018, and is one of the largest ships in the world. It was built and is owned by a Japanese firm, leased and operated by a Taiwanese company, and sailing under a Panamanian flag. Similar-sized ships carry an increasing percentage of global trade, and the relatively recent 2015 addition of a second channel to the Suez Canal was undertaken in part to accommodate them. The canal is wide enough to accommodate such large vessels but physical clearance on either side of both channels is currently still limited. Mistakes in speed or understanding of wind effects on huge vessels can (and did in this case) come from human error. But they can also be stimulated by difficult-to-detect cyber intrusions into the navigation and steering systems of these ships, especially in newer vessels. The internet protocol networks used for steering and navigation are often not segregated effectively for cyber security. They are connected to the serial bus networks that make up the supervisory control and data acquisition systems critical to ship operations. The blockage caused by the grounding of the Ever Given demonstrates to cyber-competent terrorists or adversaries the potential for disruption if they are able to manipulate or disrupt transit mechanisms from the ships themselves, their containers’ content, and pilotage management systems. Even basic electricity supplies for locks such as those in the Panama Canal offer disruption options to a world of bad actors who have already demonstrated a willingness to attack critical infrastructure. The 900-kilometer-long Malacca Strait carries 40 percent of the world’s maritime trade, including a quarter of the globe’s seaborne oil supplies and 80 percent of the Middle East’s oil and gas supplies to China. Traffic congestion is its major challenge, particularly where the strait narrows to just 2.7 kilometers wide near Singapore. In addition to posing a lucrative target, these chokepoints also afford the opportunity, both from shore and through remote means, for potential bad actors to track particular ships, owners’ fleets, crew, content, origin, destination nationalities, or missions in order to select targets. These risks are aggravated as ships and systems rely increasingly on automation. Fully autonomous ships are a stated goal of the industry and the U.S. Navy. Such systems should include proper cyber security. Ships and Cyber Security Still Strangers In 2018, security researchers at Pen Test Partners found vulnerabilities in electronic chart display and information systems commonly used on cargo and container ships. These chart systems are often linked to GPS-guided autopilots, which when exploited give hackers the ability to access the operational technology of the ship: If networks are not segregated, hackers can remotely manipulate the ship’s steering, ballast pumps, and navigation. The electronic charting system is often slaved directly to the autopilot on many ships, causing the ship to automatically follow the charted course. Hackers can redirect the ship’s course by planting false information messages via satellite communications in order to mislead navigational decisions. Many satellite communications terminals on ships are available on the public internet with default credentials and can be hacked remotely. Numerous other paths can also prove useful vectors in the cyber attack of a vessel. For example, the 2018 research also showed that the electronic charting systems on some ships were still using relic operating systems with many known major vulnerabilities, such as Windows NT, often because these are expensive to upgrade. Even when malicious control is discovered, as the cliché goes, it can be very difficult to regain control in a timely manner. Commercial ship networks tend to have flat network architectures that are originally unsegmented networks without firewalls or other cyber security measures as part of their architecture. Once inside such networks, it is not difficult to travel around across the systems of the entire ship. Internal systems often use manufacturer default passwords, not just on firewalls but also on the critical programmable logic controllers running systems, as well as satellite communication equipment. Researchers have identified other vulnerabilities in computer-security forums, such as using the ship’s satellite terminal as a point of penetration. The terminal opens the system itself to attackers replacing the poorly secured firmware or simply reverting to an even less secure previous version, and then altering the applications running the terminal. Similar research results have produced similar concerns. Access in — whether through the electronic charting system, the satellite communications terminal, or any other outward-facing communications — means the ability to control critical ship systems covertly and use the massive bulk for any reason the attacker desires. At the outset some experts suggested that the Ever Given grounding was a cyber incident. When the voyage data recorder was examined, this speculation was shown to be wrong in this case. However, as long-time cyber control systems expert Joe Weiss noted, the potential for cyber disruption still exists. Despite the ship’s relative youth, the latest marine electronics likely installed for control and navigations do not resolve the vulnerabilities discussed earlier. The recent DefCon exercise is not a one-off example of success in simulated seahacking. Concurrent with the actual grounding of the Ever Given, a team of doctoral students competed in a NavalX “Hack the Machine” exercise — using the same “Grace” maritime system as DefCon — in order to determine if “hackers” could successfully attack maritime systems remotely through a cloud network. The team succeeded, “hacking and crashing the [fictional ship’s] cyber security monitoring system.” These oversights are major safety and security issues currently left unaddressed. One reason is a gap in crew skills and the costs of maintaining cyber secure systems while underway. Leaving poor default administrative passwords on essential systems means that attackers can take control of those systems. Shipping as a Cyber Campaign Weapon Attackers will not ignore the opportunities presented by poor maritime cyber security. A cyber campaign can provide a good enough return on investment in either economic or political benefits to make it attractive, and possibly even lucrative. American adversaries such as China, Russia, and Iran learn from these exploits and integrate them in larger cyber-enabled campaigns. Russia, for example, has spoofed a ship’s GPS at least 7,910 times between 2016 and 2019, affecting about 1300 commercial ships. In 2017, North Korean navigation jamming was said to be behind the forced return of hundreds of South Korean fishing vessels, and its cyber attacks led to the devastating NotPetya attacks that crippled the large Maersk shipping line the same year. In July 2021, Sky News reported the acquisition of documents said to originate from an Iranian offensive cyber unit called Shahid Kaveh, which is part of the Islamic Revolutionary Guard Corps cyber command. They present research on how to sink a cargo ship using cyber techniques and include details on the satellite communications systems used in the global shipping industry. The routine hacking of ships from space is coming. Currently the Global Navigation Satellite System constellation includes the American-run GPS, the Russian GLONASS, the European Union’s GALILEO, Japan’s QZSS, China’s BeiDou, and the Indian system known as NAVIC. Each nation’s ships tend to use their own national system. No nation’s commercial ships are as secure as necessary today, and they lag in securing the shipboard systems in the near and medium term. There is some talk of using older but functional radio wave technology as a more secure alternative to satellite-based systems, but the discussions are only just beginning. It is questionable how rapidly or widely alternatives such as eLORAN will spread. It will take investment and a sense of urgency on cyber security from major shipbuilding firms and shipping lines to accomplish this. As one researcher states, “[Electronic charting] systems pretty much never have anti-virus.” The anti-virus industry that protects land-based personal computers in the United States and Europe started over 30 years ago, but a multitude of huge ships launched during that time with complex computer architectures contain only basic cyber protection. U.S. and allied warships — as well as most of the world’s exporting economies — plan on free transit through the Suez Canal and other chokepoints. Iranian intelligence services have collected maps, means, and incentive to use maritime cyber weaknesses for Iranian campaigns. In the mid-1990s, Osama bin Laden’s al-Qaeda group experimented with a variety of attempted attacks using public transit, notably in Paris. Six years later al-Qaeda used commercial airliners against the Twin Towers in New York City on Sept. 11. The maritime cyber environment is abysmally insecure. The technical means to exploit these ships is well distributed across land-based hackers with no prior maritime systems experience. It doesn’t take much to mess with a passing ship. The opportunities are well-known, from the chokepoints and the ship dependence on external networks, clouds, and satellite navigation communications. The motivation is as varied as the adversary, ranging from the ransomware criminal, to the “just because they can” opportunist, to the state adversary and its proxies.

#### Ukraine means that attacks on megaships ensure escalation between the US and Russia

Borger 2/13/22, Reporter forn the Guardian. (Julian, Ukraine crisis: miscalculation could trigger unintended wider conflict, https://www.theguardian.com/world/2022/feb/13/ukraine-crisis-miscalculation-could-trigger-unintended-wider-conflict)

The unprecedented Russian military encirclement of Ukraine has not only brought closer the prospect of a devastating war in that country, it has also raised the risks of triggering an unintended wider conflict. The US and Nato have been adamant that their troops will not enter Ukraine no matter what happens, and the Pentagon has pulled out the 160 national guard soldiers who were acting as military advisers. This image provided by The White House via Twitter shows President Joe Biden at Camp David, Md., Saturday, Feb. 12, 2022. Biden on Saturday again called on President Vladimir Putin to pull back more than 100,000 Russian troops massed near Ukraine’s borders and warned that the U.S. and its allies would “respond decisively and impose swift and severe costs” if Russia invades, according to the White House. (The White House via AP) Biden warns Putin: you’ll pay a heavy cost if you attack Ukraine Even during the cold war, Washington and Russia made sure their forces did not clash, and Joe Biden has made clear he would seek to keep it that way. “That’s a world war when Americans and Russia start shooting at one another,” Biden said. However, the massing of Russian troops in Belarus and the deployment of a substantial Russian naval force in the Black Sea, matched on a smaller scale by Nato land, sea and air reinforcements on the alliance’s eastern flank, means there is far more military hardware in close proximity than is normal. And with proximity comes the increased danger of accidents and unintended consequences. “The risk of something going down like a mid-air collision, or a trigger-happy Russian or American, can really escalate things quickly,” said Danny Sjursen, a former army major and director of the Eisenhower Media Network. “You’re setting yourself up for accidents and miscalculation, and that’s when you can get out of control real quick, because there are domestic considerations both in Russia and in the United States. An American pilot dies – now what? I’m not saying that necessarily means we go to cataclysmic nuclear war but it escalates things.” The US national security adviser, Jake Sullivan, told CBS News on Sunday that the US had sought to be transparent about its troop deployments in eastern Europe in order “to avoid mistake, miscalculation or escalation and also to send a very clear message to Russia we will defend every inch of Nato territory”. There is a long history of close encounters over the Baltic and Black Seas. Earlier this month US jet fighters scrambled to intercept Russian warplanes operating close to Nato airspace while British and Norwegian planes took off to monitor Russian aircraft flying into the North Sea. While Russia has shut off large parts of the Black Sea to conduct its manoeuvres, Nato navies have stayed out of the immediate vicinity for now, while building up their presence in the Mediterranean. If they do decide to go through the Bosphorus in a show of strength, or to safeguard commercial shipping, the risk will rise again. Elisabeth Braw, a senior fellow at the American Enterprise Institute, said the danger was further heightened by Russia’s suspected use of “GPS spoofing”, interference with the navigational equipment of other vessels. On several occasions recently, civilian ships traveling in the Black Sea have encountered mysterious GPS troubles that showed the vessels being in a different part of the Black Sea or even on land. It was widely though the incidents were caused by Russia testing its technology. “It raises the risk for naval vessels that are in the Black Sea, which we should remember is not that big, and it’s crowded,” Braw said. “There’s enormous shipping activity in the Black Sea, and so all those crews face the risk of having no GPS.” The transfer of combat troops from Russia’s far east to Belarus has not only significantly increased the imminent threat to Ukraine, but also made eastern European Nato members increasingly nervous. “The closest training ranges in Belarus are 150 to 200km from Vilnius or Warsaw,” said Kristjan Mäe, the head of the Nato and EU department at Estonia’s ministry of defence. “This is a Russian force posture that hasn’t been there previously.” A refugee crisis at the Polish-Belarus border last year led to a close encounter between the troops facing each other, with Warsaw complaining that Belarus forces opened fire in the direction of their soldiers. “We have to remember that the people who are actually out on the frontline are very young men and women and they face enormous responsibility,” Braw said. “Yes there is a chain of command but if there is some sort of provocation or aggression, intentional or unintentional, that is directed against them, then they have to respond.” The close encounters so far have occurred in peacetime. In the event of war, nerves will be far more on edge, communications could be hampered or flooded with disinformation. “We cannot be entirely confident that in the lead-up to or during a conflict that Nato and Russia will be able to communicate, especially as current civil and military communication systems between them are not as robust or technically resilient as they should be,” Sahil Shah, a policy fellow at the European Leadership Network, said. “The world’s two largest nuclear-armed states have returned to the brink of conflict exactly 60 years after the Cuban missile crisis. If diplomacy is not pursued to the fullest extent, the risks of miscalculation and miscommunication could potentially pull in wider Europe into a devastating war. Without dialogue on how to manage de-escalation, it will be as if our leaders are running into a monsoon with newspapers over their heads.”

#### US-Russia escalation over Ukraine causes extinction

Helfand 2-8-2022, MD, is Immediate Past President of the International Physicians for the Prevention of Nuclear War, recipient of the 1985 Nobel Peace Prize, and cofounder and past president of Physicians for Social Responsibility, IPPNW’s US affiliate. He has published studies on the medical consequences of nuclear war in the New England Journal of Medicine, the British Medical Journal, and the World Medical Journal. (Ira, “Ukraine and the Threat of Nuclear War,” *The Nation*, <https://www.thenation.com/article/world/ukraine-russia-nuclear-threat/>)

As the crisis in Ukraine deepens, it is appropriate to consider what the actual consequences of war there might be. An armed conventional conflict in Ukraine would be a terrible humanitarian disaster. Last week, US government officials estimated that the fighting could kill 25,000 to 50,000 civilians, 5,000 to 25,000 Ukrainian military personnel, and 3,000 to 10,000 Russian soldiers. It could also generate 1-to-5 million refugees. These figures are based on the assumption that only conventional weapons are used. However, if the conflict spread beyond Ukraine’s borders and NATO became involved in the fighting, this would become a major war between nuclear-armed forces with the very real danger that nuclear weapons would be used—and the public debate about this crisis is utterly lacking in discussion of this terrible threat. Both sides in such a conflict would, of course, begin fighting with non-nuclear conventional weapons. But as a result of advances in technology and firepower over recent decades, these weapons possess much greater range and destructiveness than earlier models, enabling them to strike high-value targets—airbases, radar stations, command centers, logistical hubs, and so on—far behind the front lines. As the losses mounted up on both sides—and if one or the other faced imminent defeat—its leaders could feel driven to employ their tactical nuclear weapons to avert such an outcome. Both US and Russian military doctrines allow for the use of tactical nuclear weapons under such circumstances. Despite reductions in nuclear forces over the last several decades, Russia still has 1,900 tactical nuclear weapons and 1,600 deployed strategic nuclear weapons. On the NATO side, France has 280 deployed nuclear weapons and the UK, 120. In addition, the United States has 100 B-61 tactical bombs deployed at NATO bases in Belgium, Germany, Italy, the Netherlands, and Turkey, and an additional 1,650 deployed strategic warheads. If even a single 100-kiloton nuclear weapon exploded over the Kremlin, it could kill a quarter of a million people and injure a million more, completely overwhelming the disaster-response capability of the Russian capital. A single 100-kiloton bomb detonated over the US Capitol would kill over 170,000 people and injure nearly 400,000. But it is unlikely that an escalating nuclear conflict between the United States and Russia would involve single warheads over their respective capitals. Rather, it is more likely that there would be many weapons directed against many cities and that many of these weapons would be substantially larger than 100 kiloton. For example, Russia’s 460 SS-18 M6 Satan warheads have a yield of 500 to 800 kilotons. The W88 warhead deployed on US Trident submarines has a yield of 455 kilotons. A 2002 report showed that if just 300 of Russia’s 1,600 deployed strategic warheads were detonated over US urban centers, 78 million people would die in the first half hour. In addition, the nation’s entire economic infrastructure would be destroyed—the electric grid, Internet, food distribution system, transportation network, and the public health system. All of the things necessary to sustain life would be gone, and in the months following this attack the vast majority of the US population would succumb to starvation, radiation sickness, exposure, and epidemic disease. A US attack on Russia would produce comparable devastation there. And if NATO were involved, most of Canada and Europe would suffer a similar fate. Still, these are just the direct effects of the widespread use of nuclear weapons between NATO and Russia. The global climate effects would be even more catastrophic. Recent studies have confirmed the predictions, first advanced in the 1980s, that large-scale use of nuclear weapons would cause abrupt, catastrophic global cooling. A war involving the full deployed arsenals of the US and Russia could loft up to 150 teragrams (150 million metric tons) of soot into the upper atmosphere, dropping average temperatures around the world as much as 18 degrees Fahrenheit. In the interior regions of North America and Eurasia temperatures would drop 45 to 50 degrees, to levels not seen since the last ice age, producing a disastrous decline in food production and a global famine that might kill the majority of humanity. Even a more limited war involving just 250 warheads in the 100 kiloton range could drop average global temperatures by 10 degrees, enough to trigger a famine unprecedented in human history, which would almost certainly bring the end of modern civilization. The enormity of the risk inherent in the current game of nuclear chicken between the US and Russia demands a fundamental change in their relation to each other, and in the equally fraught relation between the US and China. The great powers can no longer pursue a zero-sum game to see who will come out on top. It is possible that one of them will emerge on top of the heap—but the heap may well be a global ash pile. Nuclear weapons are a discrete manmade threat to the survival of our species. Their elimination could be achieved within a decade if the leaders of the nuclear-armed states were committed to doing so. And the process of negotiating a verifiable, enforceable timetable for dismantling these weapons would establish a new cooperative paradigm in international relations that would enable them to address the other, more complex existential threat posed by the climate crisis. The elimination of nuclear weapons is not some pie-in-the-sky fantasy. It is an absolute necessity for our continued survival. We have not survived this far into the nuclear era because of wise leadership, or sound military doctrine, or infallible technology. As Robert McNamara famously observed, “We lucked out. It was luck that prevented nuclear war.” A hope for continued good luck is an insane security policy. A determination to eliminate these weapons is a policy grounded in reality, and it offers us the only acceptable path forward.

### 1AC — Plan

#### The United States federal government should substantially increase its prohibitions of anticompetitive vessel sharing agreements involving the acquisition, use, and sharing of mega-ships above 10,000 TEU capacity in container shipping.

### 1AC — Solvency

#### Solvency —

#### Prohibiting agreements forces a shift away from megaships

Haralambides 19, Professor of Maritime Economics and Logistics at Erasmus University Rotterdam. (Hercules, 2019, Gigantism in container shipping, ports and global logistics: a time-lapse into the future Maritime Economics & Logistics volume 21, pages1–60, https://link.springer.com/article/10.1057/s41278-018-00116-0)

Such consolidation in an industry that is already highly concentrated is bound to take place under the increasing scrutiny of the regulator who, with the final consumer in mind, is likely to encourage more competition rather than further consolidation. If the liner shipping market thus becomes more open and competitive in the future, i.e. if alliance agreements regarding vessel sharing, investment planning, etc. are scrutinized more closely for their compatibility with competition law, as I expect, the joint filling of the ship will become more difficult and ship sizes shall by necessity decrease, together with an increase in the number of ports of call. Low prices would then be achieved through higher competition rather than big ship sizes. In such a scenario, shipping companies will be forced to provide the services their customers want, rather than the ones they find it convenient to offer. Shippers do not like too much transshipment and, if they could help it, they would like their container as close to them as possible. Reduction in ship size and more direct calls could thus follow the example of the air-transport industry. The most common jet flying across the Atlantic is not the 420-seat 747 jumbo but the 200 plus-seat Boeing 767. Eight out of 10 transatlantic planes are twin-engine craft such as the 767, its bigger brother the 777, or the various airbuses. This taste for smaller international jets reflects the fact that travellers now like to shun big international hubs such as London and New York and fly directly to their destinations. This is changing the international market into a web of direct intercontinental flights rather than one big air-bridge between London and New York.

#### A reduction in ship-size leads to a more competitive industry

Haralambides 19, Professor of Maritime Economics and Logistics at Erasmus University Rotterdam. (Hercules, 2019, Gigantism in container shipping, ports and global logistics: a time-lapse into the future Maritime Economics & Logistics volume 21, pages1–60, https://link.springer.com/article/10.1057/s41278-018-00116-0)

The impact of alliances on container shipping and ports I just stated that the gigantism in shipping has been induced by both port competition and shipping alliances. Indeed, without the ability to use each other’s ships, no carrier alone would be able to achieve a capacity utilization high enough to justify the use of present day mega-ships, while at the same time offering the frequency that shippers demand. But carriers have gone a step too far: At the time of writing, three alliances carry 80% of global trade. Such consolidation, in an industry that is already highly concentrated, is bound to take place under the increasing scrutiny of the regulator who, with the final consumer in mind, is likely to encourage more competition rather than further consolidation. If this happens, i.e., if container shipping becomes more open and competitive in the future, and alliance agreements regarding vessel sharing, investment planning, etc. are scrutinized more closely for their compatibility with competition law, as I expect, the joint filling of the ship will become more difficult and ship sizes shall by necessity decrease, together with an increase in the number of ports of call. Low prices would then be achieved through more competition rather than big ship sizes. This is more so when it is doubtful if the economies of scale in shipping are passed on to the final consumer, as required by the consortia block exception from the provisions of competition law in Europe.Footnote51

#### Enforcement in shipping is effective and ensures compliance

Consadine 21, Attorney with Seward & Kissell LLP. (Michael, Shipping Companies Beware: Antitrust Challenges Ahead as DOJ Focuses On Industry, <https://www.sewkis.com/publications/shipping-companies-beware-antitrust-challenges-ahead-as-doj-focuses-on-industry/>)

In response to U.S. President Joseph Biden’s July 9, 2021 Executive Order to enhance competition and antitrust enforcement, the U.S. Federal Maritime Commission (“FMC”) entered into a Memorandum of Understanding (“MOU”) with the Antitrust Division of the U.S. Department of Justice (“DOJ”) to facilitate criminal investigations of violations of U.S. laws. Given that shipping companies and their employees may be separately charged by DOJ regardless of their physical location and face draconian penalties upon conviction, it is incumbent for all shipping companies – foreign and domestic – to monitor these recent developments and take steps to minimize the likelihood of harmful consequences, including by establishing or enhancing existing compliance programs.

#### Private antitrust action is necessary to deter international collusion

Lande 16, Professor of Law at the University of Baltimore School of Law, Director of the American Antitrust Institute. {Robert; Spring 2016; Antitrust, “Class Warfare: Why Antitrust Class Actions Are Essential for Compensation and Deterrence,” <https://scholarworks.law.ubalt.edu/cgi/viewcontent.cgi?article=2019&context=all_fac>)

OUR RECENT EMPIRICAL STUDIES demonstrate five reasons why antitrust class action cases are essential: (1) class actions are virtually the only way for most victims of antitrust violations to receive compensation; (2) most successful class actions involve collusion that was anticompetitive; (3) class victims’ compensation has been modest, generally less than their damages; (4) class actions deter significant amounts of collusion and other anticompetitive behavior; and (5) anticompetitive collusion is underdeterred, a problem that would be exacerbated without class actions. Recent court decisions undermine class action cases, thus preventing much effective and important antitrust enforcement.1 Class Actions Are Virtually the Only Way for Most Victims of Federal Antitrust Violations to Receive Compensation The antitrust statutes provide that violations result in automatic treble damages for the victims.2 The legislative history 3 and case law indicate that compensation of victims is a goal, perhaps the dominant goal, of antitrust law’s damages remedy.4 Class actions play an essential role in ensuring that the treble damages remedy serves its intended function of “protecting consumers from overcharges resulting from price fixing.”5 As the Supreme Court noted, “[C]lass actions . . . may enhance the efficacy of private [antitrust] actions by permitting citizens to combine their limited resources to achieve a more powerful litigation posture.”6 Accordingly, “courts have repeatedly found antitrust claims to be particularly well suited for class actions . . . .”7 Without class actions, cartels and other antitrust violators that inflict widespread economic harm would have little to fear from the treble damages remedy. This is because, as a practical matter, class action cases are virtually the only way for most victims of anticompetitive behavior to receive compensation.8 A 2013 study that Professor Joshua Davis and I conducted documents the benefits of private enforcement by analyzing 60 of the largest recent successful private U.S. antitrust cases (defined as suits resolved since 1990 that recovered at least $50 million in cash for the victims9 ). These actions returned a total of $33.8–$35.8 billion in cash to victims of anticompetitive behavior.10 These figures do not include products, discounts, coupons, or the value of injunctive relief or precedent—only cash.11 Consequently, these totals significantly understate the actual benefits of this litigation to the victims involved. And, of course, this study covered only 60 suits (albeit 60 of the largest private recoveries) out of the many hundreds of private cases filed in the United States during this period. Of these 60 large private cases, 49 were class action suits.12 These cases recovered a total of $19.4–$21.0 billion—the majority of the amount analyzed in our study.13 Since these were among the largest private actions ever filed, specific conclusions based upon these results may not generalize perfectly to all class action cases. They do suggest, however, that without class action cases, effective and significant victim compensation would be reduced dramatically. Most Successful Class Actions Involve Collusion that Was Anticompetitive Almost every private antitrust case that results in a remedy does so through a settlement,14 so the underlying merits of the plaintiffs’ claims usually have not been definitively assessed by a court or jury. Critics sometimes use this fact to support assertions that class actions usually are meritless, that plaintiffs often receive huge sums from cases not involving anticompetitive conduct, and that private antitrust actions often amount to legalized blackmail or extortion.15 Antitrust class actions arise in widely varied market and factual settings, and views about the merits of specific cases and the litigation risks involved vary as well. This makes it extremely difficult to draw objective conclusions about the merits of settlements. Nevertheless, there are good reasons to believe that the vast majority of class action cases in the Davis/Lande study involved legitimate claims. Forty-one of the 49 class actions involved allegations of collusion,16 and the same conduct supporting the settlements gave rise to criminal penalties in 20 cases; to civil relief by the FTC or DOJ in 8 cases; to civil relief by a state or other governmental unit in 9 cases; to a trial that the defendants lost and that was not overturned on appeal in 7 cases; to a class being certified in 22 cases; and to plaintiffs surviving or prevailing at summary judgment in 12 cases.17 Overall, 44 of the 49 class action suits (90 percent) exhibited at least one of these forms of legal validation as to their merits. (The 5 actions that did not have at least one of these indicia settled too early for a substantive evaluation of their merits).18 These results are broadly consistent with a finding that Professor John Connor derived from an analysis of 130 private recoveries worldwide in international cartel cases for which he could obtain the necessary data.19 He found that of the 50 largest worldwide settlements, measured by their monetary recoveries in constant dollars, 49 had been filed against international cartels.20 Of these, 51 percent were follow-ups to successful DOJ prosecutions, and another 8 percent were filed after fines by the EC or other non-U.S. antitrust authorities.21 Using a different data set, Connor and I found that 36 of 71 (also 51 percent) successful U.S. class action recoveries followed successful DOJ criminal cases.22 This data does not prove that these or any other specific class action cases involved anticompetitive conduct. But critics who assert that most antitrust class actions are little more than legalized blackmail rely only on anecdotes, hypotheticals, and opinions (often of defendants in the cases), without support from studies, and with no reliable empirical evidence that the actions lack merit or that settlement amounts are excessive compared to the anticompetitive harm.23 To be fair, one should compare the above indicia of validity to the absence of any systematic evidence underpinning the critics’ charges. Critics also sometimes assert that remedies typically secured in class action settlements are at best dubious and often are completely worthless, consisting of useless coupons, meaningless discounts, and obsolete products. They argue with regard to cash payments (without providing even a single anecdote) that “issuing [class members] a check is often so expensive that administrative costs swallow the entire recovery.”24 According to many critics the only ones to benefit from private enforcement are the attorneys involved.25 The critics who make these charges, however, never offer evidence beyond opinions, hypotheticals, and occasional anecdotes. Indeed, for the 49 antitrust class action cases that Davis and I studied, the data show that, overall, only a total of approximately 20 percent of the recoveries went for attorney fees (14.3 percent) or claims administration expenses (4.1 percent).26 The rest was returned to the victims. This result is consistent with older estimates of legal fees in antitrust class action cases in the 6.5 to 21 percent range.27 Critics also sometimes examine what happened in other areas of law and assert that these outcomes occur in contemporary antitrust class action suits as well. But they never offer systematic evidence from antitrust cases to support their opinions.28 Interestingly, only one of the lawsuits in the Davis/Lande study involved a coupon remedy—the Auction Houses cases. However, those coupons were fully redeemable for cash if they were not used for five years.29 The actions Davis and I studied were among the largest antitrust class actions ever brought and therefore might not be representative of class action cases in general. Abuses surely occur from time to time in class action cases, as they do almost everywhere in the legal system. But a majority of the critics’ most egregious examples are from other areas of law or are quite old.30 No one has ever presented reliable evidence showing that such examples occur frequently or are typical of contemporary antitrust class action cases.31 Class Victims’ Compensation Has Been Modest, Generally Less than Their Damages Even though the $19.4–$21.0 billion that Davis and I showed had been returned to victims in 49 class action cases is a significant figure when viewed in absolute terms, it probably was not nearly enough to fully compensate all of the victims involved. To ascertain “Recovery Ratios” (the percentage of the illegal overcharges that was obtained in the form of monetary payments to victims in private actions), Professor Connor and I assembled a sample consisting of every completed private case against cartels discovered from 1990 to mid-2014 for which we could find the necessary information. For each of these 71 cases we assembled neutral scholarly estimates of affected commerce and overcharges and compared these estimates to the damages secured in the private actions filed against these cartels.32 The victims of only 14 of the 71 cartels (20 percent) recovered their damages (or more) in settlement. Only seven (10 percent) received more than double damages. The rest— the victims in 57 cases—received less than their damages. In four cases, the victims received less than 1 percent of damages, and in 12 cases they received less than 10 percent of damages. Overall, the median average settlement was 37 percent of single damages. The unweighted mean settlement (a figure that gives equal weights to the cartels that operated in large and small markets) was 66 percent. The mean and median average Recovery Ratios are higher (81 percent and 52 percent, respectively), for the 36 cases that were follow-ups to DOJ prosecutions that imposed criminal sanctions.33 Because these Recovery Ratios do not include any valuations of products, discounts, coupons, or the value of injunctive relief or precedent, the actual worth of these remedies to the victims is greater than the figures reported above. Nevertheless, it fairly can be concluded that antitrust class action cases often return important recoveries to victims that are significant in absolute terms, but usually are modest when measured against the sizes of the overcharges involved. Class Actions Deter Significant Amounts of Collusion and Other Anticompetitive Behavior Private class action cases serve to deter a substantial amount of anticompetitive activity, perhaps even more than the highly acclaimed anti-cartel program of the U.S. Department of Justice, which often results in prison sentences for cartel participants.34 Virtually every contemporary analysis of antitrust enforcement assumes that deterrence is an important purpose of the private treble damages remedy provision.35 The Supreme Court has underscored this point. For example, in Reiter v. Sonotone Corp., the Court explained: Congress created the treble-damages remedy of § 4 precisely for the purpose of encouraging private challenges to antitrust violations. These private suits provide a significant supplement to the limited resources available to the Department of Justice for enforcing the antitrust laws and deterring violations.36 The government, however, cannot be expected to do all of the necessary enforcement for a number of reasons, including budgetary constraints, “undue fear of losing cases; lack of awareness of industry conditions; overly suspicious views about complaints by ‘losers’ that they were in fact victims of anticompetitive behavior; higher turnover among government attorneys; and the unfortunate, but undeniable, reality that government enforcement (or non-enforcement) decisions are, at times, politically motivated.”37 A recent study highlights the deterrence benefits of private enforcement by comparing the likely deterrent effects of private antitrust enforcement to that of criminal anti-cartel enforcement by the Antitrust Division.38The surprising result is that private enforcement—and even just antitrust class action cases considered separately—probably deters more anticompetitive behavior. From 1990 through 2011 the total of DOJ corporate antitrust fines, individual fines, and restitution payments totaled $8.2 billion. (Dis)valuing a year of prison or house arrest at $6 million39 adds another $3.6 billion in total deterrence from the DOJ’s anti-cartel cases, yielding a total of approximately $11.8 billion. This is a substantial figure, and the possibility of incurring such sanctions surely has deterred a significant number of would-be antitrust violators.40 Nevertheless, these penalties amount to approximately 50 percent of the $19.4–$21.0 billion in cash alone (not including products, etc.) secured by just the 49 studied class cases that were completed during the same period.41 These private cases were only a portion of the hundreds of successful class action cases completed during this period (albeit they were many of the largest).42 The total amount of payouts in class action cases is so high that it probably deters more anticompetitive conduct than even the DOJ’s anti-cartel enforcement efforts.

#### Empirics prove antitrust enforcement deters cartelization

Bos et al 15, Professor of Economics Department of Organisation and Strategy Maastricht University. (Iwan, with Stephen Davies Centre for Competition Policy & School of Economics University of East Anglia and Peter L. Ormosi Centre for Competition Policy & Norwich Business School University of East Anglia, , The deterrent effect of anti-cartel enforcement: A tale of two tails <https://ueaeco.github.io/working-papers/papers/ccp/CCP-14-06v2.pdf>)

The empirical contribution of this paper derives from a novel comparison of the distributions of overcharge observed for cartels between jurisdictions which did and did not prohibit cartels. It shows that the distribution for legal cartels has significantly more mass in its tails than does the distribution for illegal cartels. This finding is robust to controlling for the time period in which the cartels occurred and the perceived quality of the sources of the data. We suggest it has two potential explanations, not necessarily mutually exclusive. It may be that anti-cartel law is most effective in deterring very low or very high overcharge cartels, or it may be that such cartels are least likely to be detected in a world where cartels are illegal. The remainder of the paper is designed to distinguish which of these potential explanations is more likely. To do this, we present a fairly general theoretical model which is representative of the previous literature on cartel formation. This establishes the conditions under which we can deduce that its is deterrence which drives the empirical result. We argue that only relatively weak assumptions are required: in essence, low-overcharge cases are deterred by fines which have (at least partly) a fixed element, while high-overcharge cases, in the face of a higher probability of detection, either moderate their overcharge to lessen the likelihood of detection and lower the expected penalty (composition deterrence), or entirely abandon the cartel (frequency deterrence) because incentives become incompatible. This has some potentially important implications. In the previous literature, evidence on the nature of detected cartels has been widely used as a key source of information about the nature of collusion in the real world. But it now needs to be underlined that this evidence emanates only from cases which are not deterred, and are detected, by active anti-cartel enforcement policy. In that this ignores cases 21 which are deterred, it may seriously underestimate the welfare-enhancing impact of policy, especially insofar as it is the most harmful cases which are most likely to be deterred.18 This also raises doubts about conventional empirical wisdoms on the structural factors which are conducive to collusion. The evidence of this paper is confined to overcharge, but it is not unlikely that overcharge will be related to the structure of the cartel (number and asymmetries of members, duration, etc). If so evidence from previous studies on the structure and stability of cartels may require revisiting.

#### Shipping antitrust enforcement effectively deters

Smith 22, Attorney Reed Smith LLC. (Reed Smith, Antitrust insights in shipping – recapping 2021 and preparing for 2022, https://www.reedsmith.com/en/perspectives/2022/01/antitrust-insights-in-shipping-recapping-2021-and-preparing-for-2022)

In the same month that EO 14036 was issued, the FMC and the Antitrust Division of the Department of Justice (DOJ) entered into a memorandum of understanding relative to “Cooperation with Respect to Promoting Competitive Conditions in the U.S.-International Ocean Liner Shipping Industry.” The agencies agreed to share information “for the purpose of improving each agency’s effectiveness in carrying out its respective legal responsibilities.” They also agreed to confer, at least annually, to address law enforcement, regulatory, and other matters related to competitive conditions in the international ocean liner shipping industry. This is the first-ever agreement of this nature between the two agencies. Importantly, unlike the FMC, the DOJ has criminal enforcement capabilities. Specifically, the DOJ has jurisdiction to enforce U.S. antitrust laws not only against domestic business activities but also against foreign business activities that have a substantial and intended effect in the United States, up to and including criminal prosecution. In recent years, the DOJ has indicted a foreign ocean liner shipping company and its executives in relation to a conspiracy regarding allocation of customers and routes, bid rigging, price fixing, and other anticompetitive conduct in the international roll-on, roll-off ocean shipping industry, resulting in guilty pleas, hefty fines, and prison time for individuals, not just for the company and its executives, but also for four other competitors that were found to have participated in the conspiracy. The DOJ’s prosecutions followed a European Union antitrust probe into the container line shipping industry, which was resolved in 2016 when 14 companies entered into legally binding commitments to increase price transparency for customers and reduce the likelihood of coordinating prices. The FMC, on the other hand, has jurisdiction to investigate and sanction ocean carriers that implement unfair and unreasonable practices in violation of the U.S. Shipping Act. Specifically, the FMC brings enforcement actions and issues civil penalties against ocean carriers; the FMC also adjudicates private party actions brought by cargo owners and awards reparations. The FMC has intensified its efforts to use these tools against ocean carriers, in particular in relation to their demurrage and detention practices during the COVID-related port congestion crisis. The most recent illustrations are three policy statements issued by the FMC last month to encourage shippers to file private party complaints against ocean carriers, either individually or collectively, and to protect them from retaliation and attorney fees awards when such actions were brought in good faith. In one of these statements, the FMC recognized that private actions are important to alert the agency of potential violations and to deter unfair and unreasonable conduct by carriers.

#### Biden is spending PC on shipping alliances now

Greenstein 3/2/22, partner in the Washington, D.C. office of Constantine Cannon, (Seth, UPDATE: The End of the Ocean Carriers’ Antitrust Exemption? <https://constantinecannon.com/antitrust-group/update-the-end-of-the-ocean-carriers-antitrust-exemption/>)

President Joe Biden’s call for shipping reform during his State of Union address is the latest indicator that the longstanding antitrust exemption for ocean carriers may be running aground. On January 7, 2022, this blog asked whether supply chain delays and skyrocketing container shipping prices could lead to the end of ocean carriers’ historical immunity from the antitrust laws under the Shipping Act of 1916. Given events in the ensuing weeks, the answer may well be “yes.” The White House released a Fact Sheet on February 28, entitled “Lowering Prices and Leveling the Playing Field in Ocean Shipping.” After citing estimates that in 2021 the pandemic enabled the container shipping industry to reap profits seven times higher than its 2020 profits, and five times its profit over the entire prior decade, the Biden administration announced several steps designed to “lower consumer prices and level the playing field in ocean shipping.” Id. Among those initiatives, the President called on Congress to pass “reforms that address the current antitrust immunity for ocean shipping alliances.” Id. President Biden echoed this message in his State of the Union address. After commenting that “capitalism without competition isn’t capitalism,” it is “exploitation,” President Biden observed: “During the pandemic, these foreign-owned companies raised prices by as much as 1,000% and made record profits.” Id. He then announced a “crackdown” on ocean carriers “overcharging American businesses and consumers.” Id. In fact, Congress did not wait for the State of the Union to put the shipping antitrust exemption on the chopping block. Representative Jim Costa issued a press release following the State of the Union address describing his bipartisan Ocean Shipping Antitrust Enforcement Act as the answer to President Biden’s call for shipping reform. The bill, which would eliminate the shipping antitrust exemption in its entirety, was introduced in the House on February 28 by Rep. Costa and co-sponsors- Rep. Dusty Johnson and Rep. John Garimendi (whose Ocean Shipping Reform Act passed the House in December 2021 by a 364-60 bipartisan vote). This legislation would thus go even further than the Free Market Antitrust Immunity Reform (“FAIR”) Act bill proposed in 1999-2001, which would have eliminated the exemption for ocean carriers while preserving the exemption for marine terminal operators. We can expect this drive to revive competition in the shipping industry to continue. Reps. Costa and Johnson are the Chair and Ranking Member, respectively, of the House Agriculture Subcommittee on Livestock and Foreign Agriculture. Agricultural export interests have been severely affected by ocean carrier practices during the pandemic, including the shipping of empty containers back to foreign ports.) Our January 7 post observed that Congress could consider more granular approaches. In addition to the FAIR Act approach, we noted that a pro-competitive bill could eliminate the exemptions that enable fuel profiteering while “permitting ocean carriers to continue entering into vessel-sharing agreements that at least in theory promote efficiency by combining containers from multiple carriers onto a single ship—similar to airline codesharing arrangements.” The adverse market effects of the Shipping Act antitrust exemptions continue to command the attention of the White House and Congress. The days of ocean carriers’ antitrust immunity, though more than a century old, may now indeed be numbered.

# 2AC

## Advantage

#### --M and A’s

Feiner 1-18-2022 (Lauren, “FTC, DOJ seek to rewrite merger guidelines, signaling a tougher look at large deals,” <https://www.cnbc.com/2022/01/18/ftc-doj-seek-to-rewrite-merger-guidelines.html>)

The Federal Trade Commission and Department of Justice Antitrust Division kicked off a process to rewrite merger guidelines for businesses on Tuesday, signaling a tougher stance toward large deals. The nation’s two federal antitrust enforcers announced they are seeking public comment on how to “modernize enforcement of the antitrust laws regarding mergers.” Their questions to the public shed light on where they may seek to strengthen the guidelines and in what areas they could take a more forceful approach to antitrust enforcement. That focus could suggest additional scrutiny for large deals in the future, especially big tech deals, which have already been the target of increased scrutiny over the past few years. Microsoft’s $68.7 billion deal to buy video game-maker Activision, announced earlier Tuesday, could be just one example of the type of transaction that will gain a closer look given its scope and industry. The agencies said they are “particularly interested” in learning about where the earlier guidelines “may underemphasize or neglect” important aspects of competition. They list labor market effects and elements of competition that aren’t tied to prices, like innovation and quality, as examples of such aspects. The request for comment contains an entire section of questions devoted to digital markets, asking whether the guidelines should differ in for such markets, how they should take into account the ways data can help firms amass power and how enforcers should assess two-sided markets, like when platforms serve both advertisers and consumers. During a press conference Tuesday, John Kwoka, chief economist to the FTC chair, said that several of the issues associated with digital markets like data aggregation were not “fully addressed” in the agency’s horizontal merger guidelines issued in 2010. A growing contingent of antitrust scholars, including progressive FTC Chair Lina Khan, have argued that enforcing antitrust laws in digital markets requires a different lens than what’s traditionally applied to deals and competitive conduct. That’s in part, they argue, because such businesses may be able to use data and network effects to concentrate their power and bar competition, even if prices for consumers appear low or even free in return. Enforcers have already been quick to review large tech deals by internet giants. The DOJ reportedly continued probing Google’s acquisition of Fitbit even after it closed last year, according to Reuters, and the agency also requested extra information about Salesforce’s deal for Slack before it closed in 2021. The FTC’s ongoing lawsuit against Facebook includes claims that it acquired Instagram and WhatsApp to illegally maintain its dominance in the personal social networking space, a claim Facebook-owner Meta has denied. Tuesday’s announcement follows the FTC’s vote last year to withdraw the joint agency vertical merger guidelines instated during the Trump administration. At the time, DOJ’s antitrust chief Jonathan Kanter had not yet been confirmed and the acting head of the division said the guidelines would remain in place, though the division would continue to collaborate with the FTC to assess their effectiveness. The two Republican FTC commissioners who voted against rescinding the guidelines lamented the uncertainty that pulling the guidelines could add to businesses seeking to merge. Now, with both Kanter and Khan in place, the agencies are embarking on a potential overhaul of existing guidelines for businesses seeking to close deals. It comes amid a surge in mergers that has overwhelmed the under-resourced agencies and led the FTC to take unusual steps, like warning some businesses that it will continue to look into their deals after the period of time the parties are required to wait to close. Kanter made clear that the two agencies are aligned in their approach.

#### ---Ag

MFN 1-4-2022 (Michigan Farm News, “USDA, DOJ launch joint effort to enforce ag antitrust laws,” <https://www.michiganfarmnews.com/usda-doj-launch-joint-effort-to-enforce-ag-antitrust-laws>)

USDA and the Department of Justice (DOJ) are outlining their joint commitment to enforcing federal antitrust laws that protect farmers, including the Packers and Stockyards Act. The update came during a White House meeting Monday, where President Biden outlined $1 billion in new federal spending to increase production capacity for independent meat processors — a move aimed at chipping away at the large companies that dominate the American meat market. Four large meat packing companies control 85% of the beef market, while in poultry the top four processing firms control 54% of the market and the top four pork processors control about 70%. Ag Secretary Tom Vilsack and U.S. Attorney General Merrick Garland said their departments are already working together to support enforcement of federal competition laws pertaining to agriculture and released a list of shared commitments between USDA and DOJ. The agencies will jointly develop a centralized process for farmers to submit complaints about potential violations of antitrust laws and the Packers and Stockyards Act. USDA and DOJ say the confidentiality of the complainants will be protected “to the fullest extent possible under the law” and commit to supporting relevant whistleblower protections. USDA and DOJ say they will work together on information sharing to create a process to efficiently address a complaint and USDA will refer potential violations of the Packers and Stockyards Act to DOJ. The agencies say they will also work together to identify areas where Congress can help modernize that process. “Antitrust and market regulatory enforcement is essential to enabling the competition necessary to transform our concentrated supply chains in favor of diversified, resilient food systems,” Vilsack said. “These are complex, difficult areas of law, and our authorities are 100 years old or more, but I'm heartened by reaffirming our shared commitment to tackle these challenges together.”

#### No emerging tech impact.

Sechser et al. 19, \*Todd S., Pamela Feinour Edmonds and Franklin S. Edmonds, Jr. Discovery Professor of Politics and Public Policy at the University of Virginia and Senior Fellow at the Miller Center of Public Affairs, \*\*Neil Narang, Associate Professor of Political Science at the University of California, Santa Barbara, \*\*\*Caitlin Talmadge, Associate Professor of Security Studies in the School of Foreign at Georgetown University. ( “Emerging technologies and strategic stability in peacetime, crisis, and war”, *Journal of Strategic Studies*, 42:6, pg. 728-729)

Yet the history of technological revolutions counsels against alarmism. Extrapolating from current technological trends is problematic, both because technologies often do not live up to their promise, and because technologies often have countervailing or conditional effects that can temper their negative consequences. Thus, the fear that emerging technologies will necessarily cause sudden and spectacular changes to international politics should be treated with caution. There are at least two reasons to be circumspect.

First, very few technologies fundamentally reshape the dynamics of international conflict. Historically, most technological innovations have amounted to incremental advancements, and some have disappeared into irrelevance despite widespread hype about their promise. For example, the introduction of chemical weapons was widely expected to immediately change the nature of warfare and deterrence after the British army first used poison gas on the battlefield during World War I. Yet chemical weapons quickly turned out to be less practical, easier to counter, and less effective than conventional high-explosives in inflicting damage and disrupting enemy operations.6 Other technologies have become important only after advancements in other areas allowed them to reach their full potential: until armies developed tactics for effectively employing firearms, for instance, these weapons had little effect on the balance of power. And even when technologies do have significant strategic consequences, they often take decades to emerge, as the invention of airplanes and tanks illustrates. In short, it is easy to exaggerate the strategic effects of nascent technologies.7

Second, even if today’s emerging technologies are poised to drive important changes in the international system, they are likely to have variegated and even contradictory effects. Technologies may be destabilising under some conditions, but stabilising in others. Furthermore, other factors are likely to mediate the effects of new technologies on the international system, including geography, the distribution of material power, military strategy, domestic and organisational politics, and social and cultural variables, to name only a few.8 Consequently, the strategic effects of new technologies often defy simple classification. Indeed, more than 70 years after nuclear weapons emerged as a new technology, their consequences for stability continue to be debated.9

## CP — FMC

#### Perm do the CP — it’s a way the aff could happen — here’s the wording of the Shipping Act

Legal Information Institute ND – (“46 U.S. Code § 40103.Administrative exemptions,” [accessed 1/21/22], https://www.law.cornell.edu/uscode/text/46/40103, see)

1. **In General.— The Federal Maritime Commission, on application or its own motion, may by order or regulation exempt for the future any class of agreements between persons subject to this part or any specified activity of those persons from any requirement of this part if the Commission finds that the exemption will not result in substantial reduction in competition or be detrimental to commerce. The Commission may attach conditions to an exemption and may, by order, revoke an exemption.** (b)Opportunity for Hearing.— An order or regulation of exemption or revocation of an exemption may be issued only if the Commission has provided an opportunity for a hearing to interested persons and departments and agencies of the United States Government.

#### Their own evidence says that Congress has to amend the Shipping Act to solve — KU reads yellow

1NC NITL 21 (National Industrial Transportation League, 5-18-2021, "PROPOSED REFORMS TO THE SHIPPING ACT OF 1984" National Industrial Transportation League – NITL, https://www.nitl.org/wp-content/uploads/2020/03/NITL-Proposed-Shipping-Act-Reforms-May-2021.pdf, accessed 11-26-2021)

I. UNREASONABLE DEMURRAGE AND DETENTION PRACTICES AND CHARGES

(a) Within 60 days of enactment, the FMC shall initiate a rulemaking proceeding to establish rules prohibiting common carriers and marine terminal operators from adopting and applying unjust and unreasonable demurrage and detention rules and practices. The rulemaking shall address the issues identified in FMC Docket No. 19-05, Interpretive Rule on Demurrage and Detention Under the Shipping Act," including but not limited to:

i. Establishing clear and uniform definitions for demurrage, detention, cargo availability for retrieval and associated free time, and other terminology used in the rule. The definition for cargo availability for retrieval should account for government inspections.

ii. Establishing that demurrage and detention rules are not independent revenue sources but should incentivize efficiencies in the ocean transportation network, including the retrieval of cargo and return of equipment.

iii. Prohibiting the consumption of free time or collection of demurrage and detention charges when obstacles to the cargo retrieval or return of equipment are within the scope of responsibility of the carrier or their agent and beyond the control of the invoiced or contracting party.

iv. Prohibiting the commencement or continuation of free time unless cargo is available for retrieval and timely notice of cargo availability has been provided.

v. Prohibiting the consumption of free time or collection of demurrage charges when marine terminal appointments are not available during the free time period.

vi. Prohibiting the consumption of free time or collection of detention charges on containers when the terminal required for return is not open or available.

vii. Requiring common carriers to provide timely notice of (i) cargo availability after vessel discharge, (ii) container return locations, and (iii) advance notice for container early return dates.

viii. Establishing minimum billing requirements, including timeliness and supporting information that shall be included in or with invoices for demurrage and detention charges that will allow the invoiced party to validate the charges.

ix. Requiring common carriers and marine terminal operators to establish reasonable dispute resolution policies and practices.

x. Establishing the responsibilities of shippers, receivers, and dray~~men~~ [edited for language, strike through not included in original article] with respect to cargo retrieval and equipment return.

(b) A common carrier or marine terminal that assesses demurrage or detention charges shall maintain all records supporting the assessment of the demurrage or detention charges for a period of 3 years and provide such records to the invoiced party on request.

(c) In any complaint proceeding challenging common carrier demurrage or detention charges as unjust and unreasonable, the common carrier shall bear the burden of establishing that the charges are just and reasonable and comply with the rules to be established under Section I.(a) above.

II. PROHIBITED ACTS

The prohibited acts set forth at 46 U.S.C. § 41101(a) shall be modified as follows:

(a) IN GENERAL.—

A common carrier, or ocean common carrier where specified, either alone or in conjunction with any other person, directly or indirectly, may not—

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(14) fail to furnish or cause a contractor to furnish the facilities and instrumentalities needed to perform the transportation services, including containers;

(15) establish rules and practices for the allocation and interchange of containers, chassis or other equipment that unreasonably reduce accessibility to such equipment or efficiencies in performance of the transportation services;

(16) an ocean common carrier may not fail to establish, observe, and enforce just and reasonable regulations and practices relating to the allocation of vessel space accommodations in consideration of foreseeable import and export demands.

III. COMMON CARRIER SERVICE OBLIGATIONS

A common carrier shall be obligated to adhere to minimum service standards that meet the public interest. The minimum service standards shall be developed in a rulemaking proceeding initiated by the FMC within 90 days of enactment of these amendments and shall include but not be limited to the following:

1. The obligation to adopt reasonable rules and practices related to or connected with the furnishing and allocation of adequate and suitable equipment, vessel space accommodations, and other instrumentalities necessary for the receiving, loading, carriage, unloading and delivery of cargo.
2. The duty to perform the contract of carriage with reasonable dispatch.
3. The requirement of ocean common carriers to establish contingency service plans to address and mitigate service disruptions and inefficiencies during periods of port congestion and other market disruptions.

## CP — Multilat

#### Zero risk of international agreement

Stephan 5, Professor and Hunton & Williams Research Professor, University of Virginia School of Law. (Paul, “Global Governance, Antitrust, and the Limits of International Cooperation,” <https://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=1635&context=cilj>)

The broad definition of competition policy not only makes sense logically, but underscores the difficulties of achieving an international consensus about its content. Even if states could agree that efficiency optimization of the sum of consumer and producer welfare-is the only legitimate objective of competition policy, agreement as to whether a particular regime advances or detracts from efficiency would remain elusive. Specifying the optimal mix of competition and cooperation in a particular economic sector is inevitably controversial. 23 Technological innovation and other kinds of change, as well as shifting consumer preferences, limit the lessons one can learn from a sector's history. Once legitimate differences over the optimal level of competition arise, it becomes difficult, if not impossible, to determine whether a regulator is pursuing efficiency-driven competition policy. The proliferation of alternative objectives for competition policy multiplies the difficulty of finding common ground. Given the difficulty of fixing optimal levels of competition, we should expect much competition law to take the form of elastic standards rather than of precise and constraining rules. With increased discretion comes inconsistency. For example, one cannot insist on maximizing consumer welfare and still promote national champions or protect inefficient small producers. In turn, tolerance of inconsistency opens the door to discrimination. Regulatory choices driven by animus towards foreign producers can be reconciled with other, permissible rationales. The more open-ended and multi-factored the policy and the greater the discretion of regulators to decide where and how to apply competition policy, the easier it becomes to disguise trade protection as competition policy. 24 Strategic deployment of competition law would be most feasible where governments have exclusive enforcement authority. 25

#### Only the AFF’s bottom-up harmonization fills enforcement gaps---that must precede any effort to develop an international antitrust regime.

Schmidt 6, \*Jonathan T. Schmidt. Antitrust lawyer. Master’s in Public Affairs from the Princeton School of Public and International Affairs. JD from Yale Law School. Former Fulbright Fellow in Peru, where he studied micro-enterprise lending; (2006, “Keeping U.S. Courts Open to Foreign Antitrust Plaintiffs: A Hybrid Approach to the Effective Deterrence of International Cartels.” <https://digitalcommons.law.yale.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1266&context=yjil>)

My proposal is also consistent with the desire by many economists and legal scholars to see some form of global antitrust authority established. Eleanor Fox notes, "international antitrust has been a gleam in the eye of the world at least since the proposal of the Havana Charter in the 1940s.,,29' Yet while there are "seeds"2 for some sort of international antitrust charter, there is disagreement as to whether the international community should adopt a common international antitrust code,294 establish an oversight body along the lines of the World Trade Organization to ensure compliance with such a code, or create a world antitrust court to adjudicate important private international disputes.295 Indeed, the United States and the European Union-arguably the two jurisdictions that present the most agreement on the substantive aspects of international antitrust-occupy diametrically opposed positions with respect to the form international antitrust enforcement should take. The European Union favors binding dispute resolution in the WTO; the United States favors a more voluntary approach that focuses on technical assistance and the issuance of voluntary standards. Although there has been convergence in substantive antitrust policies, there, too, disagreement exists. The substantive disagreements led Judge Diane Wood, after proposing a baseline general international antitrust code, to note that in actually negotiating such a code, "the details would indeed be devilish" and to "wonder whether the effort it would take to achieve international consensus on all [of the areas of antitrust] would be worth it." 296 As an international antitrust regime is still such a distant possibility, I prefer to propose an improvement to the status quo rather than waiting for the intellectually best solution.

Absent an international agreement establishing some form of global antitrust regime, the international community needs to work to further harmonize their practices to fill the enforcement gaps that allow corporate criminals like cartels to thrive.297 I believe my proposal is the best mechanism-absent an international agreement-to encourage harmonization of antitrust policies with respect to international cartels. By exercising jurisdiction over claims by plaintiffs located in countries where the laws do not provide adequate relief, the United States implicitly encourages those countries to implement and enforce laws that provide such relief. Although other nations might respond negatively to America's judgment of their antitrust regimes, their objections should be mollified by the fact that such judgments are undertaken to limit, rather than extend, American power 298 through an exercise of jurisdictional restraint.

Still, international antitrust disagreements will persist, but such disagreements are not created by the United States. Instead, they reflect real policy differences between the United States and its trading allies regarding the degree to which all cartels, especially domestic export cartels, should be deterred, the viability of private antitrust suits as a means of policing cartel activities, and the ability of the United States to protect its consumers, even at the expense of foreign corporations. Empagran has not generated conflict; it has only revealed it. Accordingly, I reject the view that the absence of conflict, such as would result by closing our courts to Empagran-type suits, is equivalent to harmony. Instead, the closing of our courts to all Empagran-type suits would represent a surrender of America's interest in protecting its consumers from the harms of international cartels. At the least, such a capitulation of America's vital economic interests should not be achieved by judicial fiat.

## DA — BBB

#### Won’t pass and a month away — Limited time, lack of focus, Manchin or Sinema back down

Zhou 3-16-2022, politics and policy reporter at Vox. (Li, 3-16-2022, “The uncertain future of the bill formerly known as Build Back Better”, *Vox*, <https://www.vox.com/2022/3/16/22955410/build-back-better-scenarios> accessed 3-16-2022)

In recent weeks, President Joe Biden has tried to resurrect the legislation formerly known as Build Back Better, the social spending and climate bill Sen. Joe Manchin (D-WV) effectively killed in December when he said he wouldn’t support it.

Biden’s efforts include ditching the name and rebranding the policies as measures to curb inflation. Senate Democrats are also holding hearings on issues like prescription drug prices to try to keep talks going. And Democrats, on the whole, have signaled a willingness and political motivation to get something done while they remain in control of Congress.

But this push, too, is in limbo. Few lawmakers seem to have any clue how to actually move it forward. “The answer is I don’t have the foggiest idea,” Sen. Mark Warner (D-VA) told Vox.

Because no Republicans support the bill and because Democrats have a very narrow Senate majority, all 50 members of the caucus need to be on board to pass it via a process known as budget reconciliation. And Democrats are still struggling to piece together a bill that could get this degree of support.

Earlier this month, Manchin indicated that there were provisions he’d potentially be open to — including reducing prescription drug prices, reforming the tax code, and addressing climate policy — but there’s no explicit agreement yet about what a plan could look like.

“I hope that we will do some of the bill and that we’ll get some key investments in,” said Sen. Raphael Warnock (D-GA). “Look, folks ought to get in the room and figure out what that is.”

Here are three possible routes Democrats could take as they try to salvage the legislation.

Scenario 1: Democrats could agree on a deficit-reducing deal

Much like the previous bill, any potential agreement hinges on Manchin.

In early March, Manchin effectively put a new offer on the table, saying he’d be willing to consider legislation that focuses on prescription drug prices, tax reforms, and climate investments as long as half the revenue it raises is targeted to paying down the deficit.

“Half of that money should be dedicated to fighting inflation and reducing the deficit,” he told reporters. “The other half you can pick for a 10-year program, whatever you think is the highest priority. Right now, it seems to be the environment.”

If Manchin is serious about his proposal, it’s possible that Democrats could come together on a plan that counters the deficit and funds a smaller slate of new policies.

Thus far, however, Manchin has only outlined this plan in broad strokes — stopping short of offering details regarding changes to the tax code that he’d like to see and declining to say whether he’d back the House bill’s approach to reducing prescription drug prices.

In the House bill, the prescription drug and tax provisions would raise $1.5 trillion over 10 years, according to the Joint Committee on Taxation. Were half this revenue dedicated to deficit reduction and combating inflation, there would still be $750 billion left over to cover new spending. This funding would be sufficient to pay for the $555 billion in clean energy tax credits and job investments that were previously part of BBB.

Already, Rep. Pramila Jayapal (D-WA), the chair of the Congressional Progressive Caucus, has said she’s willing to engage in negotiations on this proposal, though she wants specifics before moving forward.

Senate Finance Chair Ron Wyden (D-OR) echoed this support. “I think we can work with it,” he told Vox regarding Manchin’s plan.

The big question, however, is whether Manchin will stick by this position. Previously, Manchin had offered his own proposal to the White House, only to retract it when negotiations got dicey. Last summer, too, he laid out certain provisions he’d consider — including support for opioid addiction treatment and authority over a clean electricity standard — but found other problems once several of those conditions were met.

And even if Manchin is actually on board with this approach, there are questions about whether Sen. Kyrsten Sinema (D-AZ) would be willing to support it since the provisions she’s previously pushed back on were those addressing prescription drug prices and corporate taxes.

Unlike Manchin, however, Sinema backed both the prescription drug policies in the House bill and the White House’s framework on BBB, which included many of the tax provisions that made it into the final bill.

“We need to get together on the parts we agree on and pass it,” Sen. Elizabeth Warren (D-MA) told Vox. “We have a lot that we still need to pass before the midterms.”

Scenario 2: Lawmakers turn to bipartisan bills instead

If Democrats aren’t able to reach a deal on a reconciliation bill, it’s possible they turn to bipartisan alternatives on some of the issues they hoped to address, like lowering prescription drug prices.

Previously, Sens. Wyden and Chuck Grassley (R-IA) had reached an agreement on legislation that would limit the out-of-pocket prices seniors on Medicare would have to pay for drugs. Warnock is also leading a bill that could cap the monthly price of insulin at $35, a proposal that has gotten positive feedback from some Republicans, according to Kaiser Health News. And Sen. Mitt Romney (R-UT) has expressed an interest in working on the expanded child tax credit and bringing back direct monthly payments for families.

There are major risks, however, to going this route.

For one, the policies that Democrats will be able to pass will likely be much narrower. Wyden and Grassley’s bill did not enable Medicare to negotiate drug prices like the budget bill would, for example. That’s a major reform that could significantly curb drug prices given the body’s negotiating power. Romney’s child tax credit policy would also impose more work requirements for people to receive the benefit, which Democrats’ proposal did not.

Additionally, there’s no guarantee any bipartisan bills would be able to secure the 60 votes they need to advance in the Senate. Even though several of these bills have Republican support, getting 10 GOP members to sign on in the Senate will still be a challenge.

The follow-up to voting rights legislation has underscored these hurdles.

Because Democrats weren’t able to pass a voting rights bill on their own, the focus has shifted toward bipartisan talks to reform the Electoral Count Act. That measure is expected to be far more limited than the bill Democrats proposed, and it has yet to move forward in either the House or the Senate.

Scenario 3: No version of Build Back Better passes

The darkest scenario for Democrats is that no version of Build Back Better, or any of the policies it includes, is able to pass.

This option could be the most likely one given how the party has struggled to agree on a bill since talks began last June. After expressing his opposition to the previous version of the bill, Manchin has yet to support another concrete proposal, meaning any new discussions could have the same outcome as the ones that took place last year.

Democrats also have a packed spring schedule and a limited window to get legislation done before this fall’s elections.

In the coming weeks, the Senate will be focused on the confirmation hearings for Supreme Court nominee Ketanji Brown Jackson, so it probably won’t revisit BBB until mid-April at least. Congress also has to work out the differences between the House and Senate versions of the US Innovation and Competition Act, a bipartisan bill aimed at investing in the US supply chain. And lawmakers are still weighing additional action sanctioning Russia for its invasion of Ukraine along with a standalone bill that provides more pandemic relief.

That doesn’t leave much time for Democrats to work out their differences on BBB.

With BBB in flux, Democrats increasingly appear to be pointing to their other achievements like the American Rescue Plan and the bipartisan infrastructure bill as they try to make their case to voters ahead of the midterms.

“We’ve already passed the huge infrastructure bill and notice that it was not with the support of the majority of Republicans … and, of course, the Rescue bill, which did not get a single Republican,” Sen. Mazie Hirono (D-HI) said.

#### PC Low. Ukraine.

Wong 3-12-2022 (Scott, “Russia's war in Ukraine upends Democrats' gathering — and election-year agenda Biden and fellow Democrats say they're making American working families a priority, but a bloody, televised crisis abroad continues to sap their time and political capital,” NBC News, <https://www.nbcnews.com/politics/congress/russias-war-ukraine-upends-democrats-gathering-election-year-agenda-rcna19670>)

House Democrats gathered here this week to revive their flagging domestic agenda. They held closed-door strategy sessions about how to talk to voters about rising inflation, tackle the climate crisis and move forward on immigration reform and voting rights. But Russia’s bloody, televised war in Ukraine — and the humanitarian disaster that has followed — overshadowed Democrats’ annual winter conference. And the burgeoning crisis is threatening to upend the party’s midterm agenda as President Joe Biden and the Democrats seek to defend razor-thin majorities in the House and Senate. The raging war and Biden’s decision to ban all Russian oil imports have driven U.S. gas prices to record highs, leaving Democrats struggling to craft a response to voters paying more at the pump and to Republicans seizing it as a wedge issue to hammer opponents. Democrats have privately and publicly clashed with the Biden administration for killing a deal to have Poland transfer MiG fighter jets to help bolster Ukraine’s defenses. And fresh from a trip to the Ukraine-Poland border, Rep. Greg Meeks, D-N.Y., who chairs the House Foreign Affairs Committee, and Rep. Raul Ruiz, D-Calif., a doctor trained in disaster relief, both grew emotional describing thousands of tired and cold Ukrainian refugees, mostly women and children, who they observed streaming into Poland. “Slava Ukraini,” proclaimed House Speaker Nancy Pelosi to reporters on Friday, using a phrase that means “Glory to Ukraine.” “So much of what we talked about last night was about the Ukraine. So much of what we have been addressing has been about Ukraine. “This is central to what we’re talking about here. People are dying.” She noted that Congress this week passed a massive government funding package that included $13.6 billion in new military and humanitarian aid for Ukraine. But pressed by NBC News about whether the Democrats’ election-year agenda was being upended by the Ukraine crisis, Pelosi responded that aiding American families remains the top priority of Biden and his party. “So, no, we don’t stop what we need to do for America’s working families. We have to be strong, and as the president has clearly prioritized, we need to meet the needs of the American people. We have to save our own democracy, which is under assault in our country,” said Pelosi, flanked by her leadership team. “And at the same time, we can honor our responsibilities to peace in the world and helping all we can.” The stark reality, however, is that Russia’s war, now in its third week, is sapping a lot of time, energy and political capital from Biden and congressional lawmakers, and further jeopardizing the party’s already slim chances to repackage pieces of its stalled Build Back Better plan and pass it through Congress.

#### No warming impact.

Ord 20, research fellow at the Future of Humanity Institute at Oxford University, has advised the World Health Organization, the World Bank, the World Economic Forum, and the UK Prime Minister’s Office and Cabinet Office. (Toby, “4. Anthropogenic Risks”, *The Precipice: Existential Risk and the Future of Humanity*, Oxford)

Major effects of climate change include reduced agricultural yields, sea level rises, water scarcity, increased tropical diseases, ocean acidification and the collapse of the Gulf Stream. While extremely important when assessing the overall risks of climate change, none of these threaten extinction or irrevocable collapse.

Crops are very sensitive to reductions in temperature (due to frosts), but less sensitive to increases. By all appearances we would still have food to support civilization.85 Even if sea levels rose hundreds of meters (over centuries), most of the Earth’s land area would remain. Similarly, while some areas might conceivably become uninhabitable due to water scarcity, other areas will have increased rainfall. More areas may become susceptible to tropical diseases, but we need only look to the tropics to see civilization flourish despite this. The main effect of a collapse of the system of Atlantic Ocean currents that includes the Gulf Stream is a 2°C cooling of Europe—something that poses no permanent threat to global civilization.

From an existential risk perspective, a more serious concern is that the high temperatures (and the rapidity of their change) might cause a large loss of biodiversity and subsequent ecosystem collapse. While the pathway is not entirely clear, a large enough collapse of ecosystems across the globe could perhaps threaten human extinction. The idea that climate change could cause widespread extinctions has some good theoretical support.86 Yet the evidence is mixed. For when we look at many of the past cases of extremely high global temperatures or extremely rapid warming we don’t see a corresponding loss of biodiversity.87

So the most important known effect of climate change from the perspective of direct existential risk is probably the most obvious: heat stress. We need an environment cooler than our body temperature to be able to rid ourselves of waste heat and stay alive. More precisely, we need to be able to lose heat by sweating, which depends on the humidity as well as the temperature.

A landmark paper by Steven Sherwood and Matthew Huber showed that with sufficient warming there would be parts of the world whose temperature and humidity combine to exceed the level where humans could survive without air conditioning.88 With 12°C of warming, a very large land area—where more than half of all people currently live and where much of our food is grown—would exceed this level at some point during a typical year. Sherwood and Huber suggest that such areas would be uninhabitable. This may not quite be true (particularly if air conditioning is possible during the hottest months), but their habitability is at least in question.

However, substantial regions would also remain below this threshold. Even with an extreme 20°C of warming there would be many coastal areas (and some elevated regions) that would have no days above the temperature/humidity threshold.89 So there would remain large areas in which humanity and civilization could continue. A world with 20°C of warming would be an unparalleled human and environmental tragedy, forcing mass migration and perhaps starvation too. This is reason enough to do our utmost to prevent anything like that from ever happening. However, our present task is identifying existential risks to humanity and it is hard to see how any realistic level of heat stress could pose such a risk. So the runaway and moist greenhouse effects remain the only known mechanisms through which climate change could directly cause our extinction or irrevocable collapse.

## K — Cap

#### Antitrust restrains capitalism to reduce harmful effects

Parakkal et al 13 Raju Parakkal is Assistant Professor of International Relations, Philadelphia University, Sherry Bartz-Martinez is Visiting Assistant Professor, Department of Economics, University of Capitalism, democratic capitalism, and the pursuit of antitrust laws, Antitrust Bulletin; London Vol. 58, Iss. 4, (Winter 2013): 693-729.

An equally important reason why capitalism per se did not matter for antitrust adoption is that—notwithstanding some of their obvious links—capitalism and antitrust are “transactionally incongruent.” Capitalism demands freedom of trade and commerce. For its part, antitrust does seek to supply this freedom; however, antitrust goes further than that, and hence, the incongruity. Antitrust also aspires to create an equitable marketplace and to protect the less-empowered sections of society, typically the consumers and small and mediumsized businesses. The incongruity matters because these additional goals of antitrust are seemingly incompatible with a pure form of capitalism and therefore negate the possibility of a direct and automatic causal link between capitalism and antitrust. However, these additional goals that antitrust supplies—equity in the marketplace and protection of the weaker actors—unmistakably satisfy the demands of a democratic society. And that is why a democratic form of capitalism demonstrates a strong and positive impact on the adoption of antitrust laws. If we continue on this line of thought and analysis, we observe that an antitrust law truly embodies the goals of both capitalism and democracy by seeking to promote competition and free enterprise (largely a capitalistic goal) and protect society’s “little guys” (largely a democratic goal). 79 Therefore the synergistic nature of the relationship between capitalism and democracy easily manifests itself in an antitrust law. This synergy stems from their shared emphases on personal freedom and individual choice. It is due to this synergy that these two dominant systems can interact to produce a new kind of political economy that is called democratic capitalism. And that is the reason antitrust laws connect more intrinsically with democratic capitalism rather than with a pure form of capitalism. An antitrust law is not only compatible but it is also commensurate in its “normativity” with a political economy of democratic capitalism. The fact that antitrust laws go beyond the demands of capitalism and that democratic capitalism better explains antitrust adoption is evident from a closer examination of the national antitrust laws of some of the countries in the sample. For illustrative purposes, we focus on the competition laws enacted by India and South Africa. The Competition Act of 200280 enacted by India is an excellent illustration of the capitalism-democracy tango as reflected in its new antitrust law. Due to its above-average scores for both capitalism and democracy, India has a relatively high democratic capitalism score in the dataset used for this study. It therefore follows from the findings of this study that India would adopt an antitrust law that sought to promote the twin goals of both capitalism and democracy as discussed above. And that’s exactly what India did. In 2002, India enacted a new antitrust law that unequivocally states at the outset that its objectives are “to provide . . . for the establishment of a Commission to prevent practices having adverse effect on competition, to promote and sustain competition in markets, to protect the interests of consumers and to ensure freedom of trade carried on by other participants in markets”. 81 Promoting and sustaining competition and freedom of trade are clearly capitalistic goals while protecting the interests of consumers and other market participants satisfy the democratic aspirations of equity and fairness. The repeated emphases on the protection and promotion of competition, consumers, freedom of trade, and other market participants point to how a democratically capitalistic society adopts an antitrust law that seeks to supply the society with the demands of both capitalism and democracy.

#### The commitment to megaships is the commitment to a logic of expansionist spatial capitalism

Chua 18, Phd Dissertation in Political Science University of Minnesota. (Charmaine, Containing the Ship of State: Managing Mobility in an Age of Logistics, <https://conservancy.umn.edu/bitstream/handle/11299/200214/Chua_umn_0130E_19452.pdf?sequence=1&isAllowed=y>}

Networked uncertainty: Megaport expansions and infrastructural power The complex demands that megaships place on their corresponding ports thus reveal the deeply networked interdependency of large-scale logistical infrastructure. Because shipping networks depend on unstable and dynamic ensembles of physical, social, and financial infrastructure that are conceived and constructed at different local and regional scales, the extent to which megaships can fulfill their projected economic outcomes depends on the ability of port cities to support their monstrous bodies. In this light, the viability of infrastructural investment in megaship building directly hinges on the production of related port and terminal infrastructure elsewhere. Even though port expansion and megaship orders are pursued in relative isolation through industry-specific logics of competition, the cascading effects triggered by megaship growth demonstrate that such initiatives are in fact deeply interdependent. In this sense, in concerning itself primarily with market-mediated and profit-oriented dynamics of demand and supply, neoclassical economics fails to account for the spatial and political dynamics that are brought into relation when aspects of accumulation - in this case, the growth of megaships - require a corresponding geographical expansion. What then changes if we turn our attention to the explicitly spatial dynamics of the megaship expansion, seeking to understand the geographical implications of economies of scale and their unevenly materialization in urban infrastructure? In this section, I employ David Harvey’s notion of the ‘spatial fix’ to show that whereas neoclassical economics expect a tendency toward equalization of various spaces, an attention to the geographical intensification and expansion of capital accumulation reveals instead the deeply uneven development involved in expanding the mobile networks of trade. Harvey’s notion of the ‘spatial fix’, littered throughout his oeuvre but first theorized in The Limits to Capital ([1982] 2006), broadly designates forms of spatial reorganization and geographical expansion that serve to manage - though only temporarily - the crisis tendencies inherent in capitalist over-accumulation. As he explains, capitalism’s growth imperative requires perpetual market expansion. In periods of over-accumulation, capitalists are faced with a surplus of labor and capital without the conceivable means for bringing them together profitably, and this moment constitutes a crisis that forces capitalism to make new room for itself in either temporal or spatial terms, and thus to seek out new horizons of investment. In Harvey’s terms, seeking these new horizons often requires geographical expansion into other territories and markets - a process that necessitates moving capital across long distances and finding ways to overcome those distances. Harvey builds on Marx’s claim in Capital Vol. 2 that the productive forces of capitalism include the capacity to overcome spatial barriers by intensifying the links to spatially distant territories and regions by investing and innovating in the areas of transport and communication (Harvey 2001a). Specifically, where transportation is concerned, the continuity of the circulation of capital depends on the ability to physically move goods around, and thus depends upon the creation of “an efficient, spatially integrated transport system organized around some hierarchy of urban centers” (Harvey 2005, 377). Speeding up the transportation of goods or the communication of information can drastically reduce the turnover time of industrial capital and accelerate the circulation of commercial and financial capital, allowing capitalists to reinvest money capital into the production process. Harvey refers to this process as “socially necessary turnover time” (Harvey 2001a, 320): the average time taken for capital to be reinvested for average profit rates under normal conditions of production and circulation. Crucially, capitalists seek to shrink this turnover time by making heavy investments in fixed kinds of capital such as infrastructure or transportation: Improving modes of transportation (that is, creating faster or more efficient modes of travel) helps to overcome spatial distance, which, together with the credit system, provides the temporal stepping stone for the “annihilation of space with time” (Marx 1973, 539). As such, the spatial fix refers to a long-term investment that provides potential escape from crisis by expanding markets into regions beyond the local, validating heavy investments in fixed infrastructure at the point of production by increasing relative surplus-value and growing effective demand by expanding the consumer base to new populations. The megaship is in this sense another technology in a long line of investments that aim to speed the turnover of capital by achieving economies of scale in the delivery of commodities to new markets. Yet this only covers one transportation node in a complex network of mobile infrastructures, some of which are more fluid than others. As Henri Lefebvre has shown, the production of space is central to the reproduction of capital and capitalist social relations (Lefebvre 1970, 1976). A crucial tension that thus emerges is the contradiction between the ‘fixity’ and ‘mobility’ of capital. Harvey explains: “[A] distinction must be drawn between fixed capital that is mobile and that which is not. Some fixed capital is embedded in the land (primarily in the form of the built environment or more broadly as ‘second nature’) and therefore fixed in place. This capital is “fixed” in a double sense (tied up in a particular object like a machine and pinned down in place). There is a relationship between the two forms. Aircrafts (a highly mobile form of fixed capital) require investments in immobile airport facilities if they are to function. The dialectic between fixity and motion then comes into play even within the category of fixed capital” (Harvey 2001b, 328). While Harvey uses the example of the aircraft, the megaship might perhaps serve as an even better exemplar of this tension: if capitalism has to fix space (in the immoveable structures of transportation networks inland and in the built environment of ports and railroads) in order to overcome space, the megaship represents precisely this mobile form of fixed capital that achieves the liberty of movement across the globe while reducing transport and communication costs through economies of scale. Importantly, the demand that megaships place on port infrastructures to expand their space and technologies of operation leads to one of the central contradictions of capital: that it has to build a fixed space necessary for its own functioning, only to destroy that space (and devalue the capital invested within it) at a later point in order to make way for newer spatial fixes. “Capitalist development,” in Harvey’s explanation, “has to negotiate a knife-edge path between preserving the values of past capital investments in the built environment and destroying these investments in order to open up fresh room for accumulation” (Harvey 2001, 247). In this way, the spatial fix presupposes not an equalization of various spaces, but rather their uneven and differentiated development. Neil Smith and David Harvey have argued that infrastructure is a central force in enabling, expressing, and reproducing the uneven processes of development. The “frantic geographical expansion” of accumulation, Smith argues, “requires a continuous investment of capital in the creation of a built environment for production” (Smith 2008, 159). Here, infrastructures of mobility - “roads, railways, factories, fields, workshops, warehouses, wharves, sewers, canals, power stations” (ibid) - all function to concentrate capital and labor in metropolitan areas, while taking place alongside more “sprawling far-flung development” in which “roads and railways litter a landscape that has been indelibly and irreversibly carved out according to the dictates of capitalism” (Harvey 1999, 373). Under capitalism, Harvey shows that there is an unrelenting struggle in which capital has to build a physical landscape or infrastructure for itself, that is appropriate to its needs for accumulation at a moment in time. However, as soon as changing technologies or geographies of accumulation supersede the need for that infrastructure, capital finds that it only has “to destroy it, usually in the course of crises, at a subsequent point in time.” In this sense, while spatial fixes leave a very physical trace in the landscape with heavy infrastructure, these forms of fixed capital are constantly superseded in the need for endless expansion. Overall, Harvey stresses, this means that there is “no long-run ‘spatial fix’ to capitalism’s internal contradictions” (Harvey 2001a, 307).

#### Innovation dematerializes growth---capitalism is sustainable

McAfee 19, \*Andrew Paul McAfee, a principal research scientist at MIT, is cofounder and codirector of the MIT Initiative on the Digital Economy at the MIT Sloan School of Management; (2019, “More from Less: The Surprising Story of How We Learned to Prosper Using Fewer Resources and What Happens Next”, https://b-ok.cc/book/5327561/8acdbe)

There is no shortage of examples of dematerialization. I chose the ones in this chapter because they illustrate a set of fundamental principles at the intersection of business, economics, innovation, and our impact on our planet. They are: We do want more all the time, but not more resources. Alfred Marshall was right, but William Jevons was wrong. Our wants and desires keep growing, evidently without end, and therefore so do our economies. But our use of the earth’s resources does not. We do want more beverage options, but we don’t want to keep using more aluminum in drink cans. We want to communicate and compute and listen to music, but we don’t want an arsenal of gadgets; we’re happy with a single smartphone. As our population increases, we want more food, but we don’t have any desire to consume more fertilizer or use more land for crops. Jevons was correct at the time he wrote that total British demand for coal was increasing even though steam engines were becoming much more efficient. He was right, in other words, that the price elasticity of demand for coal-supplied power was greater than one in the 1860s. But he was wrong to conclude that this would be permanent. Elasticities of demand can change over time for several reasons, the most fundamental of which is technological change. Coal provides a clear example of this. When fracking made natural gas much cheaper, total demand for coal in the United States went down even though its price decreased. With the help of innovation and new technologies, economic growth in America and other rich countries—growth in all of the wants and needs that we spend money on—has become decoupled from resource consumption. This is a recent development and a profound one. Materials cost money that companies locked in competition would rather not spend. The root of Jevons’s mistake is simple and boring: resources cost money. He realized this, of course. What he didn’t sufficiently realize was how strong the incentive is for a company in a contested market to reduce its spending on resources (or anything else) and so eke out a bit more profit. After all, a penny saved is a penny earned. Monopolists can just pass costs on to their customers, but companies with a lot of competitors can’t. So American farmers who battle with each other (and increasingly with tough rivals in other countries) are eager to cut their spending on land, water, and fertilizer. Beer and soda companies want to minimize their aluminum purchases. Producers of magnets and high-tech gear run away from REE as soon as prices start to spike. In the United States, the 1980 Staggers Act removed government subsidies for freight-hauling railroads, forcing them into competition and cost cutting and making them all the more eager to not have expensive railcars sit idle. Again and again, we see that competition spurs dematerialization. There are multiple paths to dematerialization. As profit-hungry companies seek to use fewer resources, they can go down four main paths. First, they can simply find ways to use less of a given material. This is what happened as beverage companies and the companies that supply them with cans teamed up to use less aluminum. It’s also the story with American farmers, who keep getting bigger harvests while using less land, water, and fertilizer. Magnet makers found ways to use fewer rare earth metals when it looked as if China might cut off their supply. Second, it often becomes possible to substitute one resource for another. Total US coal consumption started to decrease after 2007 because fracking made natural gas more attractive to electricity generators. If nuclear power becomes more popular in the United States (a topic we’ll take up in chapter 15), we could use both less coal and less gas and generate our electricity from a small amount of material indeed. A kilogram of uranium-235 fuel contains approximately 2–3 million times as much energy as the same mass of coal or oil. According to one estimate, the total amount of energy that humans consume each year could be supplied by just seven thousand tons of uranium fuel. Third, companies can use fewer molecules overall by making better use of the materials they already own. Improving CNW’s railcar utilization from 5 percent to 10 percent would mean that the company could cut its stock of these thirty-ton behemoths in half. Companies that own expensive physical assets tend to be fanatics about getting as much use as possible out of them, for clear and compelling financial reasons. For example, the world’s commercial airlines have improved their load factors—essentially the percentage of seats occupied on flights—from 56 percent in 1971 to more than 81 percent in 2018. Finally, some materials get replaced by nothing at all. When a telephone, camcorder, and tape recorder are separate devices, three total microphones are needed. When they all collapse into a smartphone, only one microphone is necessary. That smartphone also uses no audiotapes, videotapes, compact discs, or camera film. The iPhone and its descendants are among the world champions of dematerialization. They use vastly less metal, plastic, glass, and silicon than did the devices they have replaced and don’t need media such as paper, discs, tape, or film. If we use more renewable energy, we’ll be replacing coal, gas, oil, and uranium with photons from the sun (solar power) and the movement of air (wind power) and water (hydroelectric power) on the earth. All three of these types of power are also among dematerialization’s champions, since they use up essentially no resources once they’re up and running. I call these four paths to dematerialization slim, swap, optimize, and evaporate. They’re not mutually exclusive. Companies can and do pursue all four at the same time, and all four are going on all the time in ways both obvious and subtle. Innovation is hard to foresee. Neither the fracking revolution nor the world-changing impact of the iPhone’s introduction were well understood in advance. Both continued to be underestimated even after they occurred. The iPhone was introduced in June of 2007, with no shortage of fanfare from Apple and Steve Jobs. Yet several months later the cover of Forbes was still asking if anyone could catch Nokia. Innovation is not steady and predictable like the orbit of the Moon or the accumulation of interest on a certificate of deposit. It’s instead inherently jumpy, uneven, and random. It’s also combinatorial, as Erik Brynjolfsson and I discussed in our book The Second Machine Age. Most new technologies and other innovations, we argued, are combinations or recombinations of preexisting elements. The iPhone was “just” a cellular telephone plus a bunch of sensors plus a touch screen plus an operating system and population of programs, or apps. All these elements had been around for a while before 2007. It took the vision of Steve Jobs to see what they could become when combined. Fracking was the combination of multiple abilities: to “see” where hydrocarbons were to be found in rock formations deep underground; to pump down pressurized liquid to fracture the rock; to pump up the oil and gas once they were released by the fracturing; and so on. Again, none of these was new. Their effective combination was what changed the world’s energy situation. Erik and I described the set of innovations and technologies available at any time as building blocks that ingenious people could combine and recombine into useful new configurations. These new configurations then serve as more blocks that later innovators can use. Combinatorial innovation is exciting because it’s unpredictable. It’s not easy to foresee when or where powerful new combinations are going to appear, or who’s going to come up with them. But as the number of both building blocks and innovators increases, we should have confidence that more breakthroughs such as fracking and smartphones are ahead. Innovation is highly decentralized and largely uncoordinated, occurring as the result of interactions among complex and interlocking social, technological, and economic systems. So it’s going to keep surprising us. As the Second Machine Age progresses, dematerialization accelerates. Erik and I coined the phrase Second Machine Age to draw a contrast with the Industrial Era, which as we’ve seen transformed the planet by allowing us to overcome the limitations of muscle power. Our current time of great progress with all things related to computing is allowing us to overcome the limitations of our mental power and is transformative in a different way: it’s allowing us to reverse the Industrial Era’s bad habit of taking more and more from the earth every year.

#### COVID-19 proves capitalism is financially sustainable---no structural collapse.

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Why the U.S. Is Unlikely to be Headed Towards a Structural Regime Break

Though the path from the crisis we’re in now to either depression or debt crisis is not impossible, it’s not easy or natural, if we examine each of the four paths in regards to the current situation:

Policy Error — The policy challenge of coronavirus is enormous, but what is on display is the opposite of the inaction of the Great Depression. On the monetary side, the first signs of stress in the banking system — in the repo and commercial paper markets — were met with timely and sizable monetary policy action. On the fiscal side, it didn’t take long — certainly by Washington standards — to pass the $2 trillion CARES Act to provide funds to counteract the wave of liquidity and capital problems for the real economy (households and firms). Beyond any specific policy action, we are seeing a mindset in which policy makers will keep throwing policy innovations at the problem until something sticks — quite the opposite of the 1930s.

Political Willingness — It certainly is possible that political calculus gets in the way of averting a structural breakdown, but not very plausible because the political costs are high. To be sure there are two risks involved: 1) The unwillingness to craft a piece of legislation, perhaps because of differences in analysis, beliefs, or dogma; and 2) the failure to pass legislation because one side sees greater political gain in obstruction. While the TARP fiasco reminds us that both risks are real and shouldn’t be dismissed, crises tend to lubricate deal making, and the costs of political obstruction are particularly high, even in a hyper-partisan election year.

Policy Dependence — This path is not applicable in the U.S. because of monetary sovereignty. The Federal Reserve will always facilitate fiscal policy in a time of low and stable inflation and a healthy currency.

Policy Rejection — A debt crisis seems improbable for the U.S.: Inflation expectations are very well anchored (and, if anything, too low). The rate-risk correlation is very solid, where in risk-off periods (moment when investors are less tolerant of risk and prices of risk assets like stocks fall) bond prices rally (yields fall). The USD reserve currency status is deeply entrenched as the rest of the world needs to hold U.S. safe assets (and don’t wish to see their currencies appreciate). And nominal interest rates are generally lower than nominal growth (r – g < 0). All of these factors make for favorable financing conditions. Can coronavirus damage all that and deliver a crisis where markets refuse to purchase U.S. debt? It’s possible, but very implausible, and it would be a long and painful process. A break in the inflation regime plays out over several years.

#### Revolutionary violence fails, but does sacrifice communities of color. Giving up on the law doesn’t end it, it just means it’s exclusively used anti-ethically.

DeBoer 11-11-2021, PhD in English from Purdue University (Freddie, “When You Condone Chaos, You Condone the Consequences of Chaos,” <https://freddiedeboer.substack.com/p/when-you-condone-chaos-you-condone>)

However, I do want to say this. At the time of the Kinosha riots, many many people along the left-of-center, including otherwise reformist liberals, endorsed riots to some degree or another. I know quite a few people who were willing to say that riots were just good on the merits, and there were also many saying in some terms or another that these particular riots could not be judged by progressive people due to what had inspired them. This sentiment stretches back a long way but has picked up steam in the last decade and the past year and a half particularly. Here’s a pro-riot piece and here’s a pro-riot piece and here’s a pro-riot piece and here’s a pro-rioting interview and here’s a pro-looting interview and here’s a riots-aren’t-necessarily-good-but-they-do-good-things piece and here’s a both-sidesy rioting piece and on and on. (And this is merely hilarious.) Pro-rioting sentiment is perfect for our edgelord media; it makes for good, click-farming headlines and engages in the kind of moral simplicity and righteous hectoring that defines our current culture. Well, look: chaos is chaotic. Bad shit happens when people riot. When you create environments where anything can happen… anything can happen. Some people are going to take advantage of that opportunity to do things that you don’t like. You can’t endorse spasms of directionless violence and then complain when some of it plays out in a way that you hadn’t intended. This seems totally obvious to me, and yet so many out there want to both condone riots and condemn their chaotic outcomes. It’s like putting on music and getting mad when people dance. The left-liberal stance towards political violence, at present, is beyond confused. At the Intercept, Natasha Lennard has published an incomprehensible analysis of the “antifascist” dimensions of the Rittenhouse case. I say it’s incomprehensible because its basic rhetorical move is to argue that the likely acquittal of Rittenhouse shows that business as usual in the law can’t work against the supposed fascist menace destroying the United States. Well, fair enough. The trouble is that she neither actually defines what an anti-fascist strategy would really entail nor what it would accomplish. (It also fails as a piece of writing, on a very basic level; “Hundreds upon hundreds of Black Lives Matter protest arrest cases, which should have been prosecuted on a state level, were deviously transmuted into federal courts” both shows a novel understanding of the word “transmutes” and a failure to understand that as written it suggests that the cases became courts, which is a metaphysical wonder.) Lennard is the perfect example of what I’ve complained about with antifa previously in this space - she would appear to have no idea what the lived experience of antifa has been in left protest movements in the past, that ambivalence and hostility towards antifa and black bloc tactics have been common in the radical left for decades. (I guess they don’t teach that at Cambridge.) For many posers on the left antifa is less the expression of authentic political strategy and more a tool to define oneself as an aesthetic radical. If you go to various protests and riots and encounter the self-defined antifascists there, I can assure you very few of them will be remotely interested about what happens in the courts at all. Because - and I’m sorry to break this to you romantic types - most people who self-select as antifa in 2021 are just bored white people attracted by the possibility of an excuse for mindless violence. There are of course exceptions. That some among them have a coherent political justification for what they’re doing doesn’t change the fact that many have no grasp on the history or theory of antifascism, and unfortunately people in the media like Lennard forbid us from sorting one group from the other. If you want to contribute to actual change you must confront what antifa actually is outside of your romantic projection. When fascists then act on the violent promises of their speech — by attacking people of color, stabbing leftists, or, say, storming the seat of U.S. government — credulous liberal logic does not bend: no need for robust anti-fascist action; violent fascists should answer to the law. Setting aside the fact that this logic is actually very close to that used to strengthen the hand of the government forces that Lennard says can’t stop fascism (the law hasn’t stopped right-wing violence, so… we’re gonna more-fund the Capitol police!) there’s the typical glaring unconfronted question

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here: what is the “robust anti-fascist action” that would actually lead to meaningful material change for the communities that rioters were ostensibly working for? You can punch a Nazi, if you can actually find one in the wild, but you can’t punch white supremacy, the gender wage gap, or the police state. You can burn down a Starbucks but not the Pentagon. Nor is it remotely clear that the army of graduate students and Instagrammers who make up today's antifa are likely to win many fights. Those institutions that actually hurt the oppressed you can only oppose with the slow, unsexy, decidedly uncool work of mundane political organizing, knocking on doors and putting up flyers and patiently speaking to people whose minds might be changed. The threat of investment banks is vastly larger to the average poor person of color than the threat of Boogaloo Boys, but antifa have no tools for confronting the former. There are no doubt some antifa types who do the boring activist work we need, but there are also armies of them who only turn up when it’s time to burn shit down. Does that sound like the type of people most poor communities would like to invite to their streets? The criminal legal system cannot be trusted as a bulwark against fascism. In the courts, anti-fascists must use the tools available to fight the far right. We must, in a manner of speaking, take the law into our own hands. … what is the relationship between these three sentences? The courts don’t work, but we must do antifascism in the courts? Is there a missing “but” somewhere? Most importantly, take the law into your own hands how? With what tactics? Waged by whom? For what purpose? So much attitude, so little sense. Twitter avatar for @jawsgst John Williams @jawsgst this trial teaches a bad lesson that if you want to kill some people, just show up where there are big protests and riots and then do it under the guise of fearing for your life. this dude went somewhere looking to kill people and then did and he won't even have to pay for it Ryan Grim @ryangrim Meanwhile, the media did a real disservice to people who are going to be shocked at an acquittal, and assume he was acquitted because of a biased judge, when really it's the videos that show him acting in those moments in self-defense (under the law as it is) November 10th 2021 Well, yes - sites of lawlessness and violence are good places to break the law and commit acts of violence. Perhaps the thing for thinking people to do, then, is not to pretend that such scenes are good for getting justice or anything else. Perhaps we should not give violent right-wing actors the cover of lawlessness and the excuse of mass violence, which they will inevitably use for their own ends. And people who never experience more disorder than they find in line at Whole Foods should probably stop romanticizing that which is inflicted on the poor neighborhoods they ostensibly have such humanitarian concern for. You endorsed chaotic violence. In that state, someone you don’t like engaged chaotically and violently. You said “riots are good.” But people get killed in riots! Now two people are dead, another is maimed, and the guy responsible may very well walk, as his actions took place against a backdrop of lawlessness and gunfire that gave him the legal arguments he needs to be acquitted. What else did you expect to happen, in that scenario? How did you think this would all go, this peacocking endorsement of violence for its own sake? Reap what you sow. Reap what you sow.

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## CP — Multilat

#### International agreement is completely unattainable

Stephan 5, Professor and Hunton & Williams Research Professor, University of Virginia School of Law. (Paul, “Global Governance, Antitrust, and the Limits of International Cooperation,” https://scholarship.law.cornell.edu/cgi/viewcontent.cgi?article=1635&context=cilj)

This last point also suggests why a global bargain to allocate competition policy jurisdiction may be undesirable as well as unattainable. On reflection, the jurisdictional question presents exactly the same issues and problems as does substantive harmonization. There is no neutral template for allocation that transcends the interests engaged by competition law, and no reason to believe that those interests would not affect the structure of any international bargain. In particular, giving an international agency responsibility for supervising how states exercise their jurisdiction would lead to exactly the same agency problems discussed in the previous section