

USTR SUPPLY CHAIN HEARING

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May 2, 2024

The following is testimony submitted by Edward Gresser, on behalf of the Progressive Policy Institute, at a public hearing convened by the Office of the U.S. Trade Representative on May 2, 2024. The hearing is meant to help inform USTR and other agencies with trade responsibilities working with the White House Council on Supply Chain Resilience, formed in November 2023, to oversee efforts to reduce risk in U.S. supply chains for semiconductors, critical minerals, medical goods, and other products.

Thank you very much for this opportunity to testify this morning, as the U.S. Trade Representative Office and other agencies consider supply chains, their implications for the U.S. economy, and associated policy. By way of introduction, I am Vice President of the Progressive Policy Institute (PPI) in Washington, D.C., a 501(c)(3) nonprofit research institution established in 1989, which publishes a wide range of public policy topics. Before joining PPI, I served at USTR from 2015 to 2021 as Assistant U.S. Trade Representative for Trade Policy and Economics, with responsibility for overseeing USTR's economic research and use of trade data, interagency policy coordination including chairing the interagency Trade Policy Staff Committee, and administration of the Generalized System of Preferences.

I applaud the agency for thinking systemically about the way trade and investment policy mesh with logistics and production choices, and the way both public and private-sector decisions might affect the security of U.S. industry in unexpected shocks. And I share the view implicit in the March 7 *Federal Register* Notice (FRN) which announced this hearing, that recent experience, including the COVID-19 pandemic, offers important perspective on the topic. My testimony will offer some general thoughts on these matters (from the point of view of a policy analyst and former government official rather than someone professionally involved in supply chain design or management), and share views on questions 8, 9, and 11 of the *FRN* on business sourcing choices, 'rules of origin' in free trade agreements, and data that might help inform policymaking.

INTRODUCTION: GOALS AND PREMISES FOR POLICY DEVELOPMENT

Let me begin by noting a couple of points at which my thoughts on this, to some extent, diverge from those set out in the *FRN*. As a starting point, I would personally define "resilience" (and, therefore, the basic goal of policy) in terms of an outcome. This might be defined as reasonable confidence that:

- Sudden shocks from disasters such as pandemics, security crises, or other causes will not disable U.S. production in major industries for unacceptably long periods.
- Major U.S. industries and companies have diverse sources of inputs, from both different countries and different vendors, and will not be crippled if a single source goes down.
- Major U.S. industries and companies can sell their products to a wide array of local and international customers, and will not be crippled by the loss of any single buyer.

The *FRN* defines “resilience” more in terms of characteristics than outcomes: transparency, security, diversity, and sustainability. These seem reasonable, though they can be interpreted in many ways and might imply a list of priorities too large for easily measurable results. In this I note and agree with the emphasis Ambassador Tai placed on encouraging “diversity” of sources as a principal focus in her mid-April House Ways and Means and Senate Finance Committee hearings, and share the apparent view that the largest concern — also raised in the Biden administration’s 2021 investigations of semiconductor, medical, EV battery, and critical minerals supply chains — is that posed by over-reliance on single sources or countries, especially those in regions with relatively high risk of security crisis.

However, I think two of the other premises the *FRN* uses as points of departure are flawed, and could rule out policy options that might make important contributions to supply chain resilience as well as broader U.S. objectives such as growth, job creation, farm income, consumer benefit, and alliance-building. Rethinking these might ease the development of policies that both meet U.S. needs and draw international support. Here, I am thinking in particular of the administration’s unwillingness over the last three years to engage in tariff liberalization or other reduction of trade barriers, and the limits this has put on the impact of the administration’s international economic policy.

First, the *FRN* appears to dismiss efficiency and low-cost production as goals of U.S. policy, or even to imply that these might be damaging to pursue. (“When low cost is the driver of sourcing decisions, absent incentives for improving standards over time, production becomes increasingly consolidated in economies with lower labor standards, weaker environmental protections, and transparency and governance challenges.”) This is mistaken.

American businesses need to produce goods and services efficiently, at cost and quality comparable to those of our competitors, to succeed against import competition within the United States and as exporters abroad. The assumption that high labor and environmental standards necessarily make this impossible is gloomy and unrealistic. On one hand, many conversations with business operators, sourcing managers, logistics professionals, and others involved in supply chains suggest to me that the core drivers of sourcing decisions are quite different. (More on this below, in the first part of the response to Question 9.) And on the other, at least some economic literature suggests that high environmental and labor standards (assuming they are reasonably well-designed) can be economically neutral or advantageous for competitiveness.

Clean air and water confer systemic economy-wide benefits in better health, new industries, and so on. The effect on individual enterprises is probably positive though varying by business.

Meanwhile, the cost of compliance with well-designed regulatory policy, though real, does not appear to be overwhelming. To cite two examples, the EPA argues that compliance with the acid rain reduction features of the 1990 Clean Air Act Amendments was likely around \$1 billion across the entire economy,¹ and that (as of 2005) the cost to manufacturers of pollution abatement rules was about \$20.7 billion, about 2% of that year’s \$4.7 trillion² in gross U.S. manufacturing shipments. Likewise, high labor standards need not mean only “higher costs” or “less flexible production” but can also mean a motivated, high-morale workforce that raises productivity and makes the U.S. (or high-standard economies in general) more rather than less attractive.

And, of course, businesses and workers producing goods need to appeal to customers. The last three years’ experience at home suggests that the American public places high value on low-cost goods and services, and has little tolerance for price rises. As an example from PPI’s own research, the poll of Americans with less than college degrees we conducted last December found 36% of respondents viewing “the high cost of living” as their top concern about the economy, and another 33% cited “inflation.”³ Policies that dismiss this widely held opinion are unlikely to take hold.

Second, the *FRN* makes a puzzling assertion about recent U.S. trade policy, arguing that “in recent decades, U.S. trade and investment policy — including rules related to supply chains — were designed to incentive short-term cost-efficiency and drive tariff liberalization,” and appears generally to argue that the lessons of this supposed experience rule out further tariff reduction. The comment’s implication is that before these recent decades (perhaps the period before the Trade Act of 1988?), U.S. administrations had followed a policy less ambitious and more reliant on tariff protection. In fact, this is not the case. U.S. tariff reduction was fastest during the Reciprocal Trade Agreements and GATT periods from 1933 through 1980, and has been slower since. A table drawn from the U.S. International Trade Commission’s tally of trade-weighted tariff averages illustrates:

YEAR	U.S. TRADE-WEIGHTED TARIFF AVERAGE⁴
1933	19.8% (modern-era peak)
1940	12.5%
1950	6.1%
1960	7.1%
1970	6.5%
1980	3.1%
1990	3.3%
2000	1.6%
2010	1.4%
2020	2.8%
2022	2.8% (most recent ITC figure)

In “the last several decades,” meanwhile, U.S. policy has varied. From the 1980s to the mid-2010s, U.S. trade policy was generally designed towards liberalization, and frequently included tariff reduction, but made tariffs less central than it had in earlier decades. Major goals also

included services trade liberalization, intellectual property rights, customs, labor and environmental issues, and other topics; and the larger objective was typically not “short-term efficiency” but encouragement of U.S. exports and economic integration. The last U.S. reduction in tariffs was the ITA-2 agreement at the WTO, covering only about 203 of the over 7,500 U.S. tariff lines with rates above zero. The previous administration’s imposition of new tariffs on metals and most Chinese goods in 2018 and 2019 means that over the last seven years — that is, most of this past decade — U.S. tariffs have not fallen or remained stable but risen.⁵

II. SUPPLY CHAIN BENEFITS AND RISKS

With that, let me turn to a short look at the nature, benefits, and risks of modern supply chains.

A “supply chain” — that is, a multi-enterprise system often involving international collaboration to produce a given good or service — is, in principle, not especially new. Writers in the 1950s, for example, used the pencil to illustrate the combination of U.S.-grown wood, Indonesian rubber, Sri Lankan graphite, South American zinc, maritime logistics, and U.S. assembly which together produced a simple, cheap, high-quality consumer product. The addition of modern telecommunications, digital technologies, and air cargo networks, complemented by lower trade barriers, however, has created much more sophisticated and complex production networks, making very advanced products from small and complex things such as semiconductor chips and medicines to quite large ones such as automobiles and yachts.

The increasing sophistication of supply chains brings many benefits. Most obviously, it enables businesses and workers to produce larger volumes of goods at lower cost, and deliver them rapidly to customers. Less widely recognized, but important for USTR’s focus on labor standards issues, supply chains linked to wealthy consumer markets also appear to play a useful role in improving working life in lower-income countries. The International Labour Organization’s *Employment and Social Outlook 2023* summarizes research as follows:

“[S]ectors with higher GSC [“global supply-chain”] integration tend to have a larger share of wage and salaries employment, a lower incidence of informality and a lower proportion of low-paid employment – and hence in principle a higher quality of employment.”⁶

However, as this hearing suggests, supply chains also raise valid concerns. The *FRN* argues persuasively that these include over-concentration of sourcing in single countries — in particular where geopolitical risk coexists with large commercial relationships — and single facilities. This is especially serious since supply chains are less easily understood from outside than from within — and even within, the actions of different companies are often opaque to one another — meaning that governments and often participating businesses may be unaware of these risks until a catalytic event reveals them through shock. As my colleague Dr. Michael Mandel has observed, current government trade and investment data focus on countries and large-scale flows of goods and services, and provide little insight on the operations of single companies even when they are quite large and central to supply-chain operation.

As the *FRN* notes, the last four years have provided some vivid illustrations of both the benefits of supply chains' capacity to pool and amplify strengths and the risks of supply chain disruptions. The 2021 reviews suggested that, at least in industries such as semiconductors with broad national industrial and security importance, U.S. businesses had become too reliant on a small group of countries and vendors. On the other hand, several very recent experiences are worth recounting as offering lessons in both risk and benefit, and also in “reshoring” as a frequently proposed but in some ways flawed remedy for the risks.

COVID Pandemic and PPE

First, during the first months of the COVID-19 pandemic, American hospitals and clinics began running out of important medical devices such as respirators, and of the protective clothing and masks their staff needed to work safely. This reflected the fact that as the pandemic broke out in China and then spread rapidly to Europe, North America, and elsewhere, all countries everywhere began an immediate and intense search for such products. Some producing countries restricted exports, worried about depriving their own people of needed goods. China, for a time, hoarded high-performance N95 masks; the U.S., a bit later, imposed its own export controls on products produced here. Within several months, however, businesses in Asia, the U.S., Europe, and the Western Hemisphere adapted to produce more of the relevant products. By late spring, the shortages cleared, and by summer, respirators and masks were in surplus.

With this experience in the background, the *FRN*'s argument that supply chains should be diverse, with businesses avoiding over-reliance on any single facility or any single country, is persuasive. But any supply chain — global and diverse, “re-shored” and local, concentrated in a major foreign producer — will have the capacity to produce about as much as its operators believe they can sell. If demand for a particular product rises sharply in one or two major countries, the supply chain can probably adapt. If it happens in all countries at once, temporary shortages seem almost inevitable. My own tentative conclusion therefore is that the experience revealed less private-sector weakness in crisis than inadequate public-sector preparation: Had the U.S. government possessed a larger stockpile of ventilators and masks, shortages in the U.S. itself at least would have been less severe. Governments now may wish to consider buying much larger stockpiles of the goods they may need in future crises.

COVID-19 Vaccine

Vaccine production and delivery represents a second COVID-era experience: the creation of a global supply chain for an entirely new product during a crisis. In this case, scientists identified a previously unknown virus responsible for COVID-19 in December of 2019. Within a year, the U.S. and others were producing safe and effective vaccines which were stable during transportation, suitable for providers in almost every country to use, and produced on a scale sufficient for a patient population equivalent to the “whole human race”. I think of this as a major success of industrial policy, science, production, logistics, information, and health care delivery, and evidence that supply chains have some considerable value as well as risk.

I commend the agencies' review of the excellent papers produced in 2022 by Chad Bown, then at the Peterson Institute for International Economics and currently with the State Department, on the international linkages of research, manufacturing, and logistics developed by Pfizer, Moderna, and AstraZeneca to provide vaccines for the world.⁷ Pfizer's, for example, involved 32 facilities operated by 18 firms in 12 North American, European, Asian, and African countries, ranging from the U.S., Germany, and Belgium to South Africa, China, and Singapore. Moderna's supply chain spanned six countries, and AstraZeneca's 14, including the U.S., Mexico, the U.K., Australia, Thailand, India, Argentina, and Japan. Here the conclusions might be quite positive about the potential of supply chains to amplify the value of different types of expertise, speed up and scale up the production of an entirely new product, and vaccinate the world more quickly than any single country — even the United States or China — acting alone might have been able to do.

Infant Formula

Finally, 2022 also a sudden U.S.-only shortage of infant formula. This product is distinctive as an almost completely “domestic” and “onshored” supply chain. White House documents from 2022 indicate that American factories produce 98% of all formula used in the United States.⁸ This is not, of course, because only the U.S. can produce formula, but instead, because a mesh of regulatory trade limits, dairy quotas, and high tariffs make it nearly impossible for grocery stores or drug stores to buy formula from abroad. In these circumstances, the failure of one major U.S. factory in Sturgis, Michigan, to meet FDA health standards created a nationwide shortage of this product after the factory closed on February 15, 2022. After this, given the barriers to imports, the U.S. Air Force had to fly about in Europe and elsewhere seeking emergency supplies.

This situation was especially startling since no actual shortage of formula existed in 2022. Though countries such as Australia and New Zealand had lots of formula and were eager to sell us more, they could not serve willing American buyers because trade policies and regulatory rules make exporting this product to the U.S. so difficult. The lessons of this experience suggest that while the Biden administration's hope to promote manufacturing in the United States is certainly positive, re-shoring supply chains to serve American buyers will not necessarily lead to resilience and could, in fact, do the opposite. Here, Ambassador Tai's advocacy of “diversity” in sourcing is a better approach.

III. RESPONSES TO THREE FEDERAL REGISTER NOTICE QUESTIONS

Let me now turn to several of the questions the *FRN* poses: Question 9 on priorities businesses set in sourcing decisions; Question 8 on the influence of the “rules of origin” in free trade agreements; Question 11 on the data that the U.S. government might need for policies to strengthen supply-chain resilience; and finally, returning to Question 9, the types of policy tools available to trade agencies.

Question 9(i): Business Sourcing Decisions

The *FRN*'s Question 9 asks, "What factors are driving supply chains and sourcing decisions, and how does trade and investment policy impact them?"

Here, answers likely vary in detail by industry and also by company within industries. But some general principles apply: those factors that reduce costs, ensure quality and reliability, bring products to markets quickly, and avoid various risks. Over the years, when I have posed this question to experts and sourcing officials in businesses in the course of U.S. government service and analytical work in my current position, responses typically include:

- Availability of skilled labor;
- Availability of technical experts such as engineers;
- Quality and reliability of production, including ability to vary production to shift the designs, colors, and other features of a given product;
- Quality of infrastructure, including seaports, airports, intermodal connectivity, reliability of power and telecommunications systems, and others;
- Cost per unit of producing a given product in a given location;
- Social compliance, including in labor and environmental issues;
- Speed with which a product will reach the market and the consumer;
- Tariff advantages, such as those provided by a free trade agreement or preference program, measured against the cost of complying with rules of origin.
- Perceived risks and uncertainties, including political relationships with the U.S., security issues, visa policy for partners in the country and other factors;
- Stable, transparent, and predictable legal systems, including tax policies and incentives, regulatory policies, intellectual property rules, and technical standards;
- Familiarity with a country and partner company.

In general, the image I have developed is one of a matrix, in which sourcing executives review the different strengths of different countries and regions across a set of issues, and choose among top options. Calculation would vary by industry — garment brands would have one set of top priorities, which would not always be identical to those of consumer electronics, automotive firms, or medical, energy, food industry, entertainment, and professional services. But most would share some common goals, and it would not be unusual to find that particular countries or vendors are attractive to many industries.

Question 8: Rules of Origin in Free Trade Agreements

The *FRN*'s Question 8 asks whether "preferential rules of origin in free trade agreements [and presumably also preference programs] can operate as a 'back door' benefiting goods and/or firms from countries that are not party to the agreement and are not bound by labor and environmental commitments."

This is a reasonable concern, though academic unless the U.S. returns to negotiating free trade agreements. Depending on their design, rules of origin can encourage trade among the parties to an agreement (sometimes diverting it away from non-parties, sometimes creating trade). A well-designed rule strikes a balance, enabling firms to meet it easily and cheaply while not being so permissive as to reduce the benefit to the countries participating in the agreement. Complex and very demanding rules, however, may be so costly or create such paperwork burdens that businesses choose not to use the agreement. In this case, they may continue importing under MFN tariffs (using any outside inputs they find convenient), or find non-FTA sources instead. Two current examples illustrate this dilemma:

Clothing and the CAFTA/DR: The U.S.’ 2005 FTA with “CAFTA/DR” partners Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and the Dominican Republic includes very “strong” rules defining what it might mean for garments be “made in” Central America or the Dominican Republic. This involves a base “yarn-forward” rule requiring the shirt or dress to be made of yarn and cloth originating in the U.S. or one of the six partner countries, plus a 22-page list of “product-specific” rules of origin with particular requirements for specific garments.⁹ Overall, I understand that the agreement requires 31 classes of documents to certify compliance. Since its entry into force, the CAFTA/DR partners’ share of U.S. clothing imports has fallen slightly, from 10.1% in 2008 to 9.9% in 2023. This suggests that the rules are effective in preventing third-country content, but possibly so strict and expensive as to convince some companies to source from Asian producers under high MFN tariff rates rather than using the CAFTA/DR.

Automotive Trade and USMCA: The U.S.-Mexico-Canada Agreement (USMCA) rule of origin for automobile trade is a more recent example. This raised the ‘regional value’ threshold enabling a car or truck to qualify for duty-free treatment from NAFTA’s 62.5% of vehicle value to 75%, and added additional rules for parts, metal content, and labor value. The hope includes reducing the use of non-North American metal and parts, and encouraging additional U.S. vehicle production. The agreement is new enough that we should be careful about reaching any very strong conclusions, but data published in the USITC’s “Dataweb” suggest some reason for concern. This source reports that about 468,000 Mexican-made vehicles — 20% of the 2.15 million total — arrived in the U.S. last year under MFN tariffs rather than duty-free under the USMCA. By comparison, in 2018 only 22,000 of 2.04 million vehicles, or 1%, came in duty-free. If this is correct, and if the rise in MFN imports is not a temporary phenomenon as businesses adjust to new rules, the cars would no longer be subject to any “rule of origin” and could, therefore, obviously contain much more foreign content than NAFTA-era cars meeting that earlier set of rules.

In sum, I think the question’s main point — an agreement’s rules of origin could be so loose as to provide disproportionate benefits to countries outside the agreement — is correct. Reasoning from this to conclude that more restrictive rules are invariably better, though, is mistaken.

Question 11: Availability of Data on Supply Chain Resilience

The core goal, I think, is that major American industries must remain functional and productive during crises given some reasonable time to adjust to a shock — whether they are using FTAs and preference programs or MFN trade, and whether they are integrated with foreign producers or mostly domestic. Governments seeking to achieve this goal obviously require reliable data with which to judge risk and evaluate their own success. As Dr. Mandel observes in *International Economy*, current U.S. statistics are not sufficient for this purpose, and need to be amplified by new lines of data if they are to help guide policy.¹⁰

“[G]lobal supply chains are not tracked by the conventional economic statistics. U.S. trade statistics measure flows of goods across national borders, but they do not track the flows of data that are an essential component of supply-and-data chains. Nor do trade statistics track the network of trade and production interconnections necessary to make today’s complex products. ... It is notable that the Biden administration’s signature supply chain review did not once cite the Bureau of Economic Analysis, the agency charged with calculating GDP growth. The Bureau of Labor Statistics, in charge of productivity, employment, and price statistics, was cited once in passing.”

Statistics produced by the Census and other trade agencies do offer some information on, how reliant particular industries may be on specific countries for certain kinds of inputs — metals, electronic parts, physical inputs such as wiring, chemicals, or connectors — and for final sales. To choose a probably not-very-sensitive example, the ITC’s *Dataweb* (which relies on monthly Census reports) reports that in 2023, the U.S. imported 35,169 tons of machine screws of 9.5 mm or more in length and 2.5 mm or more in diameter (HTS 73181540). Of this total, 19,713 tons of screws — about 60% — came from Taiwan and 7,283 tons or another 20% from China. Beyond this, Canada supplied 2,943 tons of these screws, Germany 1,039 tons, Japan 905 tons, and the rest of the world 3,285 tons.

This may indicate unhealthy reliance on Taiwan and China, and the degree to which supplies might be interrupted in the short term by a Taiwan Strait crisis. However, it does not tell us which industries are using these screws, or the capacity of other potential sources (Vietnam? Mexico? American producers?) to fill any sudden gaps. Neither does it suggest how many of these screws are mass-market goods meant for low-tech industries and easily available from many vendors, and how many are especially high-tolerance and specialized products only a few manufacturers are able to produce. Nor yet, how many U.S. companies in these industries rely on single Taiwanese or Chinese facilities for their supplies. To judge whether there is a supply-chain risk in this product requires therefore additional data, ways to secure it against breach, and ways to transmit it to those who would need it. For example:

- Industry-level and, in some sectors, business-by-business over-reliance on single countries, with due credit for the reliability of U.S. domestic sources and of sources in allied and friendly countries involved in “friend-shoring.” Again, business-by-business data would involve business-confidential information.

- Industry-level and, in some sectors, business-by-business over-reliance on particular vendors of crucial inputs, overseas or in the United States. This would inescapably involve business-confidential information, and would need appropriate safeguards.
- Some way to distinguish very specialized inputs from more standard and replaceable similar products in the same tariff code.
- Secure means of transmitting information on risk to businesses and industries in the U.S. and probably to partners in allied and friendly countries, without placing any of them at disadvantages not only in overseas sourcing but in competition with one another.

This is a very challenging set of needs, and a system producing regular data of this sort would take time to develop. An appropriate starting point would be to confer with specialized government agencies that have experience collecting data on individual businesses and their specific suppliers. Relevant cases include the FDA for imports heavily regulated for health and safety, and the security and export control programs of the Defense Department and the Commerce Department's Bureau of Industry and Security.

Question 9 (ii): Trade and Investment Tools Available to USTR

Finally — and perhaps especially to the point for this hearing — Question 9 also asks about the trade and investment tools that the U.S. government could use to strengthen supply chain resilience. Again, I share Ambassador Tai's view that “diversity” is the core issue here, and the goal should be to ensure that major U.S. industries recover within a reasonable amount of time from any unpredicted shock, whether this is security-related, health-related, or otherwise.

For this, trade agencies have many individual tools, but they basically fall into two large baskets. One basket contains the set of tools that provide incentives and cost savings for businesses using sources that can reasonably be considered reliable and friendly. They include FTAs, preference programs such as GSP and CBI, and, in some cases, eased import transits such as those available to firms participating in the Customs-Trade Partnership Against Terrorism (C-TPAT). The other basket holds those tools that provide disincentives or raise costs for businesses using sources seen as less reliable. These include import bans, elevated tariffs, and similar measures.

Both are important, but the first basket is preferable whenever possible — among other reasons, because the second basket of disincentives raises costs for U.S. businesses and diminishes U.S. competitiveness. As an example, the previous administration imposed a set of tariffs, on Chinese goods and on foreign-produced steel and aluminum. These have switched some U.S. sourcing to other countries, though the overall supply-chain impact is unclear. The stated hope of this was to reduce U.S. trade deficits and increase the manufacturing share of the economy, but this has at least as yet not succeeded; since 2018, the manufacturing share of U.S. GDP has fallen from 10.9% to 10.3%¹¹, manufacturing trade deficits have sharply risen, and manufacturing job growth has slowed from about 100,000 per year in the last five years of the Obama administration to about 50,000 per year¹². The ITC's 2023 report looked in detail at the metals tariffs, estimating that while as of 2020 and 2021, they had raised the value of steel and

aluminum output by about \$2.2 billion above trend, they had simultaneously shrunk the value of auto parts, machinery, and tool production by about \$3.5 billion below trend.

In general, therefore, I view it as better for the U.S. to emphasize the incentives and cost-saving tool basket over the disincentive and cost-raising tool basket. Ultimately this entails a return to market-opening agreements and tariff reduction. We do have many willing partners in this — the UK, the CPTPP partners, Kenya, Ecuador, and Taiwan are all interested — and I hope this will be an important part of the administration’s thinking on supply chain issues in the coming year.

Thank you very much, and I appreciate both the USTR’s interest in this important economic and security question and the personal opportunity to share views on behalf of the Progressive Policy Institute.

¹ https://www.epa.gov/sites/default/files/2017-09/documents/ee-0575_0.pdf, pg. 18 and https://www.epa.gov/sites/default/files/2017-04/paace_2005_ma200-05_1.xls

² *Pollution Abatement Costs and Expenditures, 2005 Survey*, Environmental Protection Agency, 2005, at <https://www.epa.gov/environmental-economics/pollution-abatement-costs-and-expenditures-2005-survey>

³ <https://www.progressivepolicy.org/publication/winning-back-working-america-a-ppi-yougov-survey-of-working-class-attitudes/>, Question 15

⁴ https://www.usitc.gov/documents/dataweb/ave_table_1891_2022.pdf, see pp. 4-7.

⁵ Congress has approved no Free Trade Agreement since those with Korea, Panama, and Colombia in 2011. No administration has concluded a multilateral MFN-based tariff cut since the ITA-2 agreement of 2015, which involved 203 lines of mostly low tariffs out of the 7,500 lines with tariff rates above zero.

⁶ *World Employment and Social Outlook: Trends 2023*, International Labour Organization, 2023, pg. 15, at https://www.ilo.org/global/research/global-reports/weso/WCMS_865332/lang--en/index.htm

⁷ See Chad Bown, “How Covid-19 Vaccine Supply Chains Emerged in the midst of a Pandemic” at <https://www.piie.com/publications/working-papers/how-covid-19-vaccine-supply-chains-emerged-midst-pandemic> and “The WTO and Supply Chain Resilience During a Pandemic” on subsidies and export restrictions at <https://www.piie.com/publications/working-papers/wto-and-vaccine-supply-chain-resilience-during-pandemic>, Peterson Institute for International Economics, June 2021 and September 2022.

⁸ See, for example, the May 2022 White House Fact Sheet entitled “*President Biden Announces Additional Steps to Address Infant Formula Shortage*”, at <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/12/fact-sheet-president-biden-announces-additional-steps-to-address-infant-formula-shortage/#:~:text=Increasing%20the%20Supply%20of%20Formula,are%20key%20sources%20of%20imports.>

⁹ See CAFTA-DR Final Text, Annex 4.1, at <https://ustr.gov/trade-agreements/free-trade-agreements/cafta-dr-dominican-republic-central-america-fta/final-text>

¹⁰ “The Complexity of the Supply Chain”, Michael Mandel, *International Economy*, Winter 2022, at http://www.international-economy.com/TIE_W22_Mandel.pdf

¹¹ Bureau of Economic Analysis, GDP by Industry series, “Value Added by Industry as a Share of GDP”, <https://www.bea.gov/itable/gdp-by-industry>

¹² Bureau of Labor Statistics database, “Employment, Hours, and Earnings” series, annual averages for all employment and manufacturing employment 2011-2016 and 2018-2023, at <https://www.bls.gov/data/>