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Is the Global Economy Deglobalizing?

And if so, why? And what is next?

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Is the Global Economy Deglobalizing?
And if so, why? And what is next?[1]

Pinelopi K. Goldberg and Tristan Reed[2]

Abstract

Data on global trade as well as capital and labor flows indicate a slowdown, but not reversal, of globalization post the 2008-09 financial crisis. Yet profound changes in the policy environment and public sentiment in the largest economies over the past five years suggest the beginning of a new era. Increasing anxiety about the labor market effects of import competition from low-wage countries, especially China, laid the groundwork, but was not the catalyst for the reversal in attitudes towards globalization. Similarly, the COVID pandemic provided novel arguments against free trade based on global supply chain resilience, but neither the pandemic nor short run policy response had enduring effects on trade flows. We demonstrate that global trade was remarkably resilient during the pandemic and that supply shortages would likely have been more severe in the absence of international trade. After a temporary decline in 2020, global trade in goods and services increased sharply in 2021. Russia's invasion of Ukraine raised new concerns about national security and the exposure of supply chains to geopolitical risk. This was followed by demands to diversify away from "non-friendly" countries and to the employment of trade policy, export restrictions in particular, to halt China's technological development. The future of globalization is highly uncertain at this point, but these new policies will likely slow global growth, innovation, and poverty reduction even if they benefit certain industries in certain countries. Regarding resilience, the main goal of recent trade policy changes, measures of trade volatility or concentration can be helpful, but resilience will be elusive as long as we lack benchmarks against which policy performance can be measured.

At a December 2022 opening of a semiconductor chip plant in Phoenix Arizona, Morris Chang, founder of Taiwan Semiconductor Manufacturing Company, stated "globalization is almost dead and free trade is almost dead … I don't think they will be back"[3] Such claims are

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[2] Goldberg: Yale University, BREAD, CEPR, NBER and PIIE. Reed: World Bank, DEC Research Group.

[3] Nikkei Asia. December 7, 2022. "TSMC founder Morris Chang says globalization 'almost dead'." <https://asia.nikkei.com/Business/Tech/Semiconductors/TSMC-founder-Morris-Chang-says-globalization-almost-dead>

not new. For the past decade economists have been debating the future of globalization, pointing out that since the financial crisis of 2008/09, world trade has been growing more slowly than GDP – a reversal of an earlier trend observed during the two decades that marked the era of so-called hyper-globalization (1989-2009). Using data up to the onset of the COVID pandemic, Goldberg (2019) and Antràs (2020) argued that there was little systematic evidence to support the view that the world economy had entered an era of deglobalization. However, the past three years have seen dramatic changes in the trade policy and geopolitical environments that call for a reevaluation of this view.

No matter how one feels about globalization these days, there is wide consensus that it has had substantial effects on global growth[4], poverty reduction, and inequality (both across and within countries) – not to mention its political, societal, and cultural consequences. It is no surprise that the possibility of its reversal has become a central question in policy and public discourse. This article has three aims: 1. to critically assess existing evidence regarding the deglobalization hypothesis; 2. to analyze the causes of a potential deglobalization trend; and 3. to assess, speculatively at this point, the consequences of potential deglobalization. It is accordingly organized in three sections, each reflecting these aims.

Traditional metrics of globalization (trade; capital flows; immigration) still show no sign of trend reversal – if anything, they suggest that trade has rebounded after the COVID pandemic. However, the policy environment and public sentiment towards globalization have fundamentally changed, especially in the largest economies. To the extent that policy and public opinion help shape economic outcomes, there are therefore good reasons to believe that we have entered a new era. Regarding the causes of this trend, there seem to be three phases in the deglobalization sentiment.

The first phase starts around 2015 with concerns about the impact of import competition from low-wage countries, especially China, on the labor market, and the impact of refugee flows, primarily in Europe. Such concerns make the general public receptive to protectionist policies. This phase is marked by Brexit and the US and China increasing tariffs on one another, the economic effects of which were meaningful, but still not substantial enough to reverse decades-old globalization trends.

[4] See Irwin (2019) and Chari, Henry, and Reyes (2021) for a review of the evidence on the relationship between trade and growth and a reevaluation of the critical assessment of Rodriguez and Rodrik (2000).

The second phase plays out during the COVID pandemic when new arguments against trade emerge: temporary shortages of personal protective equipment (PPE) and other items are attributed to the fragility of global supply chains. Demands for greater "resilience" through greater dependence on domestic production provide a novel justification for "reshoring" economic activity. We argue that the evidence does not support these claims and that, if anything, trade increased economies' "resilience" during the COVID pandemic. While the demands for resilience did not have any direct implications for policy or trade during this period, and trade actually grew fast following the pandemic, the extensive coverage of the topic in the press further contributed to the notion that globalization had harmful effects to the domestic economy and prepared the ground for phase 3.

The third phase begins with the Russian invasion of Ukraine in February 2022 and provides the perhaps strongest to date argument for rethinking globalization: concerns about national security. The reliance of Europe on Russia for energy exposes the fragility of a global supply system based on hyper-specialization. New demands of "decoupling" emerge, not just from Russia, but from any country that is not our "friend," and a new term enters the international trade vocabulary: "friendshoring." The talk is followed by strong policy actions by the US that include sweeping export restrictions in the semiconductor sector targeting China. These developments can plausibly be considered the markers of a new era.

Given that these trends are only a few months old, any assessment of their consequences is inevitably highly speculative. With this caveat in mind, we offer some concluding thoughts and very preliminary evidence on possible effects of deglobalization on efficiency, inflation, global and within-country inequality, resilience, and peace.

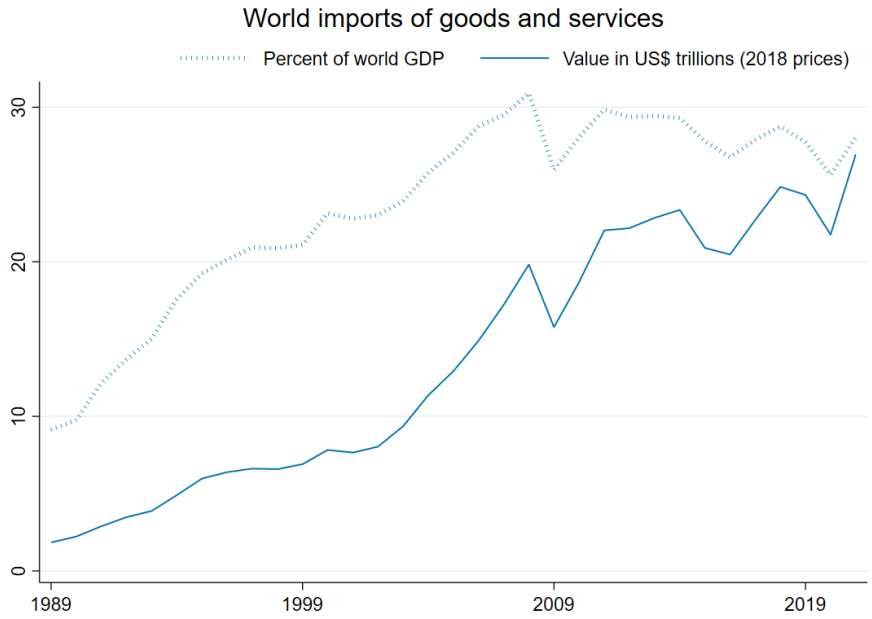
I. Is The World Economy Deglobalizing?

While we do not formally define globalization, we employ three different approaches towards capturing trends towards or away from it. First, we examine trends in some key variables (such as world exports and imports, capital flows, and immigration) that have been traditionally viewed as appropriate metrics of globalization. Second, we assess the trade policy environment. Finally, we consider how public discourse has changed in recent years by analyzing the occurrence of certain terms in news articles.

I.A. Trends in Standard Metrics of Globalization

A popular measure of globalization is international trade in goods and services. World imports have grown rapidly in the last three decades, including post-2009, as shown in Figure 1. Notably, world imports increased sharply in 2021 after a temporary decline in 2020 due to COVID, showing trade's longer-term resilience to the pandemic. Yet, when measured as share of gross domestic product, imports have slightly declined since the global financial crisis. This is the aforementioned trend that has led to concerns that the world has started deglobalizing post-2009. Because the decline is too small to justify the term "deglobalization," "slowbalization" has been used instead as a more appropriate characterization of this trend.

Figure 1: Trade is growing, but has declined as a percent of world GDP since the global financial crisis



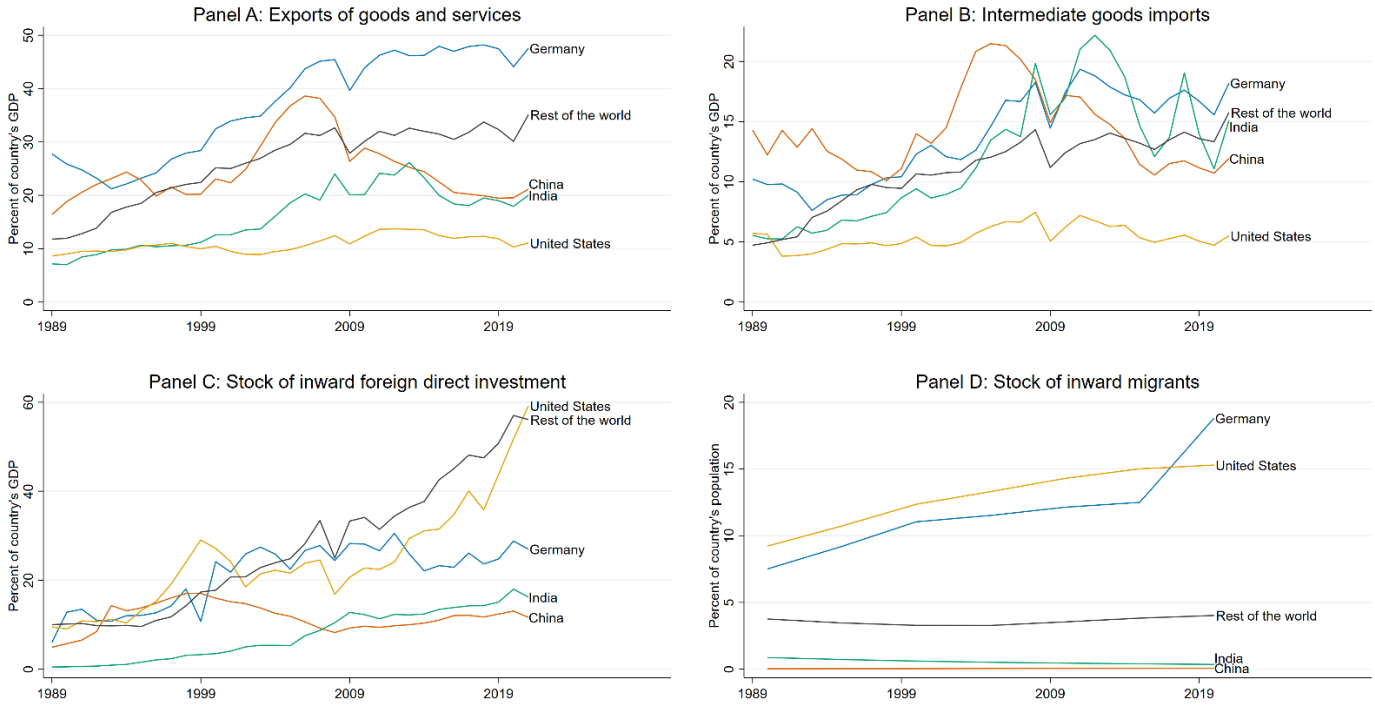
Sources: COMTRADE, WTO, World Bank

Notes: Nominal value of goods imports is from COMTRADE, and nominal value of services trade is from the WTO, both reported in US dollars. The sum of nominal trade values is divided by world GDP in US dollars at market exchange rates (NY.GDP.MKTP.CD GDP in the World Bank Development Indicators). Nominal trade values are converted to 2018 prices using the GDP deflator (NY.GDP.DEFL.ZS) for the United States.

The mirror of world imports are world exports, which generate an almost identical picture. Panel A of Figure 2 reports trends in exports since 1989 for four large economies and the rest of the world. Examining these trends at the individual country level highlights how amidst

global trends, national integration with the global economy is changing. China and India appear to be less reliant on the global economy. Exports as a share of GDP exports have declined in both countries, from peaks during the 2000s in the case of China and the 2010s in the case of India, leveling off at about 20 percent of GDP in both economies. On the other hand, Germany's exports have been increasing since the 1990s, except for brief interruptions during the global financial crisis and COVID-19 pandemic, so that exports now account for 50 percent of GDP. In the United States, exports have held steady at about 10 percent of GDP. In the rest of the world, exports are 30 percent of GDP, indicating greater reliance on the global economy for demand than China, India, or the United Sates.

Figure 2: Countries have diverse experiences with globalization



Sources: COMTRADE, United Nations Conference on Trade and Development (UNCTAD), United Nations Global Migration Database, World Bank

Notes: Intermediate goods in Panel B are classified according to the Broad Economic Categories (BEC4) of the Standard International Trade Classification system. The stock of foreign direct investment in Panel C includes equity investments with foreign ownership greater than 10% and reinvested profits accruing to that ownership. The stock of inward migrants in Panel D includes all foreign-born residents of a country.

These figures highlight diverse experiences with globalization. Globalization has allowed the United States to enjoy the consumption of foreign goods, borrowing to purchase the exports of the rest of the world. China and India have exploited this demand to fuel their own growth

from a low income. They now rely less on the global economy, and instead on their own population, which is richer and can support domestic demand. Germany, which is nearly as rich as the United States, shows low wages are not a prerequisite for export success.

The imports of intermediate goods and services as a share of countries' GDP are shown in Figure B of Figure 2. Such imports are essential inputs into exports, especially for countries participating in global value chains (GVCs), where different stages of production processes are located across different countries. The World Bank (2020) estimates that GVCs account for 50 percent of global trade, but that their growth has plateaued. Intermediate goods imports are a declining share of GDP in China and India, as both countries now produce more inputs domestically. These two economies are becoming less reliant on the global economy for inputs. Though it is less stark, there is also a downward trend in intermediate imports in Germany and the United States. In the rest of the world, the trend is instead slightly upwards.

Measures of globalization in factor markets provide a different perspective. The stock of inward foreign direct investment (FDI) in Panel C of Figure 2 measures the globalization of capital markets. In the United States and the rest of the world the stock of inward FDI investment accounts is valued at nearly 60 percent of GDP and shows no major downward trend. In Germany, inward FDI as a share of GDP grew until the global financial crisis but has not yet recovered from that peak. China experienced a boom in FDI during the that preceded it a boom in exports, as did India. Figure A1 shows positive trends are similar when counting the sum of debt and equity foreign investment, using the series of Coppola, Maggiori, Neiman, and Schreger (2021) that also incorporates foreign investment through tax havens. Relative to Panel C of Figure 2, the level of inward foreign investment is greater in China and Germany relative to Figure A1, reflecting greater reliance on debt financing in these economies.

The stock of inward migrants in Panel D of Figure 2 measures the globalization of labor markets. Germany and the United States have absorbed migrants as an increasing share of their population, with Germany recently surpassing the United States in migrants as a share of the population as it absorbed a surge of refugees in the 2010s. China and India are homes to far fewer migrants as a share of their population, and this trend appears flat.

There are two main takeaways from the preceding graphs. First, it is clear that the growth of trade as percent of GDP has stalled since the financial crisis, and even declined in some cases. However, trends in capital and labor markets tell a different story. Taken together, these trends

suggest that it is premature to talk of "deglobalization" – the slowdown of global trade seems a natural development following its earlier, fast growth and reflects partly the growth of the domestic markets of two large, formerly low-income countries, China and India. Second, deglobalization trends are highly heterogeneous across countries. While the United States and China – the world's two largest economies which by virtue of their economic size drive aggregate trends – seem to be gradually decreasing their reliance on global markets, this is not true for the rest of the world.

I.B. Policy Environment

While the data do not yet show strong signs of deglobalization, the trade policy environment has changed drastically in the past five years, especially in the US. This is important as trade and other measures of globalization may respond with a lag to changing policies.

Since the end of World War II, global trade barriers had been gradually falling, while a proliferation of bilateral and regional trade agreements allowed many countries to become more integrated in world markets. Several developing countries reduced their tariffs unilaterally and joined the World Trade Organization (WTO) while allowed them to enjoy many of the benefits of multilateralism. The US and other advanced economies played a leading role in the reduction of trade barriers and the design of the world trading system.

The picture changed dramatically in 2018, when the US announced a first set of tariff increases targeting several countries, but especially China. Eventually these tariff increases led to a tariff war between the US and China, the world's two largest economies in 2018 and 2019. The US also imposed tariff increases on steel and aluminum imports from nearly all countries. Despite the change in the US administration, most of these tariffs remain in place to date. The US continues to argue that these tariffs are required for national security, though has also declined to elaborate the mechanism through which discriminatory tariffs improve its national security. In December 2022, in response to challenges brought by China, Norway, Switzerland and Türkiye, a WTO dispute settlement panel found that the tariffs indeed violated WTO rules. Article 21 of the General Agreement on Tariffs and Trade allows WTO members to discriminate against one another for national security reasons "in time of war or other emergency in international relations" but the panel concluded that the year 2018 did not constitute such a time.

Additionally, the US practice of exercising its veto power to block the appointment of new judges in the WTO's Appellate Body as the terms of existing judges ended, has rendered the WTO's dispute settlement system defunct. US dissatisfaction with the way trade disputes between countries are resolved within the international rules-based system had been simmering for years, but it was not until the end of 2019, when the terms of the last two judges expired, that the crisis reached its peak paralyzing the dispute settlement process, effectively ending 23 years of WTO trial-like enforcement, the keystone of international efforts to prevent trade protectionism. The Appellate Body now lacks a quorum to hear appeals, so that the US, for instance, could not even appeal this recent ruling if it wanted to. One interpretation of US actions is that they are less about dissatisfaction with the WTO system for resolving disputes, but rather about dissatisfaction with outcomes that are not in the US's favor. While other countries could take this approach, some nonetheless still find the spirit of WTO dispute resolution useful, with for instance the EU and Türkiye recently opting to use arbitration in the absence of the Appellate Body to resolve a dispute over rules requiring local content in pharmaceuticals purchased by Türkiye's national health scheme.[5] The EU challenged these rules and won in arbitration; an alternative mechanism available in the WTO charter to appeal disputes. Though Türkiye lost, with the arbitrator finding WTO rules require it to end a "buy Turkish" rule for pharmaceuticals, Türkiye was willing to go through arbitration.

More recently, there has been a clear shift in the US approach to trade away from liberalization and multilateralism towards industrial policy and discriminatory policies vis a vis China in the name of supply chain resilience and national security. This shift was first apparent in the speech[6] that Ambassador Katherine Tai, the US Trade Representative, gave at Roosevelt Institute's Progressive Industrial Policy Conference on October 12, 2022. It became even more salient a week later, when the White House released its National Security Strategy, which poignantly begins with the words: "The world is changing." The release came a few days after the announcement of sweeping export restrictions on the semiconductor industry aimed at

[5] Turkey: Certain Measures Concerning the Production, Importation, and Distribution of Pharmaceutical Products https://www.wto.org/english/news_e/news22_e/disp_25jul22_e.htm

[6] The speech is available here: https://ustr.gov/about-us/policy-offices/press-office/speeches-and-remarks/2022/october/remarks-ambassador-katherine-tai-roosevelt-institutes-progressive-industrial-policy-conference#:~:text=We%20believe%20industrial%20policy%20and,opening%2C%20liberalization%2C%20and%20efficiency.

stopping China from advancing technologically. The restrictions were justified in the name of national security, specifically, the military-civilian fusion as practiced by China, and the increasing significance of dual-use goods, i.e., goods that are designed for commercial applications, but that have military applications.

These actions signal a clear break from former US trade policy and the possible beginning of a new era. So does the Chips Act that provides multi-billion support for the development of the domestic semiconductor industry, several discriminatory provisions in the Inflation Reduction Act (IRA) towards countries that are not members of the United States-Mexico-Canada agreement (USMCA), and the US distancing from new trade agreements, such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The US did in May 2022 propose a new economic agreement with the largest economies in Asia and Oceania except for China called Indo-Pacific Economic Framework for Prosperity (IPEF). This agreement is envisioned to include commitments to standards for digital trade, decarbonization, labor standards, and tax enforcement, but there has been no mention of US market access which has been the traditional focus of trade agreements, and which is also highly valued by trade partners.[7]

Meanwhile, several other countries are going in the opposite direction, at least when it comes to economic agreements. The recent signing of the Regional Comprehensive Economic Partnership (RCEP) between the ten member states of the Association of Southeast Asian Nations (ASEAN) that went into effect on January 1, 2022, the expanding membership of the CPTPP as more countries request to join, and the launching of the African Continental Free Trade Area (AfCFTA) that aims to boost intra-African trade, are examples of a trend towards more regional or – in the case of the CPTPP – plurilateral integration. Along the same lines, Fajgelbaum et al (2022) show that while the trade war between the US and China reduced trade in the targeted product categories between these two countries, it boosted trade between third countries and the rest of the world in these products. The countries that exhibited the largest export growth to the rest of the world were countries with expansive trade agreements. So, the trade conflict between the world's two largest economies did not simply cause reallocation of

[7] The Trans Pacific Partnership did include commitments on digital trade, environment and labor which the US had lobbied for before it exited the agreement. From this perspective the IPEF could be a way for the US to achieve some of the goals it had pursued in the TPP negotiations, but without making commitments of further market access.

global trade flows, it also generated new trade opportunities for other countries. Therefore, it seems that outside the US, the picture is more nuanced with many countries striving to take advantage of the new opportunities potentially created by the reversal of US policy.

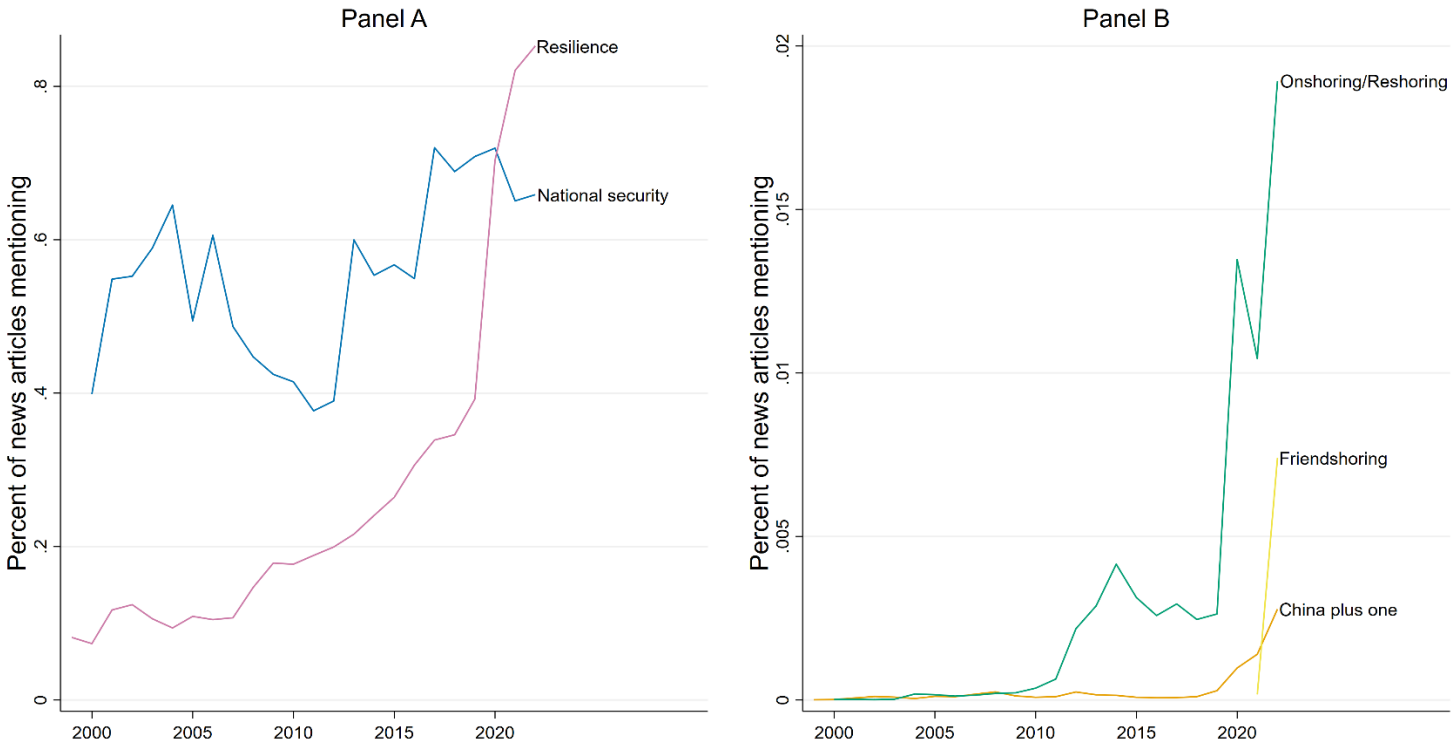
Note however, that one of the most assertive recent moves of the US, the export restrictions in the semiconductor sector targeting China, require the cooperation of other countries to succeed. Because most of the semiconductor chip manufacturing takes place in countries other than the US, using however to a large extent US software and US machinery, the new export controls require third country chip manufacturers to obtain export licenses from the US in order to export their products to China. The US implemented this policy change unilaterally, putting allies in a difficult position as they faced a choice between going along with the export restrictions or – if they wished to continue exporting to China – foregoing access to US technology. This use by the US of economic interdependence to force other countries to go along with its policies has been termed "weaponizing interdependence."[8] It suggests that no matter what other countries' preferences and intentions are, ultimately it is the priorities of the largest economy of the world that may shape the future of the global economic system. Seen in this light, US's turning inward may have important implications for the future of globalization.

I.C. Public Discourse

Just as economic variables respond with a lag to policy, policy responds with a lag to public sentiment and attitudes. Therefore, we now turn to an investigation of such attitudes regarding trade and globalization. Data from the PEW Global Attitudes Surveys show that the public still views trade as beneficial to the economy[9]. However, news articles suggest more nuanced attitudes marked by increasing skepticism about participation in the global economy.

Figure 3: Trends in documents using "national security", "onshoring" or "reshoring", "friend shoring", "China plus one"

[8] The term was coined by H. Farrell and A. Newman (2019).
[9] See Dorn, D. and P. Levell (2021), p. 32, Figure 8.



Source: Factiva

Panel A of Figure 3 shows that mentions of the phrase "resilience" have been increasing since the global financial crisis, with an acceleration during the COVID-19 pandemic. This could reflect an increasing awareness that global supply chains expose countries and companies to risk, but need not cast doubt on the underlying trade. Doubts may instead be reflected in the increasing use of the phrase "national security." Surprisingly, today this phrase occurs in a greater percent of news articles than immediately after September 11, 2001, and after the Arab spring and NATO intervention in Libya in 2011. It is difficult to pinpoint of the proximate cause of increasing salience of national security in 2013 and again in 2017. The beginning of the nationalist Donald Trump administration is one hypothesis for the latter. Though mentions of national security dropped sharply after the election of Joe Biden in 2021, it is still used nearly twice as much as in 2000. Panel B of Figure 3 shows the emergence of other less common jargon. The phrases "onshoring" or "reshoring" emerged into frequent use in 2010. This suggests skepticism of globalization predated the Trump administration, during which use of the terms skyrocketed.

Not all discourse has been nationalist. After 2017, the phrase "China plus one" also began to emerge in the business press, a recognition of China's important role in global supply chains, and the need to diversify to at least one alternative supply. In 2021, US Commerce Secretary Gina Raimondo introduced the concept of "friendshoring." The term is now associated with policy aimed at moving US value chains away from China. Yet, compared to "onshoring" or "reshoring" it also suggests a more moderate view of globalization, that it should continue and may deepen, but only with a subset of countries who are "friends"[10].

I.D. Summary

Trends in goods and services trade, both for the global economy and for major economies, suggest a slowdown (though not reversal) of globalization. But FDI and migrant flows suggest the opposite. Overall, to date, there is no hard evidence in the data that we have entered a new era. There are however profound changes in the policy environment, at least in the US, as well as in general attitudes towards trade with other countries that may be the harbinger of – if not deglobalization – a new kind of globalization. Prominent among these are the concern about national security, the demand to diversify away from China, and the belief that trade should only be promoted if it is between "friends." These issues are distinct from the more traditional concern about the impact of globalization on low-skill workers in advanced economies, which has traditionally been the reason for advocating reshoring. Their origins seem rooted more in (geo)politics than economics. Accordingly, we may be entering an era where the future of trade and globalization is shaped top-down by politically motivated governments rather than by market forces.

I. Causes

II.A. What Caused Hyper-globalization?

The factors that have contributed to the hyper-globalization of the 1990s and 2000s have been extensively analyzed in the literature. The World Bank's 2020 World Development Report (WDR) on Global Value chains provides a succinct summary of the main drivers, which involve

[10] This stance is also reflected in Secretary Yellen's piece on "Resilient Trade": https://www.project-syndicate.org/magazine/biden-trade-agenda-emphasizes-resilience-by-janet-l-yellen-2022-12

a combination of technology and policy. Major technological advances after World War II led to dramatic declines in transportation and communication costs that enabled the fragmentation of the production process, so that different stages of production could be outsourced to different countries to take advantage of international cost differences. This process led to the emergence and growth of Global Value Chains and to unprecedented growth in gross trade as intermediate goods and services crossed borders many times before final products reached their intended destinations. But technology alone would not have achieved this growth, had it not been for a set of policies that created the right environment for trade and GVCs to flourish: sharp reductions in tariff and nontariff barriers, often within the context of unilateral trade liberalizations by developing countries[11]; bilateral and regional trade agreements that liberalized trade for the member countries; and last but not least, the expansion of the World Trade Organization (WTO) to include several developing countries including China. Multilateralism played an important role during this period by reducing uncertainty. When goods and services are traded across the entire globe, regional agreements do not suffice; only multilateralism can offer the degree of stability and predictability required for global trade to flourish[12]. At the same time, the ideological shift towards neoliberalism, fueled by the fall of communism in Eastern Europe and the Soviet Union, provided a supporting intellectual backdrop for the changes that were taking place, encouraging the entry of several countries in Eastern Europe, Central Asia and East Asia into the global trading system.

Against this background, it is natural to ask what has changed since that time, causing a possible reversal of earlier trends. Not surprisingly, the main drivers are the same factors that led to the hyper-globalization of the past: technology and policy.

II.B. What Is Causing a Possible Reversal?

Technology: There are two reasons one might suspect that the slowdown of trade (as percent of GDP) since the financial crisis could be technologically driven.

The first reason is that the fragmentation of production underlying the expansion of global value chains (GVCs) and trade would eventually reach its technological limit. In fact,

[11] See Irwin (2022) for an overview of the trade reform wave of 1985-1995, the years leading up to the era of hyper-globalization.
[12] For a more detailed discussion see Goldberg and Pavcnik (2016), Goldberg (2019) and Goldberg (2023).

some have viewed the decline of trade in intermediates (evident in Figure 2) as evidence that the fragmentation of production has run its course. However, as Goldberg (2019) argues, this evidence is far from conclusive. Apart from the fact that the decline in intermediates trade is too small to support such a conjecture, the *value* of trade in intermediates is influenced by several factors, including commodity prices. An alternative measure of fragmentation that is more closely associated with GVC trade, the share of parts and components in *volume* terms in manufacturing trade, has increased at a moderate pace since the 1990s and has not shown any signs of reversal since the global crisis. Accordingly, the evidence on this point is mixed.

The second argument is that recent technological advances, e.g., automation, 3D, now favor reshoring of economic activity, as the production process relies less on low-skill labor than in the past. However, this argument does not withstand scrutiny for three reasons.

First, as the WDR 2020 showed, recent technological advances also create additional scope for trade. Indeed, the evidence to date suggests that those sectors most affected by automation (e.g., the automobile industry) expanded intermediate product imports, especially from developing countries, as the scale of production increased.

Second, as Antràs (2021) has argued, the presence of sunk costs in foreign investments implies that reshoring is not symmetric to offshoring; even if the incentives to produce abroad may not be as strong today as they were in the 1990s, GVCs will not abandon their activities in other countries given that the large sunk costs they have incurred in the past.

Finally, it is conceivable that the advances in modern technology, especially in information and communication technology, lead us in the opposite direction, fostering another wave of globalization, this time driven by trade in services. The increase in remote work and internet-based services and commerce during COVID have contributed to this trend. However, trade in services requires further global integration and regulatory convergence across countries[13], for which there is no appetite now. Which brings us to policy.

[13] For a detailed discussion, see, for instance, Mattoo (2018). The provision of many services requires licensing, but licensing requirements are not harmonized across countries. Even business services, such as banking and insurance, that can be purchased from firms in other countries, often raise delicate regulatory issues, especially regarding the handling of data and privacy. The challenge for policy is to strike a balance between the legitimate use of domestic regulation to protect consumers and its protectionist abuse. Trade policy alone is not enough to make progress in these areas; one also needs regulatory cooperation and coordination.

Policy: Given that there is no compelling evidence to date that the trend against globalization is technologically driven, policy emerges as the primary explanation. In fact, that set of policies discussed in section I.B suggest that the policy environment has changed dramatically since the 1990s and 2000s. But this leads to another question: If deglobalization trends are driven by policy, what explains the change in policy?

Policy in all countries, but especially in democracies, responds to public sentiment. As discussed in the first section, the sentiment vis a vis globalization has been gradually changing in the US since the mid-2010's. There are several reasons responsible for this change that are explored in the next section.

II.C. Phases of Backlash and Causes

There are roughly three phases in the backlash against globalization. The first phase starts in the mid-2010s, when politicians both at the extreme right and extreme left blamed international trade, in particular NAFTA and increasing import penetration by China, for the decline in manufacturing employment and stagnation of real wages in the US. The sentiment that globalization had become a liability for the domestic labor market was not confined to the US, as evidenced by Brexit in the UK and the strong anti-immigration movement in several other European countries. The second phase coincides with the unfolding of the COVID pandemic (2020-2022) that led to additional concerns about trade related to the resilience of global supply chains. The third phase began with the Russian invasion of Ukraine in February 2022 and is centered on yet another concern: national security. The factors contributing to the anti-globalization sentiment in each phase are accordingly specific to each phase.

Financial Crisis: Given that the financial crisis marks the onset of the trade growth slowdown, it is tempting to attribute the sentiment against global markets to the crisis. Indeed, people in different countries were exposed to risks not of their own making that were "imported" from the US. However, there are several reasons arguing against the hypothesis that the financial crisis was the origin of the anti-globalization sentiment. First, there is the timing. International trade declined sharply during 2008/09, but recovered immediately afterwards. It is not until 2015/16 that strong arguments against trade and globalization emerge. Of course, one could argue that it took time for people's frustration to build up, but 5-6 years seems an implausibly long lag. Second, several countries, most importantly China and the developing world, fared well

during the crisis in terms of growth and poverty reduction, so that the pain felt was by no means universal. For the US and Europe, Bonomi, Gennaioli, and Tabellini (2021) provide an interesting explanation of why the financial crisis did not lead to a fundamental change in attitudes (including those towards globalization).[14] They argue that it is not economic shocks per se that lead to changes in social attitudes, but the interaction of economic shocks with a pre-existing divide along cultural lines. The financial crisis may have caused economic hardship, but this hardship was not concentrated in low-education, socially conservative groups that had a pre-existing aversion to globalism. However, this was not the case with the next possible cause of the backlash.

Import Competition from Low-Wage Countries, especially China: As noted earlier, starting in the mid-2010's, several US politicians blamed increasing inequality in the US, declining manufacturing employment, and stagnation of real wages on imports from low-wage countries, especially from China - the so-called "China Shock" or "China Syndrome." While there is little evidence to support the view that such imports had a major effect on aggregate trends and outcomes in the US, there is ample evidence by now that they had a large impact on local communities that were disproportionately affected by import competition[15]. These communities fit the profile in Bonomi, Gennaioli and Tabellini (2021): they consisted of low-income, low-education, socially conservative households who, faced with a major economic shock, became polarized and increasingly economically conservative, rejecting redistribution as well as globalization. While the change in attitudes was initially confined to these communities, it garnered momentum over time, with trade and globalization becoming major issues in the 2016 electoral campaign. Eventually, it led to the US-China trade war of 2018-19, a major departure from the earlier trade liberalization policies practiced by the US. However, even as the trade war was unfolding, it seemed unlikely that this was a permanent change of policy; rather, the policy towards trade and China seemed specific to the choices of a particular administration at the time. Many commentators expected the trade restrictive policies to be reversed once a new administration came to power. Of course, this expectation did not materialize, indicating that the change in attitudes towards globalization was more permanent.

[14] This point is also made in Guido Tabellini's Presidential Address to the Econometric Society in 2022: https://www.youtube.com/watch?v=i6Cp1MIv-Rg&t=2s.
[15] See Dorn and Levell (2021) for a discussion of the evidence for the US and several European countries.

Climate Change and Carbon Taxes: With the emergence of climate change as a major challenge facing the world today, globalization has come under fire as a potential contributor to high emissions. The multiple crisscrossing of goods across borders as they are traded within GVCs implies additional packaging and fuel for transportation. Countries have different environmental standards, which may create incentives for pollution havens (though to date, there is no evidence supporting this hypothesis[16]). Last but not least, trade is associated with growth, and growth (at least to date) means more pollution. Policies to cope with climate change, including carbon border adjustment taxes, have the potential to lead to a new world order as they will change relative prices with potential implications for countries' competitiveness and comparative advantage. However, the war in Ukraine and the associated energy crisis have put such adjustments on hold. Hence, while climate change could be a major force for rethinking transnational relationships in the future, it has not played this role to date.

COVID-19 and Demands for Resilience: Since the onset of the pandemic, a rather novel concern regarding trade has emerged: the resilience of GVCs. Short-run supply shortages of various items, from paper towel and toilet paper to personal protective equipment (PPE) and ventilators in March 2020 were attributed to the disruption of the normal functioning of GVCs due to COVID. Such concerns became even more pronounced towards the end of 2020 and in early 2021, when problems with shipping, delays at ports, and shortages of critical products such as baby formula, were featured daily in the press. A chain with multiple links, some of which may be located in different countries, is as strong as the weakest link, some argued. Any time a link in a foreign country breaks due to a local shock, the global supply chain suffers. As a result, the idea that a natural way to increase the resilience of supply chains was to relocate as many links as possible to the domestic economy, i.e., to "reshore" supply chains, gained traction during that time.

It was not the first time that vulnerability of GVCs to local shocks became a cause for concern. Boehm, Flaaen, and Pandalai-Nayar (2019) and Carvalho et al. (2021) studied the 2011 earthquake in Japan and showed how this country-specific shock propagated through supply networks to affect firms located in other countries. Barrot and Sauvagnat (2016) studied firm-level idiosyncratic shocks due to natural disasters and found that such shocks affected not only the companies nearby within the region, but also their customers who reported declines in sales

[16] See Shapiro and Walker (2018).

growth in the medium run. However, neither the Japanese earthquake nor natural disasters led to the sustained criticism of GVCs and denouncing of globalization observed during the pandemic. This is surprising, especially in light of the fact that the COVID shock was not country-specific, but global, weakening the case for reshoring. A natural question is then whether the resilience argument reflects genuine worry as opposed to presenting a novel and convenient excuse for pursuing old-style protectionism motivated by the aforementioned concerns regarding the labor market effects of trade and its potential contribution to domestic inequality.

To address this question, it is necessary to have a well-defined notion of resilience. A useful starting point is the definition provided by Markus Brunnermeier in his recent book "The Resilient Society." According to Brunnermeier, resilient means to "bend but not break" in response to a shock. A comparison between the oak and the reed is illuminating. The oak is strong and "robust" to many shocks. But if the shock is strong enough, the oak may break. In contrast, the reed is not robust, but it is "resilient." Even a light breeze makes it sway back and forth. But when hit with a big storm, it bends, it does not break, and proves therefore more resilient than the oak.

Illuminating as this comparison may be, it still begs the question of how one would operationalize the concept of resilience in economics. A strict interpretation of the "bend but not break" criterion, would imply that an economic entity, be it a firm, an industry, an economic relationship, or an entire economy would be resilient if it survived an economic shock, and not resilient if it ceased to exist. A less strict interpretation might be taken to imply that even entities that survived a shock, are not resilient if it takes them a long time to completely recover. But this in turn begs the question of how long is long? It is becoming apparent that the concept of resilience raises several questions that remain unanswered in economics to date. Importantly, we lack a well-defined benchmark of "resilience," by which responses to economic shocks can be judged.

This state of affairs notwithstanding, one can make progress by making explicit some key factors that need to be considered when judging responses to economic shocks. The following schematic summarizes relevant considerations:

Relevant considerations

- **Nature and Magnitude of Shock**

i. Supply, Demand, or Both[17]
ii. Sector- , Country-specific, or Both
iii. Idiosyncratic or Systemic

- **Time Horizon (short-, medium- or long-run)**
  - **i.** Dependent on sector (food, medicines: time is of the essence)
  - **ii.** Dependent on (possibly non-homothetic) preferences (consumers in rich countries without well-developed public transportation may consider a car a necessity)
- **Level of Aggregation**
  - **i.** Economy-Level
  - **ii.** Industry-Level
  - **iii.** Firm-Level
  - **iv.** Household-Level

To see why these factors matter, consider first the response to a demand-side shock, e.g., a decline in aggregate demand due to rising unemployment or due to health concerns. Whether or not the supply chain is national or global, or well diversified, will matter little for resilience in this case. Now consider the response to a supply shock, e.g., a natural disaster or a disease. If the shock is specific to a particular location/country, then diversification of the supply chain to include multiple locations, will make it more resilient. On the other hand, if supply shocks are correlated across locations (as is the case with a pandemic for example), then diversification will do little to increase the supply chain's resilience. Along the same lines, if a supply shock originates in the domestic economy, then reshoring of supply chains will make them less resilient to such a shock. Of course, the opposite would be true if the shock originated abroad. The magnitude of the shock, and relevant time horizon also matter greatly for resilience. For example, the 2011 earthquake in Japan caused severe disruptions in the global automobile industry that lasted for several months after the earthquake. But beyond the automobile industry, the global economy was not much affected, and even the automobile industry eventually recovered. Based on the criterion of "bend but not break", the global economy proved incredibly resilient to this shock.

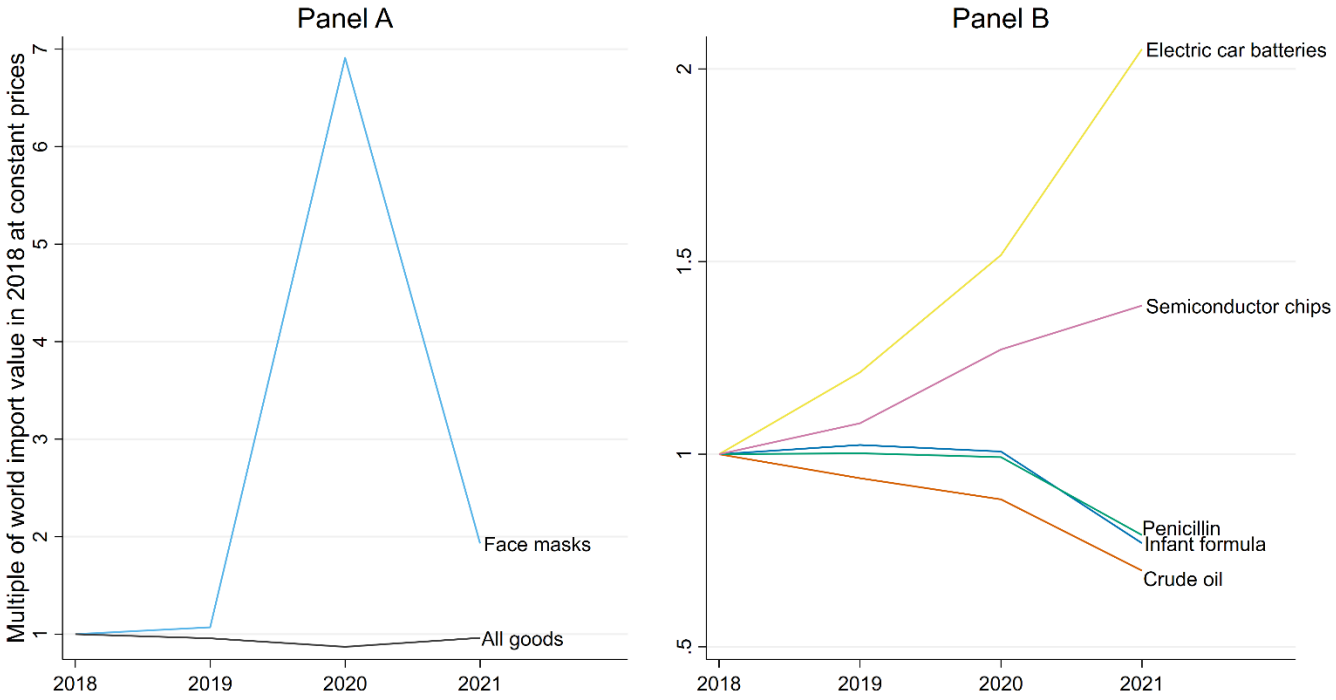
[17] In practice, it may be hard to separate between supply and demand shocks. Guerrieri et al (2020) show how a shock that starts as a supply shock can become a demand shock (COVID-19 is a good example).

Returning to the COVID pandemic, it is plausibly the largest shock the global economy has faced since World War II. It represented both a demand and a supply shock, as unemployment rose and income dropped sharply during lockdowns, while at the same time, production and commerce ceased in many countries. It affected all sectors of the economy, but some more than others (e.g., hospitality services versus finance or tech). It affected most countries on the globe, but not at the same time, as the infection waves were not synchronized across countries in different continents. In some sectors, such as food and medical products, delivery delays and shortages are critical (i.e., life threatening), while in others, such as autos or semiconductor chips, they are simply inconvenient.

How would one judge the resilience of GVCs and the global economy against this background? While, as noted earlier, we lack an agreed-upon benchmark against which resilience can be measured, we can look at how global trade, both in aggregate terms and in some key products, evolved during the pandemic years, keeping of course in mind that the pandemic is not completely over yet.

Figure 4 shows world trade flows since 2018 up to 2021, when the most recent COMTRADE data are available. Values are reported as a multiple of the 2018 world import value in constant prices. There was a negligible drop in all goods trade during the pandemic during 2020, and a full recovery in 2021, as seen already in Figure 1. Imports of face masks, shown in Panel A of Figure 4, exhibit an interesting pattern: these imports increased sharply in 2020 reflecting the increasing use of face masks from China and Korea to meet the surge in domestic demand. Not only did international trade not let down the economy in this case, without imports, domestic demand for face masks would not have been met by domestic producers. Growth in use of imports to supply electric car batteries and semiconductor chips grew in real terms during the pandemic, with imports of batteries accelerating. Use of imports to supply penicillin, infant formula, and crude oil has declined slightly as of 2021, but supply is not broken.

Figure 4: During COVID-19 import usage was bent not broken



Source: COMTRADE, U.S. Bureau of Labor Statistics (BLS)

Notes: World imports of goods are identified with six-digit Harmonized System (HS) codes: face masks (630790), penicillin (300410), Infant formula (190110), crude oil (270900), electric car batteries (850760), and semiconductor chips (854231). Nominal values from COMTRADE are converted to 2018 prices using import price indices from the Bureau of Labor Statistics. Some indices match nominal values exactly at the four-digit HS code: crude oil (EIUIP2709), penicillin (EIUIP3004), and semiconductor chips (EIUIP8542). Where such matches are not available in 2018, goods are matched to price indices at higher levels of aggregation: face masks are matched to instruments and appliances used in medical, surgical, dental, or veterinary sciences (EIUIP9018); electric car batteries are matched to vehicles other than railway or tramway rolling stock, and parts and accessories thereof (EIUIP87); and infant formula matched to food, beverage, and tobacco preparations (EIUIPIV). Values for all goods are deflated by the US GDP deflator as in Figure 1.

Khanna, Morales and Pandalai-Nayar (2022) highlight two additional measures of resilience that can be measured in firm-to-firm transactions: (i) whether it is easy for firms to find new suppliers; and (ii) whether firms maintain links with suppliers. The first measure is summarized, for each firm j and time period t by the

$$Entry\ Rate_{j,t} = \frac{N\ of\ suppliers\ to\ j\ in\ t, who\ don't\ supply\ in\ t-1}{[(N\ of\ supp.to\ j\ in\ t-1) + (N\ of\ supp.to\ j\ in\ t)]/2}$$

which measures the percent of suppliers who are new in the current period. A market is resilient if the entry rate does not decrease after a shock. The second measure is summarized by the

$$Separation\ Rate_{j,t} = \frac{N\ of\ suppliers\ to\ j\ in\ t-1, who\ don't\ supply\ in\ t}{[(N\ of\ supp.to\ j\ in\ t-1)+(N\ of\ supp.to\ j\ in\ t)]/2}$$

which measures the percent of suppliers from the last period that no longer supply in the current period. A market is resilient if the separation rate does not increase after a shock. A net separation rate may also be measured as

$$Net\ Separation\ Rate_{j,t} = Separation\ Rate_{j,t} - Entry\ Rate_{j,t}.$$

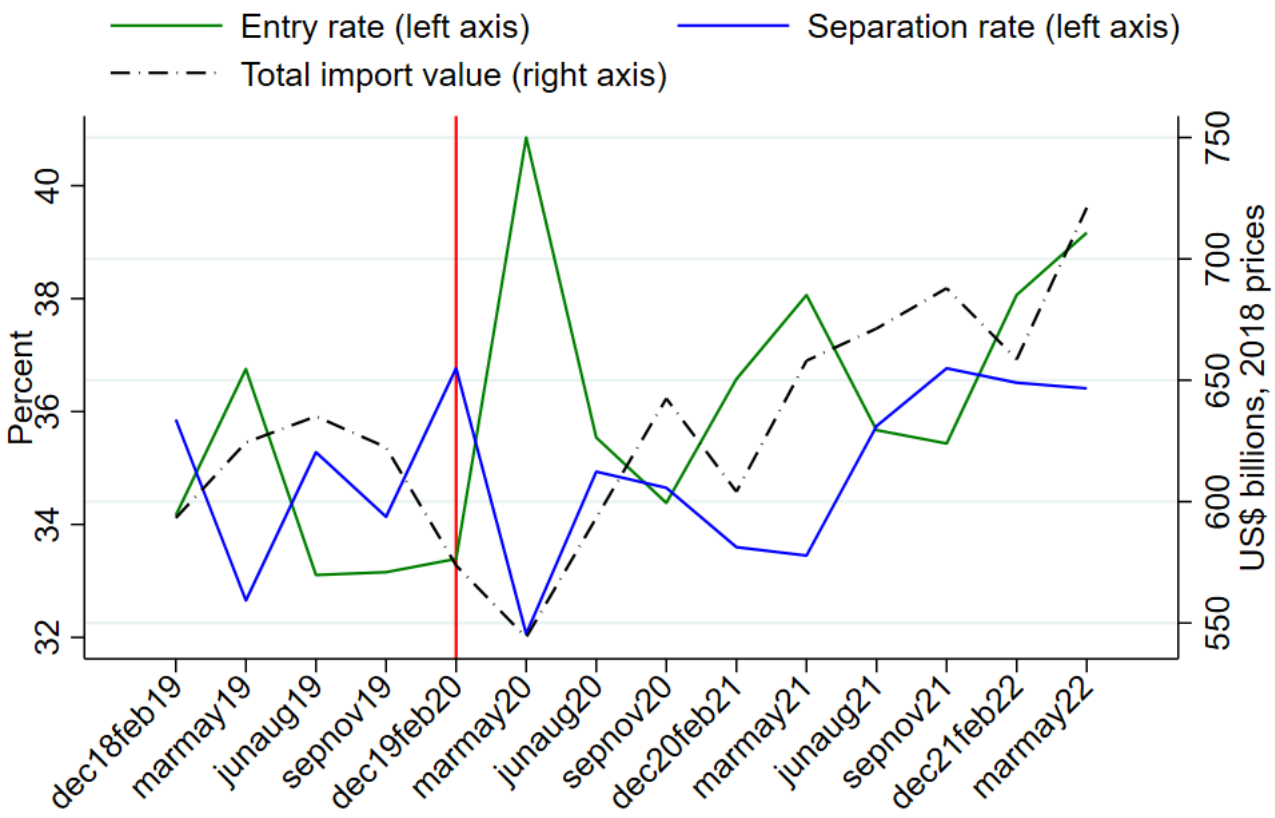
To evaluate the resilience of U.S. supply chains during COVID, we construct these measures for U.S. imports. The data source is Panjiva, which compiles the manifests for all container shipments coming into U.S. ports. Though the data do not include trade values, firm identifiers allow us to measure the extensive margin of trade. For each shipment, the data identify the U.S. firm receiving the shipment (consignee) and the foreign firm sending the shipment (shipper).

Figure **5** shows the quarterly averages of the entry and separation rates across all importing firms in the U.S. during COVID and a year before. Both measures have an average of about 35 percent, as many firms do not receive shipments from the same firms each quarter, and receive shipments only once or twice a year.

By these measures, supply chains appear resilient in the quarter of March 2020 to May 2020, the first wave of the pandemic. In that quarter the total value of imports dropped 13 percent in real terms relative to same quarter in the previous year, reflecting reduced demand and prices as the country entered lockdown, and potentially supply reductions elsewhere.[18] Despite this, the entry rate spiked to 42 percent. The separation rate also fell, as firms held on to previous suppliers. Since entry grew by more than separations, the net separation rate fell. It seems that during the pandemic domestic firms held on to existing relationships with trading partners and even pursued new ones, showing resilience in the context of declining total trade.

***Figure 5: U.S.** firms' relationships with foreign suppliers during COVID*

[18] Total import values reported by the Census Bureau: https://www.census.gov/foreign-trade/balance/c0015.html. In the Panjiva data the volume of container shipments also declines in March to May 2020 relative to March to May 2019.



Source: Panjiva, US Census, BLS

Notes: The vertical red line indicates the quarter before the Covid-19 pandemic begins. The entry rate measures the percent of suppliers that are new in the current period, and the separation rate measures the percent of suppliers from the last period that no longer supply in the current period. Total import value is the value of goods imports (not seasonally adjusted) reported by the Census deflated by the import price index for all commodities.

An explanation for these patterns is that COVID was a shock to import supply and demand. On the one hand, international suppliers faced lockdowns and curtailed supply. On the other, there was a large reallocation of demand across products, as households scaled purchases of durables in anticipation of prolonged lock down, and also purchases of health-related goods, like facemasks.[19]

To isolate the response of firms to only the supply side shock, we exploit the time varying nature of COVID lockdowns across countries. Define the supply-side lockdown exposure of firm j in time t as:

[19] Consistent with this, when replicating Figure 5 only using firms importing either: (i) facemasks, or (ii) electric car batteries, the spike in entry rates is somewhat larger in the quarter starting March 2020.

$$Lockdown\ Exposure_{j,t} = \sum_i s_{i,j,t_0} \times (Lockdown\ stringency\ in\ country\ i\ at\ time\ t)$$

where s_{i,j,t_0} is the share of firm j's import volume (measured in twenty-foot equivalent container units, or TEU) from country i in t_0, the quarter December 2019 to February 2020, and lockdown stringency in country i at time t is the Oxford University lockdown stringency index (Hale et al., 2020). Time intervals are three-month quarters, so the stringency index in each time period is the average for the quarter. Lockdown exposure is zero for all firms prior to March 2020, and then varies across firms and quarters after the pandemic begins.

To isolate responses to this supply side shock we estimate the regression:

$$Net\ Separation\ Rate = \alpha_j + \alpha_t + \beta_1\left(Lockdown\ Exposure_{j,t}\right) + \beta_2\left(Lockdown\ Exposure_{j,t} \times W_j\right) + \epsilon_{j,t}$$

where α_j is a firm fixed effect and α_t is a quarter fixed effect. The quarter fixed effects control for changes in demand in the US economy during the pandemic. W_j stands for alternative firm characteristics hypothesized to shape resilience, namely: (i) the share of import volume (again in TEU) of goods that are differentiated, rather than sold on an organized exchange or with reference prices, according to Rauch (1999); (ii) the number of suppliers to the firm at t_0; and (iii) the total volume of imports at t_0.

Results are reported in Table 1. Across all columns, and in contrast to the aggregate pattern in Figure 5, supply-side lockdown exposure increases net separations. This confirms that the aggregate pattern of decreasing net separations is explained by demand factors.

Table 1: Resilience of US importers to supply side shocks

VARIABLES	(1) Net sep. rate	(2) Net sep. rate	(3) Net sep. rate
Lockdown exposure [0,1]	7.14***	5.71***	5.60***
	(0.52)	(0.43)	(0.43)
Lockdown exposure X Share differentiated in t_0	-2.02***		
	(0.35)		
Lockdown exposure X Z(Number of suppliers in t_0)		3.13***	
		(0.30)	
Lockdown exposure X Z(Import volume in t_0)			1.73***
			(0.63)
Number of observations	913,822	913,822	913,822
R-squared	0.04	0.04	0.04
Firm fixed effects	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes

Notes: Number of suppliers in t_0 and import volume in t_0 are normalized as Z-scores by subtracting off the sample mean and dividing by the standard deviation. Standard errors in parentheses are clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1

There is heterogeneity in responses across firms. Perhaps surprisingly, firms whose imports are more differentiated by the measure of Rauch (1999) have fewer net separations as they maintain relationships even in the presence of a supply shock. In contrast, firms with more suppliers, and those with larger overall import volumes experience greater net separations, potentially because they have a greater pool of relationships on which to draw. Khanna, Morales and Pandalai-Nayar (2022) find similar patterns of heterogeneity when studying the response of firms to supply-side shocks generated by lockdowns in Indian districts. Using firm-to-firm transactions data, similar to those in Panjiva but covering also domestic transactions, they exploit the differential exposure of firms in that state to supplier risk during the pandemic. Because the severity of lockdowns differed greatly across Indian states, suppliers located in states with more strict lockdowns experienced a larger disruption. In an event-study, they show that firms with suppliers exposed to more severe lockdowns experienced an increase in net separation rates, a similar result to Column 1 of Table 1. The intensive margin of trade as measured by the value of inputs and firm output also suffered. They also document that these disruptions were less severe for supply chains trading more complex products.[20] Though the paper does not attempt to nail

[20] They use a few alternative measures of complexity: The number of products a particular firm buys from suppliers; the share of total purchases accounted for by differentiated products; and the average number of inputs that are necessary to produce each firm's product.

down the mechanism behind this somewhat unexpected finding, a plausible explanation is that firms that produce more complex products value supplier-specific relationships more and take great care to preserve them when faced with uncertainty and disruption.

The importance of relationship-specific investments in global supply chains, and international trade more generally, has been emphasized in the literature (see 2020 WDR for an overview). Seen through this lens, it is perhaps not surprising that the US firms that appear in the Panjiva data and trade internationally did not on average sever existing relationships during the pandemic. Furthermore, the additional demand for certain products, e.g., face masks or electric batteries, may have led them to seek new trading partners. At any rate, though supply side shortages due to lockdowns contributed to net separations, overall the extensive margin of trade resulting from the combination of supply and demand forces indicates--- contrary to popular claims---strong resilience during the pandemic, as shown in Figure 5.

This message is reenforced in a few other papers that explore the economic effects of the pandemic. Stumpner (2022) studies regional lockdowns in China and shows that with the exception of the Shanghai lockdown of April 2022, the other regional disruptions in China due to COVID had no effect on international trade. He concludes that regional lockdowns could still reduce aggregate trade, but only if they were exceptionally stringent and implemented in an economically important province such as Shanghai.

Using data for 64 countries, Bonadio et al (2021) document a large contraction of economic activity (an average 29.6% drop of GDP) during the pandemic. But only a small fraction of this contraction (ca. 23%) can be attributed to foreign shocks that are intermediated through final and intermediate goods trade. Moreover, simulations based on a global network model indicate that global supply chains alleviated the pandemic-induced contraction: the downturn in the 64 countries of their sample would have been worse on average if there were no international trade and supply chains relied on domestic inputs only. The reason is that elimination of foreign inputs would have increased reliance on domestic inputs which were also affected by the pandemic.

Lastly, looking at world- and country-specific GDP rather than trade, reenforces the message of resilience. Clearly, the world economy took a major hit with the COVID shock in 2020. But most countries rebounded. World GDP contracted in real terms by -3.2 percent in 2020, but increased to 5.9 percent in 2021. The United States economy grew on par with global

growth in 2021, and the recovery was even faster in several regions according to the World Bank (2023).[21] Even though the pandemic is still not over and many of its effects will be felt for many years to come, the world economy is far from broken. Global growth in 2022 is estimated at 2.9 percent. This is indeed a slowdown relative to the rapid recovery of 2021, but still greater than the 2019 rate of 2.5 percent (World Bank 2021). So, once again, based on the criterion "bend but not break," the world economy proved resilient during the pandemic.

In sum, despite the prominence of resilience concerns in the public debate in the past three years, the evidence to date provides no support either for the view that global supply chains were not resilient during the pandemic or that the world economy would have been more resilient if there had been less dependence on foreign inputs and trade.

Invasion of Ukraine and Energy Crisis: The alleged effects of trade on advanced economies' labor markets and inequality as well as COVID-19 supplied many arguments against free trade and globalization, but none of them seemed to cause a reversal of attitudes and long-term trends by itself. Nevertheless, these developments might have prepared the ground for what has turned out to be a game changer in the debate and policy on globalization: the quest for resilience, this time not to economic shocks or natural disasters, but to geopolitical turmoil, and the emergence of national security as a major reason for rethinking globalism. This is turn fed new demands for reshoring as well as for a rather new concept in trade policy: "friendshoring," i.e., trading only with, or predominantly with, friendly nations.

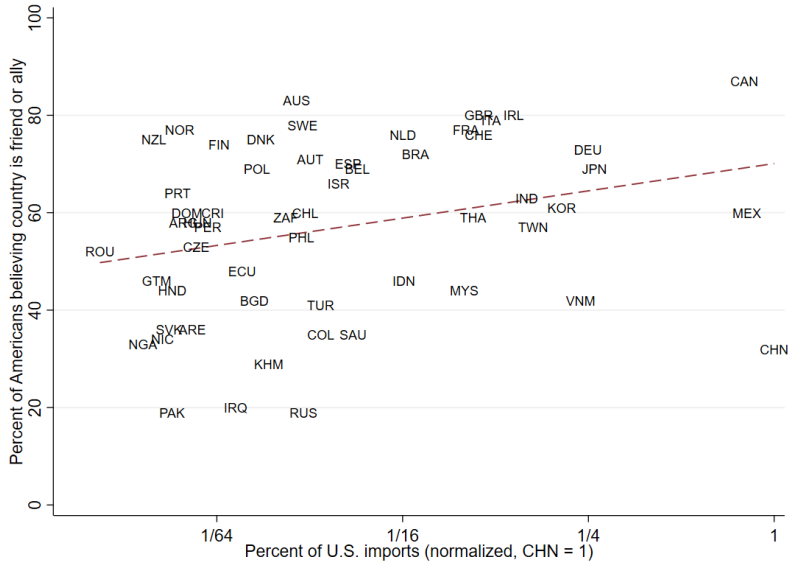
The catalyst for this new phase in the de-globalization movement was the invasion of Ukraine by Russia in February 2022 that was followed by a major energy crisis. At this point, the vulnerability of Europe to relying on a single source (i.e., Russia) for a large share of its energy imports became apparent. The evidence on supply chain resilience during COVID-19 provided by Khanna, Morales and Pandalai-Nayar for Indian firms as well as by our results for US firms suggest that the private sector had taken steps to cope with exogenous shocks, at least in those cases where disruptions would be expected to have severe economic implications due to relation-specific investments. But the experience with Russia revealed that at least Europe was ill-prepared to deal with disruptions due to major geopolitical shocks. The concerns about Europe and Russia have led---by extrapolation---to more general concerns about the resilience of global

[21] In 2021, real GDP growth in the United States was 5.9 percent, but 7.9 percent in South Asia 7.2 percent in East Asia and the Pacific, 6.8 percent in Eastern Europe and Central Asia.

supply chains to geopolitical risks, and to demands to fundamentally reorganize international relationships, so as to decouple from any country that is perceived as "unfriendly" by the US. China tops the list.

A natural question in this context is whether, beyond specific instances of government-led sanctions, market forces have led countries to already orient themselves towards trading with "friends." In Figure 6 we evaluate whether the US is in fact friendshoring, by relating the import share of a country in 2022 to the percent of Americans believing the country is a friend or ally in the most recent poll by YouGov (2017). For many trading partners, a majority of Americans believe the country is a friend, and there is a positive and statistically significant association between this variable and a country's share of imports. China, the largest trading partner, is in fact an outlier, with just 35 percent of Americans believing it is a friend.

Figure 6: America is already friend shoring



Sources: YouGov (2017), U.S Census Bureau (2022).

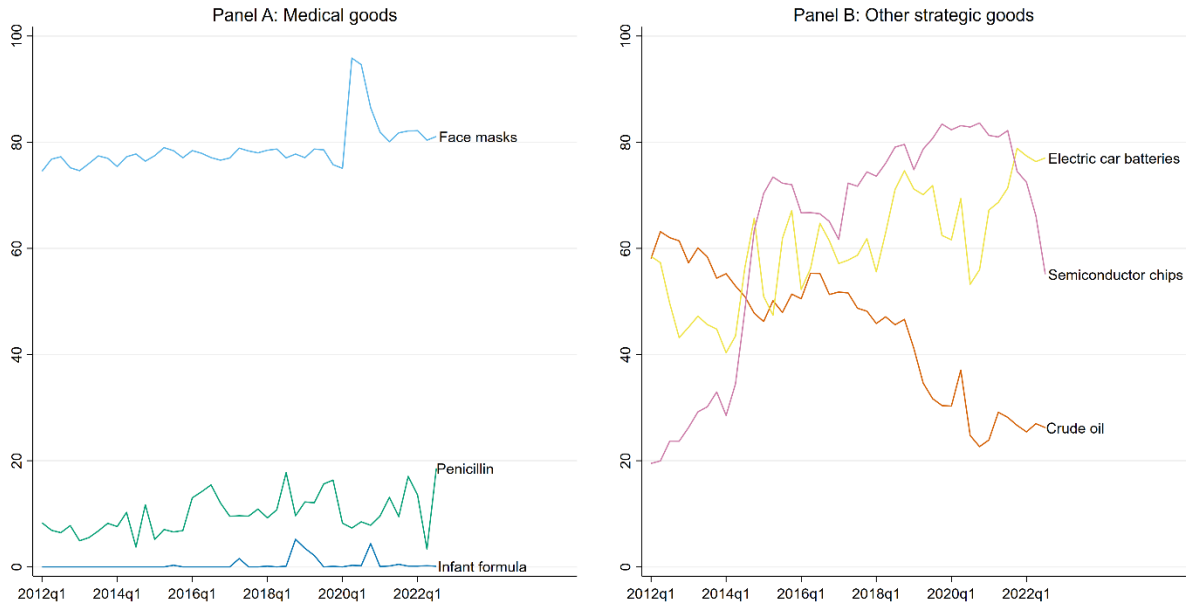
Notes: Countries are classified as unfriendly if less than 50 percent of Americans believe country is a friend or ally. Figure includes only countries with greater than one tenth of one percent of U.S. imports in 2022. The slope of the red dashed line is 4.04 (s.e. = 1.87).

The survey data reveal the limits of friendship as an organizing principle for trade. For many countries, Americans respond in the YouGov survey that they are unsure whether the country is an ally, friend, unfriendly, or an enemy. Indonesia, Malaysia, and Vietnam are all important sources of imports, including semiconductors, but less than 50 percent of Americans

believe they are a friend or ally. There is a pro-European bias to surety, with for instance Japan ranking below Germany, despite nearly identical import shares.

Though the *aggregate* import data suggest an already high degree of friendshoring in the US, it is possible that high dependence on non-friendly nations in the imports of some critical products makes the US vulnerable to geopolitical risks (as was the case with Europe in the case of energy import from Russia for example). For this reason, we focus on some high-profile products next. These products are considered critical either for health and nutrition reasons or because they represent important inputs in the production processes of a modern economy. Figure 7 reports for health (Panel A) and other strategic goods (Panel B) the share of U.S. imports coming from countries where less than 50 percent of Americans believe country is a friend or ally, or 'non-friendly' countries, measured in 2017. We hold the classification of countries constant to illustrate dynamics in import shares. There are several observations.

Figure 7: Percent of US Imports from 'non-friendly' countries



Source: YouGov (2017). US Census

Bureau (2022).

Notes: Countries are classified as unfriendly if less than 50 percent of Americans believe country is a friend or ally. Imports are identified with six-digit Harmonized System (HS) codes: face masks (630790), penicillin (300410), infant formula (190110), crude oil (270900), electric car batteries (850760), and semiconductor chips (854231).

First, in the category of health products, face masks, of which 73 percent come from China in 2022, is an outlier in terms of reliance on non-friendly countries. 'Non-friendly' countries provide less than 20 percent of penicillin imports, and less than 5 percent of infant formula imports. Evenett (2020) makes a similar point in his study of prepandemic international sourcing patterns of medical goods and medicines for France, Germany, the United Kingdom, and the United States.

Second, as noted earlier, in the case of face masks, imports from China provided important relief and increased resilience during the pandemic. Note the spike of imports from non-friendly nations during the second quarter of 2020 in Figure 7. Hence, decoupling from unfriendly nations may increase resilience to specific geopolitical shocks, but decrease resilience to other shocks unrelated to politics. The general point is that it is impossible to think about resilience without specific reference to the type of shock to which resilience is sought.

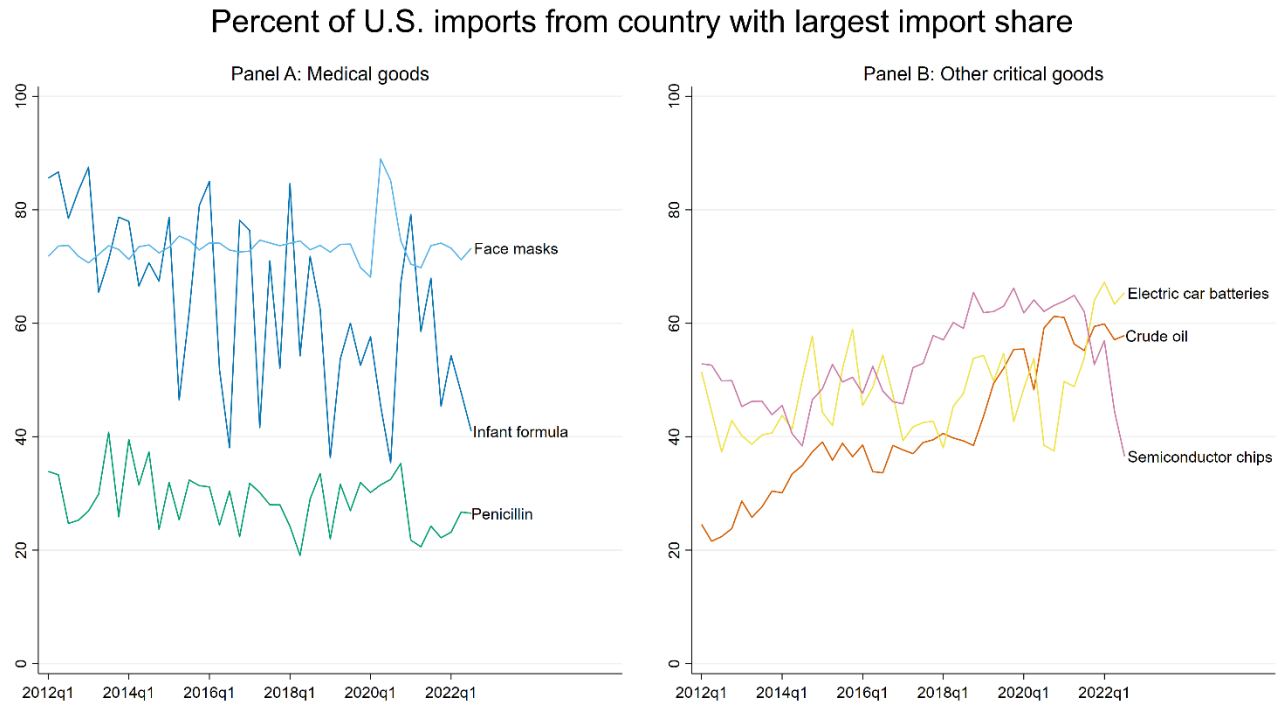
Third, Panel B of Figure 7 shows how import dependence on non-friendly nations has evolved in the past decade for some strategic goods. The sharp increase in the case of semiconductor chips reflects the rising popularity of the "foundry" model in the past two decades, with many foundries located in Malaysia, Vietnam and China (see Table A1 in the Appendix) – countries that are all perceived as non-friendly by a majority of Americans in the YouGov survey. Similarly, in the case of electric batteries, the growing dependence on China is evident in the figure. However, import shares for some goods appear responsive to policy. The share of crude oil sourced from 'non-friendly' countries has fallen from 60 percent to about 20 percent, as the shale boom made the US a petroleum exporter. Though in 2020 about 80 percent of semiconductor chips were imported from non-friendly countries, in 2022, during which the U.S. articulated a friendshoring policy with regard to the sector, this share had fallen dramatically to 55%. This reflects growth in the import share of Taiwan from 5 percent to 10 percent; Ireland, from 2 to 8; and Israel, from 1 percent to 4 percent.

Dependence on non-friendly countries is only one among several possible factors affecting supply chain resilience. High concentration in the market of a specific product will in general imply high dependence of buyers on suppliers making this market less resilient to supplier-side risk – be it risk associated with exogenous shocks (e.g., natural disasters) or risk arising from the exercise of supplier market power. Given that "friendship" is a volatile concept (ironically, two of the countries viewed as friends of the US today, Germany and Japan, were its

main enemies during World War II), resilience in its broadest form implies availability of multiple alternatives for sourcing a product and low concentration.

Figure 8 and Table A1 in the Appendix show how concentrated the markets for the above strategic product imports are in the US. Concentration can signal a lack of resilience because it implies fewer alternatives to choose from if one supplier fails, or if demand increases unexpectedly. Figure 8 reports the percent of U.S. imports from the country with the largest import share in each product category, and Table A1 shows the import shares of the five largest importers in each case. By these measures, some goods markets appear less resilient than when viewed through the lens of supply by friendly countries. Approximately 75% of infant formula comes from two countries, Ireland (45%) and Mexico (30%). This concentration is due to differences in market access: Ireland and Mexico have duty free access through free trade agreements, whereas most other countries are subject to a tariff of 14.9% to 17.5% depending on the content of the formula. Stringent labelling and food safety requirements, which are not harmonized with those required by regulators in Europe further restrict imports (Casey 2022). Similarly, in the case of crude oil, ca. 70% of US imports in 2022 came from two (friendly) countries, Canada and Mexico. The main takeaway from these data is that key product markets in US imports are highly concentrated. Given that the main suppliers in most of these markets are friendly countries, this state of affairs does not imply vulnerability to geopolitical risk--- *at present*! But it does imply vulnerability to other country-specific risks as well as to a potential change in international relations in the future.

Figure 8: Markets for imports are highly concentrated



Source: US Census Bureau (2022).

Notes: Imports are identified with six-digit Harmonized System (HS) codes: face masks (630790), penicillin not packaged for retail (300410), Infant formula (190110), crude oil (270900), electric car batteries (850760), and semiconductor chips (854231).

Measures of import market concentration are of course imperfect proxies of resilience. Ideally, one would like to know elasticities of substitution and export supply and import demand elasticities at a highly disaggregate level to assess a product market's resilience to a shock. For instance, in the case of a demand shock (say an increase in the import demand for face masks due to COVID-19), a market would be characterized as resilient if the export supply of face masks by the rest of the world were highly elastic. And similarly, in the case of a supply shock (say a decrease in supply of inputs due to a lockdown), a market would be considered as resilient if the import demand were highly elastic. Export supply and import demand elasticities are notoriously difficult to credibly estimate. Fajgelbaum et al (2020) use the tariff variation induced by the recent trade war between the US and China to estimate these elasticities at the HS-10 level of aggregation. Interestingly, they cannot reject the hypothesis that the export supply curve facing the US is infinitely elastic. Similarly, they cannot reject that the export supply curve

of the US facing foreign trade partners is infinitely elastic. Taken at face value, the elasticities imply high resilience to demand-side shocks.

However, these elasticities are measured at a level of aggregation that may be still too high for judging a sector's "resilience." The vulnerabilities that are often cause of concern play out at a much more disaggregate level. Consider semiconductors for instance. According to Table A1 in the Appendix, Taiwan has only a 10% share in US semiconductor chip imports. However, as a joint report by the Boston Consulting Group and Semiconductor Industry Association shows,[22] Taiwan dominates the market for logic chips in the advanced nodes (10 nanometers or below), which are required for compute-intensive devices and smartphones. If the production technology in these products is Leontieff, then there will be no substitutes for these highly specialized chips made in Taiwan. Industry reports suggest that this is indeed the case. But obtaining credible estimates of substitution elasticities at that level of disaggregation has been elusive so far. Future micro-oriented research might be able to make progress on this front.

Along the same lines, our discussion so far has focused on resilience as it relates to imports--- given that this article is about deglobalization and the forces that are shaping it. But resilience of supply chains depends as much on domestic market structure and competition as on international factors. For example, an industry that sources its inputs from a single domestic supplier might be plausibly sheltered from geopolitical risk, but would have little resilience to other shocks. A complete assessment of resilience requires therefore careful modeling of the entire industry under consideration, considering both domestic and international firm-to-firm relationships. This could be another area for policy-relevant, micro research in the future.

In general, the evidence to date does not suggest any strong dependence of the US on imports from non-friendly countries---*on average*--- though there is dependence is some critical sectors. However, even in these sectors, the recent experience with COVID-19 suggests that countries regarded as non-friendly *alleviated* rather than *caused* critical bottlenecks. In addition, it seems that the private sector, even without government intervention, has been slowly decoupling from non-friendly countries in recent years, especially in the semiconductors and crude oil. However, imports of critical products are highly concentrated among a few countries. Independent of geopolitical risk, this is a cause of concern as it suggests potential vulnerabilities to idiosyncratic supplier-side risk.

[22] See BCG&SIA, p. 35, Chart 17.

Dual-Use Goods and Concerns about National Security: The national security argument is not new. It was initially deployed by the Trump administration to impose tariffs on aluminum and steel, and subsequently endorsed by the Biden administration that declared these tariffs were non-negotiable. As discussed earlier, it has also been invoked to justify policies encouraging decoupling from non-friendly nations in the imports of critical products in order to make their supply resilient to geopolitical risk. But it has reached new significance since the last quarter of 2022 when it was employed proactively to stop non-friendly countries, China specifically, from developing military capabilities by exploiting trade with the US to their advantage. The cornerstone of this argument is the increasing importance of "dual-use goods," that is goods that have both civilian and military uses. A complete list of such products can be found in Singapore, where under the Strategic Goods (Control) Act permits are required for transshipment of dual-use goods. The list is vast, including aluminum and steel alloys above a certain tensile strength, semiconductor chips, and machine tools.

The main category targeted to date is the semiconductor sector. Semiconductors are an integral component of various consumer products such as cars and smartphones, but can also be used in dual-use goods, such as civilian and military aircraft. Moreover, they are used in supercomputing and artificial intelligence, fields that have potential national security implications. Motivated by these considerations, the US announced in October 2022 sweeping export controls in the semiconductor industry targeting China. The US does not export many semiconductor products directly to China. However, the export controls targeted third-country chip manufacturers who use US software and/or US machines in their manufacturing facilities. According to the restrictions, any semiconductor made with US technology for use in supercomputing or artificial intelligence can be sold to China only with an export license issued by the US that will be difficult to obtain. Given that almost every semiconductor is produced using US technology, this rule effectively covers the entire global industry. Third-country producers had no say in the matter. They have two choices at this point: either obtain the required export licenses by the US or cease to use US technology and equipment. Hence, the use of the phrase "weaponized interdependence" to characterize how the US has used the interdependence inherent in trade and global supply chains to force its trade partners to go along with its economic war against China. In addition, the US barred its citizens from working with

Chinese chip producers except with specific approval. With these measures the US is seeking to prevent China from advancing technologically in sectors that are crucial to national security.

Interestingly, none of these restrictions were the result of lobbying efforts by the domestic or global semiconductor industry (in fact, the semiconductor industry has become so globally interconnected that it is one of the strongest advocates of free trade). They were decided top-down by the US government based on concerns about the increasing militarization of China and military applications of dual-use goods. The global semiconductor industry was asked to adjust or lose access to US technology. To the extent that these new policies contribute to deglobalization today, it is fair to say that deglobalization is not market-driven; rather, it is the result of government-led actions and policies that had little support, at least initially, from the private sector.

Taken at face value, national security is the most powerful argument against unconstrained, market-driven globalization to date. It is also the most problematic as it cannot be verified directly by researchers, market analysts, or journalists -- one has to place faith in government's intelligence sources. Nevertheless, the argument has found bipartisan support in the US. Furthermore, a broad interpretation of "dual use" might lead to many goods facing restrictions – including clothing or medicines used by the military. Accordingly, it has the potential to lead to broad, sweeping restrictions in several sectors and a major economic war if China retaliates. An alternative interpretation of the recent export restrictions in semiconductors is that they have little to do with natural security but aim instead to contain China's economic development as the US has realized that industrial policy alone will not be sufficient to outcompete China in the future[23]. If this is the case, the new restrictions mark the end of an era of globalism and economic cooperation and the onset of another cold war.

[23] Remarks by the by National Security Advisor Jake Sullivan at the Special Competitive Studies Project Global Emerging Technologies Summit are consistent with this interpretation. See: https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/09/16/remarks-by-national-security-advisor-jake-sullivan-at-the-special-competitive-studies-project-global-emerging-technologies-summit/. To quote Sullivan: "…*On export controls, we have to revisit the longstanding premise of maintaining "relative" advantages over competitors in certain key technologies. We previously maintained a "sliding scale" approach that said we need to stay only a couple of generations ahead. That is not the strategic environment we are in today. Given the foundational nature of certain technologies, such as advanced logic and memory chips, we must maintain as large of a lead as possible*…."

II. Consequences

We conclude with some thoughts about the potential consequences of gradual deglobalization. Given that, as shown in Section I, deglobalization is not showing in the data yet, but is nevertheless plausible given recently adopted policies, any statements about its likely effects in the future are highly speculative.

In the short- and medium-run, one would not expect any dramatic effects as the world economy is slowly transitioning to a new state. One should also distinguish between level and direction of change. The level of globalization remains extremely high by historical standards, though the direction of change is towards deglobalization. As global supply chains get reorganized across the world, a new international economic system may emerge, one that relies heavily on bilateral and regional agreements as well as partnerships among "friends." This process may create opportunities for countries that are well positioned to take advantage of this new economic environment (see, for example, the response to the US-China trade war documented in Fajgelbaum et al (2022)). But even though trade will likely survive the new geopolitical tensions, the consequences of the newly emerging economic system on the global economy may turn out to be more severe in the long run.

Resilience: Given that many of the recent policy restrictions were motivated by the quest for resilience, be it resilience to natural and economic shocks or resilience to geopolitical risk, it is natural to ask whether the new system envisioned by policy makers would make the economy more resilient. As emphasized throughout this article, this question is impossible to answer without a well-defined metric of resilience. Developing such a metric requires value judgements by our society, it is not simply an economic question. For instance, ongoing work by Carvalho, Elliott and Spray (2022) makes progress on this conceptual challenge by defining a closely related concept, that of a firm being "essential," as a case where "*demand for key goods at current prices cannot be met without that firm producing, i.e., there is no way of re-routing demand through the supply network such that other firms can take up the slack*[24]." This is a useful starting point, but still leaves the question open of what "key" goods are. From the point of view of some US consumers, a new car of the latest model year might appear a key good.

[24] Carvalho, Elliott, and Spray (2022), p. 4.

Similarly, if one focuses on the total output of the economy, the question becomes how large a decline to a major shock (such as COVID-19) a society is willing to tolerate.

These qualifications notwithstanding, reviewing the theoretical arguments and evidence to date suggests that future resilience---no matter how exactly this is defined---could go either way.

On the theory side, recent work by Elliott, Golub and Leluc (2022) shows how modern production networks create the potential for critical bottlenecks. Private optimization is not sufficient to avoid severe disruptions, so there is scope for intervention by a social planner. In this context, reshoring in critical sectors is potentially justified.

On the empirical side, the evidence is mixed. As discussed earlier, existing supply chains in almost all sectors proved resilient to the pandemic. But energy supply in Europe turned out to be highly vulnerable during the Ukraine war. In general, as emphasized earlier, resilience cannot be judged without reference to specific shocks. Caselli et al (2020) make this point forcefully when considering the question whether international trade makes a country more or less resilient (i.e., in the sense of being exposed to volatility) to shocks. As they point out, the answer depends on whether the shocks are sector-specific or country-wide. A common view is that trade makes countries more vulnerable to shocks, as trade encourages specialization that implies high exposure to sector-specific shocks. However, when country-wide shocks are important, international trade may make a country more resilient by reducing its exposure to domestic shocks. Using a quantitative model of trade, they find that in recent decades the second type of shocks dominates, so that international trade has reduced economic volatility for most countries. The evidence reviewed in Section II pertaining to COVID-19, a shock that was not just country-wide but global, however not synchronized across countries, reenforces this view.

In short, unless a sector is highly dependent on a single import source (as is the case with the dependence of the energy sector in Europe on Russia), international trade seems to contribute to resilience, not compromise it. Hence, it is unlikely that trade restrictions will improve countries' resilience.

Efficiency, Innovation and Long-term Growth: It may be hard to cleanly identify the causal effects of global supply chains and openness on efficiency and growth through econometric studies, but the consensus is that many of the features that characterize modern trade, such as hyper-specialization, firm-to-firm relationships, and technology and knowledge

transfer across firms and countries, played a crucial role in promoting growth and technological progress over the past three decades. The stagnation, if not reversal, of the open policies of the past by the country that more than anyone else had embraced them, naturally raises questions about the future of growth and innovation under the new regime. The recent export restrictions in semiconductors represent a major blow to the technological advancement of China (as intended) at least in the short run. How China will cope remains to be seen. The hope of the US is that the same policies aimed at containing China, combined with well-thought-out industrial policy, could spur a new wave of growth and innovation in the US. But industrial policy has a mixed record, and it remains to be seen whether its recent incarnation will prove beneficial to the US economy in the long run. Further, a slowdown in Chinese growth and innovation could slow the US and global economy.

Though the future is highly uncertain in this changing landscape, there are reasons to be concerned about future growth prospects. In a study completed in 2021, so well before the sweeping export restrictions targeting China were put in place, the US Chamber of Commerce issued a report studying the aggregate costs of a potential U.S.-China decoupling as well as its industry impacts. The report concluded that the costs would be uncomfortable high; for instance, abstracting from other measures, a 25% tariff applied to all two-way trade, would imply an annual GDP loss for the US in the order of $190 billion by 2025. The aggregate effects would be orders of magnitude larger if one considered restrictions on investment, people, and ideas flow. The impacts on specific industries such as aviation, semiconductors, chemicals, and medical devices, would also be substantial over the next decade.[25]

Along the same lines, a recent paper by Thun et al (2022) introduces a new concept, "massive modularity," that characterizes many production processes today, and argue that the presence of massive modularity makes it extremely hard to "decouple," "reshore," and generally reorganize economic activity across borders. Massive modular systems involve several modules that are interconnected with each other, can experience innovation independent of each other, and can be broken into smaller, more specialized modules, each of which can again experience independent innovation. Different firms, located in different countries, specialize in different modules making production structures extremely complex. As an example, they cite the CEO of

[25] In aggregate, IMF researchers estimate losses the order 8 to 12 percent in some economies once technological decoupling is considered (Aiyar 2023).

Pfizer, who once stated that the company's Covid-19 vaccine "requires 280 different materials and components that are sourced from 19 countries around the world." The vast complexity of modern production poses a challenge for policy as measures aimed at reducing risk or promoting domestic industries may have unintended consequences. In general, rebuilding massively modular industries in all their complexity on a national level is a Herculean task. Even if it doesn't fail, it will certainly take many years to accomplish. Given that the sectors characterized by this high complexity are precisely those sectors that are key to innovation and growth, this effort will likely slow down growth in the US and global economy.

Decoupling between the U.S. and China in particular also threatens the pace of global innovation. Most models of long-term growth emphasize the role of population in research and development (see, e.g., Kremer 1993). With 1.4 billion people, China is expected to have a lot of new ideas and develop advantages. For example, China is a global leader in 5G communications technology, and consistently files more artificial intelligence patents than any other country (Li, Tong, and Xiao 2021). Xie and Freeman (2019) attribute 37 percent of global citations to scientific articles written by Chinese researchers. Though citations are an imperfect measure of innovation, the scale is unquestionable. Moreover, a significant amount of this research has been done with American coauthors.[26] As political tensions have increased, this scientific collaboration has come under scrutiny. In 2018, the US Justice Department "China Initiative" began investigating US based scientists under suspicion of intellectual property theft on behalf of the Chinese government, and the US National Institutes of Health (NIH) began investigating hundreds of scientists for non-disclosure of research funds from China. Jia, Roberts, Wang, and Yang (2022) show that around this time, there was a marked decline in publications by and citations of scientists with previous collaborations with scientists in China, even if these scientists were not themselves subject to investigations. US based scientists of Chinese heritage were hit hardest. In interviews, scientists cited new administrative overhead including frequent consultation with their university's administration to navigate regulations about collaboration, and a feeling that they had to choose between access to U.S. research dollars and their collaborations with scientists in China.

[26] Along the same lines, U.S. universities enrolled 129,440 Chinese graduate students in the year 2018/19 (Feldgoise and Zwetsloot 2020).

While US authorities have legitimate reasons to enforce intellectual property rights over commercialized technology developed at private firms, the type of pre-commercial basic research done at universities is often done without an expectation of patent. Indeed, many university scientists are not motivated by profit and recognize that their research is most beneficial when it disseminates quickly and can be built on by other scientists. As Chinese science continues to advance even under US export restrictions, barriers to interaction of US scientists with Chinese scientists could plausibly retard innovation in the United States.

Inflation: Inflation emerged as a major concern in 2021. No one claims that the recent increases in prices are due to trade restrictions. The U.S.- China trade war may have increased the prices of targeted products[27], but it had small effects on US CPI. However, one of the main presumed benefits of open trade is its effects on lowering consumer prices. The low inflation the US and many other advanced economies enjoyed in the past two decades, despite aggressive monetary policies, is in part due to globalization. International sourcing allowed firms to reduce their costs, and even though these cost reductions were not always passed through to consumers in the form of lower prices, so that many firms increased their profit margins[28], international competition kept price increases in check. On the labor side, unions and workers in general had little bargaining power when their jobs could be outsourced to low-wage destinations (or to machines and robots). One may lament the effects that globalization and technology may have had on the American worker, but the flipside of these forces is that they kept prices low for consumers. If in the new era product and labor markets are shielded from foreign competition in the form of trade or immigration, the price of work and goods will rise. This is especially relevant in a period characterized by labor and other supply chain shortages.

Within-country Inequality: On the other hand, the empowering of the American worker has been one of the stated objectives of the new stance towards globalization in the US. The question is then, will deglobalization halt and possibly reverse the rising inequality that emerged during the era of hyper-globalization? As the Deaton Review argues, "inequality" is a complex phenomenon with many dimensions, social, political, and economic, so that there is no simple answer to this question. However, the experience of the past two years should give one

[27] Studies of the price effects of the trade war find complete pass-through of the tariff increases on import prices, though consumer prices were less affected. See Fagjelbaum et al (2019) and Cavallo et al (2021).
[28] See De Loecker et al (2016) for a discussion of pass-through of cost reductions on prices.

pause. In the US, nominal median weekly earnings went up by 10% from January 2021 to December 2022. But due to a 14% inflation, real wages actually declined, by 4%.[29] Though other factors than deglobalization could be responsible for this trend, one thing that is certain is that the American worker was not better off in 2022 compared to past years.

Global Inequality: The effects of potential deglobalization on global inequality might be easier to sign. The past three decades saw a sharp reduction of global poverty, driven primarily by the growth of East Asia, and a decline in global inequality[30]. Though many factors contributed to these developments, the consensus among economists is that the opening of long-closed borders, the growth of trade between countries, and the establishment of the modern global trading system played an important role.

Such progress seems less likely in a future deglobalizing world where advanced countries are turning inward. Large developing countries, such as India, may still find a way forward if they implement appropriate policies by relying on their own large domestic markets and by taking advantage of the void left by US decoupling from China to advance their economic integration with the rest of the world. However, the lessons learnt from trading with China will not be forgotten in advanced economies; India could expect to encounter a less "friendly" reception in the US if its low-wage labor represented a threat to US labor markets, or if it grew to the point that it threatened the technological dominance of the US.

For smaller, low-income countries the prospects are much bleaker. Without access to lucrative foreign markets, there is no clear path for such economies towards growth, poverty reduction, and development as Goldberg and Reed (2022) show. Increasing emphasis on environmental and labor standards as well as product regulation (such as sanitary and phytosanitary standards) raise entry barriers for poorer countries, and may lead an increasing share of trade to be within the set of high-income countries that can comply, rather than between high-income and low-income countries.

Policies to fight climate change may further contribute to divergence between advanced and developing countries. If, for instance, countries sharing similar interests and characteristics (e.g., the prosperous economies of G7; or North America; or Europe) form climate clubs, then

[29] Weekly earnings are median usual weekly real earnings for wage and salary workers employed full time, 16 years and over, and inflation is the consumer price index for all urban consumers, both reported by the Federal Reserve Bank of St. Louis.
[30] See Goldberg (2023) for a discussion of these trends.

countries like India with high emission levels may find themselves excluded and potentially facing punitive tariffs.

Peace: A final, long-run consideration regards the effects of deglobalization on peace. Indeed, one of the strongest motivations for free trade has been the belief that it promotes peace and political stability. The predecessor of the European Economic Community (EEC), the European Coal and Steel Community (ECSC), for instance, was designed with the explicit goal to assist the economy of Europe and prevent future war by integrating its members.

An influential paper by Martin, Thierry, and Thoenig (2008) argues that this conventional wisdom is only partially true, and depends crucially on whether trade is bilateral or multilateral in nature. Bilateral trade increases the opportunity cost associated with the loss of trade between two countries, and makes them therefore less likely to engage in war. In contrast, multilateral trade decreases bilateral dependence to any given country and thus the cost of bilateral conflict, making countries more likely to end up in war. The recent war in Ukraine and Russia's reliance on China to survive the trade disruption caused by sanctions imposed by the West fit this paradigm.

On the other hand, one might counter that multilateralism had been severely compromised prior to the war, and that it was in fact fractures in the world trading system that ultimately enabled the invasion of Ukraine. For instance, one might wonder if China would have been willing to provide a lifeline to Russia if it its economic relationship with the West had not deteriorated so much in the past four years. The decline of multilateralism may not be evident in the trade data yet, though trade between the US and China has declined following the trade war between these two countries. But trade data may take some time to adjust to reflect changes in attitudes and political climate that contribute to armed conflict.

The period leading to World War II provides a case in point. De Bromhead et al (2019) study interwar trade and show that in the 1930s there was a dramatic shift away from multilateral trade towards trade within empires, or informal spheres of influence. For instance, the British Empire accounted for 30 percent of UK imports in 1929, but 42 percent by 1938. Several observers have argued that this changing nature of trade not only reflected, but potentially exacerbated, the international tensions of that period, an era now known as "pre-belligerency." The changing nature of globalization in the past five years bears an eerie resemblance to that time.

III. Conclusion

The future of globalization is highly uncertain at this point. But one thing is certain: There is no longer support for market-driven, unbridled globalization. Governments are now investing to reallocate international supply chains from a free-market equilibrium. A challenge in this new era is that such investments are motivated by objectives that are hard for researchers and the public to evaluate. When globalization was motivated primarily by the objective of economic efficiency, aggregate welfare benefits and distributional effects could be quantified through the lens of economic models. In contrast, there is not yet a quantitative benchmark for how much "resilience" is optimal. National security threats and their diminution can be difficult to verify without security clearance. Researchers can make progress by developing tools to evaluate the impacts of trade and industrial policy on these outcomes that are now guiding policy makers.

No matter what form globalization takes in the future, great care will have to be taken to address its potential effects on within-country inequality in advanced economies, the risks associated with high import concentration in critical product markets, and national security concerns. Whether industrial policy and trade restrictions aimed at containing China's technological development will accomplish this, remains to be seen.

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Appendix not for Publication

Figure A1. Stock of portfolio and direct foreign investment

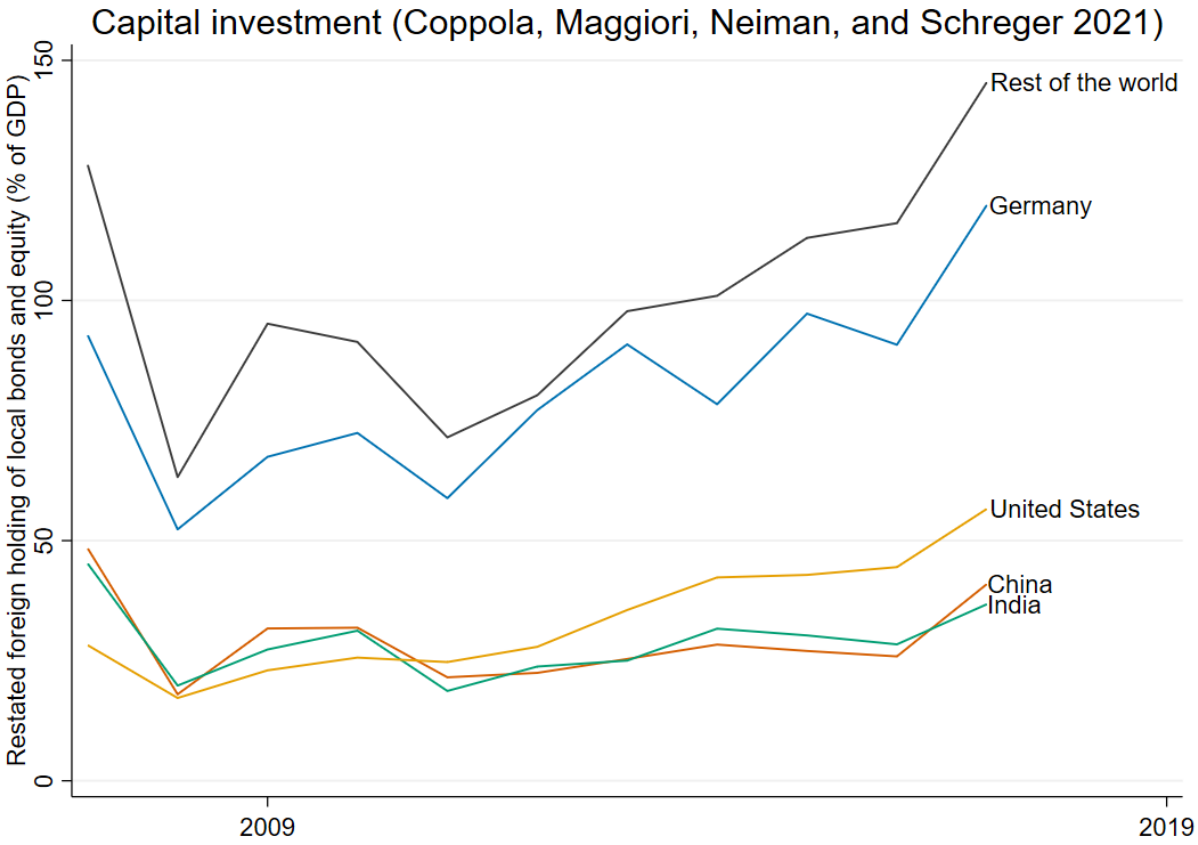

Table A1: Top Five US Import Sources for Strategic Goods in 2022

Partner	*Percent of Imports*	*Value of Imports (US$ millions)*	*Partner*	*Percent of Imports*	*Value of Imports (US$ millions)*	*Partner*	*Percent of Imports*	*Value of Imports (US$ millions)*
Infant formula (630790)			Penicillin, put up in measured doses (300410)			Electric car batteries (850760)		
IRL	45.2	101.2	IND	25.3	89.2	CHN	65.2	6,537.7
MEX	30.3	67.9	SWE	18.2	64.1	ROK	9.3	931.9
AUS	7.2	16.2	ITA	17.2	60.8	JPN	7.6	762.5
GBR	6.4	14.3	AUT	12.6	44.4	HUN	3.3	328.4
NZL	4.3	9.6	CHN	5.4	19.2	POL	3.3	326.1
Crude oil (270900)			Face masks (HS 190110)			Semiconductor chips (854231)		
CAN	58.1	92,565.7	CHN	72.6	3,541.6	MYS	46.3	8,682.2
MEX	10.5	16,754.3	MEX	9.5	465.1	TWN	10.3	1,930.6
SAU	7.9	12,614.3	VNM	3.8	186.1	VNM	9.4	1,772.3
COL	4.0	6,443.9	IND	2.9	140.5	IRL	7.8	1,464.8
IRQ	3.7	5,912.8	DOM	1.3	61.1	CHN	6.5	1,212.2