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The New Logic of Globalization: Uncertainty, Volatility, and the Digital Economy

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Prepared For Brookings/KDI Project
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INTRODUCTION

The global economy in the decades ahead will be volatile and uncertain.[1] A first driver of the volatility and uncertainty is the reconfiguration of the global political economy reflecting what we term the new zero-sum logic of globalization and its implications for cross-border flows of goods and services. An important element of this reconfiguration is the growing economic and geopolitical power of China. The post-World War II period of globalization reflected the neoliberal vision of the United States, but American economic and political power is declining, at least in relative terms. The rise of China and other new economic powers means the emergence of a multipolar or perhaps a bi-polar framework for globalization that differs from the neoliberal version in significant ways. A second driver is ongoing technological changes in both the digitalization of goods and services and the automation of work via artificial intelligence (AI). Over the past thirty years, as the digital economy has matured, it has become intertwined with and has supported globalization. AI will continue to transform work and society; but it remains to be seen whether it acts as an integrator of the global economy or equally likely, fragments it along national or regional lines with the restructuring of global politics. A third driver is ongoing climate change and its effects on global patterns of production, employment, and investment by individual nations and by the global community. In this chapter, we examine how the patterns and the rules for global trade and investment are changing as a result of these three drivers of change. Based on our reading of the evidence and current trends, we posit four conclusions for the advanced industrial democracies.

[1] Tyson and Zysman (2022a).

First, the economic world remains highly interconnected. It's not de-globalizing: it is restructuring. All nations have a significant dependence on international trade and investment: self-sufficiency is not an option for any nation regardless of size. Cross-border flows proved remarkably resilient during the COVID-19 pandemic. Even before the pandemic, there had been a slowdown in global integration after more than two decades when global trade grew twice as fast as global GDP. The period of "slowbalization" after the 2008 global recession was marked by a plateauing of global goods flows. But plateau did not mean reversal: global trade flows have continued to hover around 60% of global GDP. No single region or country is anywhere close to economic self-sufficiency.[2]

Interconnections, however, are being reconfigured along more fragmented and regional lines as a zero-sum approach to globalization displaces a positive-sum approach in the US and many other advanced industrial countries. The US, long the champion of neoliberal globalization, has embraced onshoring, near-shoring and friend-shoring to bolster national security, to mitigate vulnerabilities that can lead to supply chain disruptions, and to promote national production and employment. The zero-sum logic is likely to result in higher costs and slower global growth. According to the International Monetary Fund (IMF) the fragmentation of the global economy could reduce global GDP by a sobering 7%.[3] According to the World Trade Organization (WTO), the separation of the global economy into two blocs could lead to a 5% reduction in GDP.[4]

Second, globalization is increasingly "services-driven," enabled by digital technologies. Global trade and financial flows are being driven by services and, within services, by flows of data, knowledge-intensive services, intangibles and talent. Cross-border data flows are growing by 50% annually as they enable remote working and the production of digital services around the world. Cross-border data flows are surpassing flows of physical trade. Half of all trade in global services depends on digital technologies and global exports of digital services account for more than half of total exports of services. Digital technologies allow actors, from small

[2] McKinsey Global Institute (2022a).
[3] IMF (2023).
[4] World Trade Organization (2022).

businesses to multinational companies, to participate in cross-border transactions. Having a website can give small firms an immediate global presence and e-commerce platforms provide supporting financial payments and support with logistics.

The neoliberal era of globalization was driven by manufacturing deconstruction and labor arbitrage as low-cost labor was opened to global companies and was facilitated by the integration of Russia and China into the global economy. Now, the globalization of manufacturing production and trade based on labor-market arbitrage and cross-border supply chains is giving way to the globalization of services production and trade based on new sources of labor-market arbitrage in digitally-enabled services. Patterns of interconnections are also being changed by AI and its effects on the production and delivery of both goods and services.

Third, globalization is being reshaped by the resurgence of industrial policies in the US and around the world, particularly, as nations search for "strategic autonomy" and competitive advantage in AI and other technologies deemed crucial to national security, to the energy transition, to combating climate change and to high-wage employment opportunities. All four of these goals drive the return of industrial policy with multiple objectives, which at times can pull in opposing directions. Industrial policies, unless developed cooperatively are by definition "zero-sum" in the sense that they promote domestic, as opposed to and at the expense of global, production and employment in favored sectors. But industrial policies can also have positive-sum effects across nations, for example by promoting scientific and technological advances through investments in research and development. The "subsidy war" between the US and Europe in green technologies, for example, may speed and scale investment and production with a positive-sum effect on global collective efforts to address the shared "common goods" challenges of climate change. But no nation has a monopoly on the technological advances necessary to address climate change, and there is a danger that dueling industrial policies and differing standards will impede rather than accelerate the development and adoption of the most effective technologies.

Fourth, the future of US-China economic and national security relations will be a defining force for the future course of globalization. China's entry in the WTO and, as a result, its growing share of global trade and GDP were key outcomes of neoliberal globalization as

China emerged as the center of complex global supply chains throughout manufacturing. The "designed in the US, produced in China" description of the Apple iPhone, which transformed lives around the world, applied to a growing array of sophisticated manufactured goods, including many dual-use goods with both civilian and security applications. Despite higher tariffs, pandemic supply-chain disruptions, and heightened geopolitical tensions, US trade with China set a new record in 2022. Now primarily for national security reasons but also for concerns about the eroding US lead in key technologies relative to China, the US is committed to "de-risking and diversifying" its economic relations with China, while pursuing its own ambitious "industrial and innovation strategy."[5]

This new emerging Washington consensus view is evident in US policies in the semiconductor industry, which include both direct incentives to build semiconductor production in the US by and the unilateral imposition of US controls with extra-territorial reach on exports of both advanced semiconductors and semiconductor equipment to China together with restrictions on outbound US investments to China in this and related advanced technologies. The goal of these controls is to keep China several years behind the technological frontier in this militarily critical dual-use digital technology while the US strengthens its lead. Although the US denies a zero-sum approach in its economic relations with China, that zero-sum logic is a foundation of US policies to restrict US exports and outbound investment in technologies deemed to have significant national security implications.

1. Where We Are and How We Got Here

The old logic of globalization was perhaps best encapsulated by John Williamson's "Washington Consensus" in the early 1990s.[6] This "consensus," championed by the US, emphasized private property rights, the elimination of trade and cross-border investment barriers, competitive exchange rates, market liberalization, and other pro-market reforms In contrast, the new logic of globalization is driven by the reassertion of national interests. Nations

[5] Sullivan (2023).

[6] Williamson (1990).

around the world, including the US, are now acting assertively to shape their economies to position themselves to generate advantage in the reconfigured global economy. Decisions that were formerly considered to be the primary, if not exclusive, domain of profit-driven corporate managers are increasingly the subject of intense political scrutiny, policy intervention, and conflict as states engage in a competitive struggle to generate income for their populations, to combat climate change, and to secure "strategic autonomy" in critical digital technologies like semiconductors and AI.

The net effect is a shift from a "positive-sum" to a "zero-sum" logic in national decision making and a departure from the previous emphasis on the benefits of free trade and global cooperation. Several examples illustrate this shift:

- The Increasing regulation of the private sector on the basis of national security concerns;
- The explicit focus of policies on creating good jobs at home by attracting production, investment, and employment from other nations;
- The embrace of Industrial policies–government subsidies and protections to promote domestic capacity in favored sectors.
- Possibilities for global cooperation on issues like climate are undercut by national rivalry for dominance in key sectors and technologies.

This new logic of globalization emphasizes advancing national interests rather than promoting global cooperation and mutual benefit. The jobs lost in the previous era or, more precisely, the effort to offset these losses and generate future employment, are a significant driver of industrial policy today.

This new nationalist logic of globalization is driving volatility and uncertainty in the global economy. The certainties that could once be relied upon in an earlier phase of globalization are being upended by this new logic. Countries are now attempting to secure their positions in a rapidly changing and highly competitive global economy. The rapid pace of technological change has also brought significant challenges for individual nations in areas like privacy, cybersecurity, and the impact of automation on employment. Although the evolving new zero-sum logic will not bring globalization to an end, it will significantly impact its shape and structure, with deleterious effects on efficiency and global growth.

We emphasize, however, that the economic transformations of the last several decades cannot simply be undone. The global system is not disintegrating but transforming.[7] Accordingly, "de-globalization" is the wrong term for describing what is unfolding. What is emerging is increasing *fragmentation and regionalization, not diminished international connections*.

The new logic of globalization is especially evident in the digital economy, where the tensions between globalization and nationalism are quite visible. Digital technology and the digital economy are ubiquitous: chips are embedded, it has become conventional to note, in everything from toasters and cars to mobile phones and computers. Our economic and social lives are mediated by interconnected webs of data, and digital fabrics underpin everything from product repairs to restaurant deliveries. Products are increasingly differentiated by the information and communications technology (ICT) services they offer in their use and maintenance. [8] Digitalization has also led to the emergence of the large tech platforms that challenge traditional industries and create new value chains.

Today the rules for data, AI, and digital platforms are taking significantly different forms throughout the world, making it all the more likely, as we argue further on, that even without geopolitical rivalries intensifying, the internet will splinter and become a "splinternet."[9] Digital tools are also reshaping warfare via cyberattacks on critical infrastructure, misinformation campaigns in elections, new forms of battlefield surveillance, and the deployment of autonomous drones. Finally, national strategies to adapt to and to create advantage in the transition to a hopefully green but certainly digital future will create tensions amongst erstwhile allies.[10] The digital economy—from software to semiconductors—will be a key battleground where governments seek to balance the benefits of openness against national interests.

[7] Lund and Tyson (2018).

[8] Zysman, Feldman, Murray, Kushida, and Nielson (2013).

[9] Garcia Calvo, Kenney, and Zysman (2023).

[10] Tyson and Zysman (2023) and Meckling (2021).

The trajectory of the digital economy and the neoliberal global system are both intertwined and mutually supporting and overlapping in time. The commercial internet dates either from 1993 when Tim Berners-Lee released the code that would become the World Wide Web or 1995 when the National Science Foundation (NSF) retired the NSF Network internet backbone enabling the rise of private Internet Service Providers.[11] The maturation involved a shift from a focus on the power of particular devices, the speed of processors, and memory in personal computers, to the ways Internet bandwidth permitted interconnected computer systems to be built at massive scale. Microprocessors were suddenly everywhere and in everything. The spread of cloud computing, mobile networks, and the rise of the platform economy changed business practices, market structures, and social arrangements.

The phone system itself became part of the digital universe with 5G networks delivering an increasing share of existing digital services and enabling entirely new ones. Computing power arguably contributed to the 2008 financial crisis by enabling derivatives, securitized assets, and high speed trading.[12] More formally stated, the maturation of the digital economy involved the interlinked and compounding increase in network capacity, storage capacity, and semiconductor power. Cloud-based systems replaced standalone systems to capture economies of scale. Global cloud storage capacity increased 25-fold and global data center internet traffic increased 11-fold between 2010 and 2020.[13] Digital transformation was not limited to the advanced economies. Mobile phone networks and simple payment systems such as M-Pesa in Africa and the Unified Payments Interface (UPI) in India fundamentally transformed market dynamics in those countries.[14] Estonia became a recognized leader in the digital provision of government services to its population.

At more or less the same time the commercial internet was launched, the fall of the Berlin Wall in 1989 and the collapse of the Soviet Union in 1991/92 signaled a new structure of the global economy. The heyday of neo-liberal globalization was marked by the entry of China

[11] Harris and Gerich (1996).

[12] Breznitz and Zysman (2013).

[13] Masanet et al (2020).

[14] https://www.vodafone.com/about-vodafone/what-we-do/consumer-products-and-services/m-pesa

into the WTO at the end of 2001. A political consensus in favor of neoliberal globalization in the advanced countries enabled this transformation: policymakers seemed to agree that increasing economic integration would provide benefits for all. The "global economy" became a vision and a goal for some. In practice, however, globalization has not been monolithic. It has had quite different consequences for different groups, with real winners, including substantial parts of the emerging economies, and real losers, notably many in the former industrial belts of the advanced countries. These events were not the end of history, but rather a new geopolitical chapter.

The diverse experiences of neo-liberal globalization generated what Roberts and Lamp usefully identify as the "six faces" of globalization.[15] They argue political attitudes towards globalization crucially depend on one's perspective. The dominant view of globalization, which they term the "establishment narrative," focuses on the benefits of globalization for everyone. The evidence supporting this view includes lower prices, low inflation and strong growth around the world, the millions lifted from poverty and the emergence of strong middle classes in the developing world, and the emergence of a global consensus around boosting trade and cross-border investment. This view, however, has become "besieged from all sides."[16] The other "faces" of globalization focus on the relative winners and losers from globalization and the distributive flows.[17] Right-wing populists emphasize how blue-collar workers in developed countries have been disproportionately harmed relative to workers elsewhere. Left-wing populists see the gains of globalization as having been disproportionately captured by a small economic elite.

The two stories—geopolitical economy and technology—are, clearly, intimately interconnected. Cross-national supply networks emerged as firms headquartered in the advanced countries sought lower costs for parts of their operations, both in production (e.g. manufacturing/assembly) and services (e.g., call centers). ICT permitted the deconstruction and reconfiguration of the production and distribution of both goods and services. New trade and

[15] Roberts and Lamp (2021).

[16] Roberts and Lamp (2021), 7.

[17] For a summary, see Roberts and Lamp (2021), 166-168.

finance regulations, framed in general theory in practice but benefiting specific groups more than others, were sought to facilitate these new arrangements, and the possibilities of global gains became the ideological framing for the particular demands of these groups. Nevertheless, the winners were not just in the advanced countries: millions in countries now integrated with global production systems and supply networks were pulled out of poverty and indeed into middle incomes. But as production moved out of the advanced countries, it meant job losses, wage stagnation, and devastated communities in the industrial heartlands of the US and other advanced industrial nations.

To set the stage for the future, let us consider some of the economic consequences of the maturing and increasingly ubiquitous digital infrastructure and the digitalization of the global economy. We cannot, of course, do justice to the full skein of developments, only spotlight some of the most important ones reconfiguring economies and societies.

The Domestic Side of the Story

Routine-biased technological change: Digitization facilitated and enabled routine-biased technological change in production that has been a major driver of the decline in the share of routine middle-income, middle-skill jobs as a share of overall employment, the stagnation of wages for middle-skill workers, and increasing income inequality in the advanced economies. These effects were most dramatic in the manufacturing sector where the declines in employment were far larger than the declines in production, attesting to the substantial labor productivity gains from routine and skill-biased technological change. Digitally driven gains in information, communication, and logistics facilitated the outsourcing of jobs—the deconstruction and relocation of manufacturing employment from the advanced industrial economies to China and other low-cost labor locations. Despite popular perceptions, the reality is that technological changes have been more important than trade based on labor arbitrage and China's policies in the loss of manufacturing employment in the advanced industrial countries.[18]

[18] Tyson and Zysman (2022b).

Rise of the platform economy: The rise of the platform economy is arguably the most visible transformation driving cross-border data flows and digital services. Ten years ago, the arrival and significance of platforms enabled by digitalization and driven by powerful network effects and first-mover advantages were already recognized. By the early 2020s, the maturation and pervasiveness of platforms were evident across the economy.[19] Platforms have reshaped retail commerce (Amazon), libraries (Google search), travel (Expedia but more powerfully Google Maps), entertainment (Spotify to Netflix and all the other streaming services), and more.

> A digital platform economy is emerging. Companies such as Amazon, Etsy, Facebook, Google, Salesforce, and Uber are creating online structures that enable a wide range of human activities. This opens the way for radical changes in how we work, socialize, create value in the economy, and compete for the resulting profits. Their effects are distinct and identifiable, though certainly not the only part of the rapidly reorganizing global economy.[20]

Platforms are no longer a surprise, but rather are a maturing if not mature technology penetrating a vast array of sectors and affecting the way work itself is organized.[21]

Cloud computing as the foundation: Digital platforms rest on a revolution in computing, loosely referred to as cloud computing.

> [There is a] Cloud Computing revolution in computing architecture, transforming not only the "where" (location) of computing, but also the "how" (the manner in which software is produced and the tools available for the automation of business processes).[22]

Fundamentally, the rise of cloud computing marks the enormous abundance of computing resources and the move past scarcity. The basics of contemporary cloud computing, now often referred to as hyperscaling, were long understood in theory, emerged in practice

[19] Kenney, Bearson, and Zysman (2021).
[20] Kenney and Zysman (2016).
[21] Garcia Calvo, Kenney, and Zysman (2022).
[22] Kushida, Murray, and Zysman (2015).

from the computing needs of companies like Google and Facebook. They required large-scale operations and could achieve them only with the new abundance of resources. To define terms:

> Cloud computing delivers computing services - data storage, computation and networking - to users at the time, to the location and in the quantity they wish to consume, with costs based only on the amount of resource used.[23]

Cloud offerings from the likes of Amazon and Google permit firms to spin up offerings quickly and at very low cost. There is no need for a startup or a unit in an established company to build out an entire – and extremely expensive –IT infrastructure. Rather, they simply "rent" the computing power on an ongoing basis or long enough to assess the offering.

Services with everything: The emergence of cloud computing has transformed services. Capital costs for computing and data storage infrastructure have plummeted and have been transformed into an operating cost, enabling an array of service functions that can be cheaply produced and easily rented.[24] The avalanche of firms providing these services is a direct consequence of the dramatic decline in computing costs. Startups no longer need to purchase expensive equipment in order to provide a specific business function.[25]

> With the Algorithmic Revolution, tasks underlying services can be transformed into formalizable, codifiable, computable processes with clearly defined rules for their execution. The inexorable rise in computational power means that an ever greater range of activities are amenable to expression as computable algorithms, a growing array of activities are reorganized and automated.[26]

A wide array of services—accounting and book-keeping, x-ray diagnostics, order taking in a restaurant, to name a few—are now facilitated and delivered with AI and digital tools. Value creation and work are being reconfigured.[27] At the same time, physical products become

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[23] Kushida, Murray, and Zysman (2013).

[24] Our World In Data (n.d.).

[25] A few years ago, an entrepreneur whom we know sold her company to Microsoft. She remarked that she needed to raise $70 million for the necessary infrastructure, whereas today, she could have started the whole project on her credit card by purchasing the required computing power from Amazon's cloud.

[26] Zysman, Feldman, Murray, Kushida, and Nielson (2013).

[27] Frey and Osborne (2016).

portals to service offerings. The "television" is now really just a tablet hanging on the wall, functionally more limited than the computer, which also offers a portal to an ocean of services. Many physical products from tires to jet engines are sold in service packages made possible by sensors and digital analytics.

The combination of routine-biased technological change, platforms, cloud computing, and ICT enabled services, services with everything, profoundly affects work, its location, the economic structures within nations, and the global interconnections among them. This transformative combination is also reconfiguring politics and societies within nations and the geopolitical relations among them.[28]

The International Counterpart

Neoliberal globalization connected domestic economies with the global economy. The result was widespread, albeit unevenly shared, economic growth and prosperity. It produced a period of converging growth rates around the world that brought millions of people out of poverty and into the global middle class in the emerging market economies while reducing the size of the middle class in the advanced industrial economies. While the expansion of trade in manufactured goods was perhaps its most visible aspect, the defining characteristics of this era were the emergence of cross-border supply chains and production networks that enabled the deconstruction, decomposition, de-verticalization, and outsourcing by large firms to low-cost sites and to growing markets around the world. A dramatic instance of that decomposition was when IBM, eager to match Apple's personal computer, outsourced processors to Intel and operating systems to Microsoft. The label "Wintelism"—Windows from Microsoft and processors from Intel—captured the notion that crucial innovation could come from outside.[29] A more general expression of that argument is "open innovation," that firms should be open to and incorporate innovation outside their own company boundaries.[30] What emerged was not an atomic system of competing nodes, but rather regions and ecosystems specializing in

[28] Fourcade (2021).
[29] Borrus and Zysman (1998).
[30] Chesbrough (2006).

different phases of the overall production system. Examples range from service centers and help desks to semiconductor foundries.[31] Echoing this earlier arrangement, Apple focuses on design and software while outsourcing semiconductor fabrication to the Taiwan Semiconductor Manufacturing Company (TSMC) and assembly to Foxconn. Hence the phrase on every Apple product: "Designed by Apple in California. Made in China."

Moreover, globalization enabled the Pearl River Delta region to become the global leader in electronics assembly, and Taiwan to become the global leader in advanced semiconductor fabrication, with Samsung a close second or third. The entire global value chain in semiconductors is enabled by advanced lithography machines made by the Dutch firm ASML. The decomposition and globalization of production have created geographic nodes of supply chains rooted in expertise and know-how rather than simple labor cost advantages. The overall effect has been an exponential decrease in the cost of storage, computing power, and bandwidth, enabling large platforms to capture massive economies of scale without historical precedent. Thus, over the last decade, global flows have been driven by services and intellectual property rather than resources and manufactured goods. Growth in global data flows has been particularly sharp, nearly doubling since 2020.[32]

The benefits of the global economy, however, have not been distributed equally. The famous "elephant chart" captures the fact that while globalization enabled high income growth among middle-income countries and the very wealthy, the 80th-95th percentile of the global income distribution experienced flat or negative income growth during the same period.[33] Income inequality within many countries increased while income inequality between countries declined. More recent work complicates the exact shape of the curve, but the general conclusion that the benefits of globalization were not widely shared remains.[34] It is essential to note, however, that skill- and routine-biased technological change, enabled by the digitalization

[31] Breznitz (2021) argues that the global economy sees nodes of specialization in four phases, that is regions specialize in one particular phase in the innovation process: Stage 1. Novelty; Stage 2.Design, prototype development, and production engineering**.** Stage 3: second generation product and component innovation. Stage 4: Production and assembly.

[32] McKinsey Global Institute (2022b).

[33] Lakner and Milanovic (2013).

[34] Kharas and Seidel (2018).

of production, rather than globalization, was the major source of the loss of middle-skill, middle-income jobs and the resulting decline in the share of the middle class in the advanced industrial economies. Neoliberal globalization bears a disproportionate share of the blame for the effects of technological change on income and wealth inequality in these countries. Moreover, despite the fact that these countries had similar experiences with globalization and technology, they exhibit differences in wage and income inequality, indicating the importance of policies to mitigate these effects.[35]

2. What lies ahead for the globalization of the digital economy

The neoliberal political economy dominated by the US is shifting toward a yet to be defined global architecture and governance regime. Climate change, the rapid advancement of digital technologies, and the changing geopolitical landscape are certain. However, the specific outcomes shaped by these structural forces are highly uncertain. Therefore, it is difficult to make accurate projections or predictions about the direction and speed of developments in the digital economy and their implications for the global economy given the significant uncertainties that are embedded in these certainties. Despite this, identifying emerging issues can help to shed light on the potential paths and directions that the increasingly digital global economy may take.

We identify three key issues:

- The US and other nations are embracing more activist industrial policies to gain competitive advantage in strategic technologies like semiconductors and green. This approach risks sparking subsidy wars and tensions with allies. Will competing national industrial policies in a struggle for digital technology leadership and the "de-risking and diversifying" of US economic relations with China force difficult adaptation?

[35] Autor, Basu, Qureshi, and Rodrik (2022).

- The internet could splinter as countries impose diverging regulations on data, platforms, and digital infrastructure. However, the extent of the fragmentation is unclear. Will the splintering of the internet accelerate with geopolitical conflict?
- AI, especially new generative models, will likely transform economies and societies. But the precise impacts on jobs, productivity, and international trade are debated. How will AI's impact on productivity and work influence global patterns of production, employment and investment? How will nations differ in their regulation of AI?[36]

The US was once the champion of neoliberal globalization, with its multinational corporations (MNCs) playing a major role in global trade and investment. Now, the landscape has shifted: global flows are increasingly shaped by nations with policies to bolster their companies and economies. Both security and commercial interests play key roles in this shift. The belief that integrating China and Russia into the US-led global order would stabilize global geopolitics has been shattered by Russia's invasion of Ukraine and by rising geopolitical tensions between the US and China. The question of whether there will be a destructive de-coupling, to use Michael Spence's phrase, or the diversification and de-risking of economic relations with China, is now a significant concern for both the US and Europe.[37]

Despite these tensions, most nations, especially in Asia, are not interested in decoupling from China. South-South trade is growing and now accounts for 25% of global trade. Asia has doubled its share of world trade, with more than half remaining within Asia itself. ASEAN countries have negotiated several trade agreements and supported China in creating the Regional Comprehensive Economic Partnership (RCEP), which includes 15 countries representing about one-third of global GDP and is currently the largest free trade agreement in the world.

[36] Europe is already moving forward with regulation, building on its GDR regulations on privacy, and China has announced a comprehensive framework to regulate generative AI. China has demonstrated that it can control the internet and it is likely to be able to do the same with AI. Different national approaches to AI regulation will affect its deployment and may lead to different regional trade and investment outcomes in this key transformative technology. Luo, Dan, Liu, and Shepherd (2023).

[37] Acemoglu and Johnson (2023).

Regional and bilateral trade agreements may continue to eclipse multilateral rules. Supply chains may also become shorter and more regional to boost resilience and competition. Supply chains in services, and trade and investment flows in intangibles are likely to expand, resulting in new global hubs and requiring new rules. Recognizing the importance of digital trade in services, a group of 90 members of the WTO, including members of the European Union(EU), the US, and China, is negotiating to develop new multilateral rules for digital trade. Despite the increased challenges, multilateral cooperation on trade rules is still possible, as evidenced by recent WTO agreements to curb subsidies to fisheries, to remove barriers to food aid, and to enhance access to the intellectual property behind COVID vaccines.[38]

Global trade and finance aggregates as such do not appear to be in retreat, though the pace of the overall expansion has certainly slowed.[39] However, the pattern of *who* trades *what* with *whom* will be shaped by the character and intensity of geopolitical conflicts.

- War in the Ukraine and the ensuing sanctions have certainly been disruptive, especially shifting patterns of grain and oil trade.
- Confrontation with China and the ensuing sanctions suggests the possibility of a "destructive decoupling." Setting aside the chip wars, the battle to control the pace and direction of a host of "strategic technologies," including AI and climate technologies, will likely have significant effects on production networks and supply chains. Only ponder the adjustments that Foxconn will need to make about what it produces and where.
- The rise of new powers, with attention to India, will likely also change the patterns of trade, particularly trade and investment in services.
- Climate mitigation strategies as well as migration flows driven by climate, not just war, will have consequences.
- Challenges to big tech domination running from defensive regulation in Europe, tougher anti-trust policies in the US, rupture in China, and open source development of digital public utilities in India will shape data flows and commerce more generally.

[38] Georgieva and Okonjo-Iweala (2023).

[39] Nye (2023) writes: "Globalization is simply the growth of interdependence at intercontinental, rather than national or regional, distances."

There are diverse possibilities that range from destructive decoupling to a reconfiguration of economic linkages along lines of geopolitical blocs rather than geographic regions. The most dramatic outcome would be a confrontation aligning China, Russia, and their allies with the rest of the world. The emerging architecture might involve a different regional concentration as, for example, reflected in Japan's push for closer engagement with India. There will be tensions as competing national objectives foster different regional and global arrangements. National security confrontation with China will strain the ability to arrange global agreements to address climate. The final global architecture will shape who is a "friend" and affect patterns of trade and finance.

The Rise of Industrial Policy and Its Implications for the Global Economy

The US remains the largest economy in the world by GDP, the largest importer (accounting for about 13% of global imports in 2022), and the second largest exporter after China (accounting for close to 10% of global exports in 2022). Given its shares of global trade and its leadership in shaping the WTO and the prevailing multilateral rules of trade, the resurgence of industrial policy in the United States is a major driver of the new logic of globalization. Although the overall size of industrial policy in the US is relatively small—for example, subsidies to favored industries are currently only around 0.5% of GDP—a new era in American economic policy is emerging. There are multiple, interrelated goals of US industrial policy: strengthening national security, maintaining leadership in key technologies, including those related to climate change, slowing China's advancement in these technologies, and boosting domestic investment, production and employment. In both trade policy and industrial policy the Biden Administration emphasizes the need for an inclusive "bottom-up, middle-out" approach, with a special focus on labor, on disadvantaged groups and on disadvantaged communities. This approach is reflected in policies in both the CHIPS Act and the Inflation Reduction Act (IRA) enacted in 2022 and in the actions and priorities of the United States Trade Representative (USTR).[40]

[40] Office of the United States Trade Representative (2023).

Neoliberal globalization rested on the assumption that investment decisions should be made by managers and shareholders, not by governments. This market logic reflects the belief that markets always allocate capital productively and efficiently, regardless of what other nations do to create competitive advantage and the existence of market imperfections, market power, regardless of the effects of markets on income inequality, and externalities like climate change that markets overlook. Driven by this logic, national economic interests in the US and other advanced industrial economies receded into the background as global rules and incentives along with routine and skill-biased technological change and digitalization tilted production, employment, and investment away from the industrial heartlands of the North Atlantic world towards the South and the East.

It is important to reiterate that neoliberal globalization generated significant returns for the US economy and for most of the world. This period was not a race to the bottom but a race to the top—most nations became richer and income inequality between nations declined. Neoliberal globalization was driven by a positive-sum logic with positive-sum results.[41] But globalization, particularly the rapid emergence of China as a manufacturing powerhouse, offshoring through complex supply chains and the development of labor-saving technologies also imposed significant costs on the firms, workers and communities that lost economic activity to lower-cost locations around the world. As noted earlier, the globalization of manufacturing production to low-cost locations based on labor-arbitrage contributed to rising income inequality and the stagnation of middle class wages in the US and other advanced industrial economies. And these in turn fed rising political discontent, reflected in the UK's decision to break from the EU and the election of President Trump in the US in 2016.

Recent speeches by the US Treasury Janet Yellen and National Security Adviser Jake Sullivan and Secretary of t signal the shift in US thinking about globalization and in favor of industrial policy—what US officials are calling "industrial and innovation strategies."[42] It is important to acknowledge that industrial policy is not new to the US. The US competitive position in major industries, including aircraft and space vehicles, the internet, social media,

[41] Irwin (2023).

[42] Yellen (2023).

fracking, pharmaceuticals, and medical equipment has been supported–some might say created—by numerous policies including R&D policies, tax policies, and government procurement policies. Now, however, the US has become more explicit about the need for industrial policy for three reasons:

* to strengthen the supply side foundations and productive capacity of the US economy, especially in technologies and products like semiconductors critical to national security;

* to strengthen the US technological lead and to secure global supply chains for such products, including through friend-shoring and near-shoring investments;

*and to encourage US employment, production and investment in green products and technologies—in short to create US competitive advantage in new products and services to combat climate change.

In her recent remarks, Secretary Yellen linked the new industrial policy focus to what she calls "modern supply-side economics"—investing in infrastructure and physical capital, in R&D and knowledge capital, and in human capital to counter the harm that US underinvestment and what she termed China's unfair economic trading practices have imposed on US workers and firms around the world. At the same time, she emphasized national security concerns with China as a major factor in the development of a robust industrial policy in semiconductors including subsidies, tax credits, and controls over exports and cross-border inflows and outflows of investment. In his comments, Sullivan emphasized the need for industrial policy on national security grounds to protect "foundational technologies" with a "small yard and a high fence" and to usher in a new wave of the digital revolution to ensure that next generation technologies work for not against democracy and security.[43] Sullivan's comments presage additional US industrial policy measures on digital technologies beyond semiconductors. Although Sullivan was explicit that the US was not imposing a "technology blockade" on China, the US has also been clear that the national security objective is to

[43] Sullivan (2023).

maintain a technological edge over China in semiconductors and in other high-value and dual-use technologies.

Will the US industrial policy in semiconductors be successful? There are many formidable obstacles to onshoring a meaningful percentage of advanced semiconductor manufacturing. Running a semiconductor fabrication plant requires more than just the factory itself. It also requires an entire ecosystem of advanced inputs and high-skill engineering talent. TSMC is headquartered in the Hsinchu Science Park in Taiwan that is also home to four hundred technology companies, their suppliers, and two leading technical universities. The park was established in 1980 on the model of Silicon Valley by the Taiwanese government. Building such an ecosystem from scratch in the outskirts of Phoenix is a tall order.[44] TSMC founder Morris Chang referred to the CHIPS Act as an "expensive exercise in futility."[45] On an earnings call, TSMC's Chief Financial Officer estimated that the cost of building a US plant might be upwards of four times as expensive as building a similar plant in Taiwan.

In the absence of cooperation with allies in Europe and Asia, US industrial policy in semiconductors is triggering similar policies in other countries. Cooperation among allies is giving way to competition and commercial friction among them to gain competitive advantage in semiconductors and in other strategic technologies, including green technologies. Germany has already announced plans to build semiconductor fabrication facilities and is inviting foreign companies to invest in such facilities. Samsung has announced that it will invest $228 billion to create a new semiconductor cluster in Korea, with significant support from the Korean government. Samsung is already the largest producer of semiconductors in the world and is in a race to close the gap with TSMC in advanced semiconductors within 5 years.

Given the shared strategic importance of the semiconductor industry and its global location in many allied countries, the US should have worked to coordinate industrial policies with its allies. Instead, it has fostered competition and potential commercial conflicts with them. An effective industrial policy for a global strategic industry requires coordination, not

[44] Locating the new TSMC plant in Arizona and the new Intel plant in Ohio suggests the centrality of domestic political considerations.

[45] Liu and Mozur (2023).

zero-sum policies to attract employment and production from one nation to another. Cooperation and coordination with allies on both semiconductors and green technologies are essential to prevent tit-for-tat measures that could potentially slow both digitalization and the energy transition.[46]

It is also possible that competition among countries to gain competitive advantage and employment in the semiconductor industry will result in overproduction, with poor market returns. It is certain that this competition will not create many jobs. The semiconductors industry is capital and research intensive; it relies on expensive educated engineering talent, not low-cost talent. It is very likely that moving a significant share of the semiconductor supply chain back to the US will significantly increase the production costs and prices of semiconductors that are a key input to all digital products and services. This in turn could impede the pace of digitalization in the global economy. Some bottom-up and middle-out provisions of the CHIPS Act, such as labor requirements and benefits, including childcare benefits, and requirements that investments include small minority businesses and disadvantaged communities, are likely to further increase chip production costs. The US Semiconductor Industry Association estimates the CHIPS Act, if successful, will create only about 42,000 permanent jobs in the semiconductor industry.[47]

The US embrace of industrial policy is also apparent in the IRA that includes numerous policies to create competitive advantage for US-based production, employment and private investment in green goods and services to combat climate change. Many provisions of the IRA are zero-sum in the sense that they reward economic activity in the US, whether by domestic or foreign firms, relative to activity in the rest of the world. In response to strong allied opposition, the US has already eased some of the most glaring IRA zero-sum policies, such as its buy American provisions. But commercial frictions are likely to continue as the EU and the US compete to create their own competitive companies and clusters in green products and services . Such frictions are already apparent in the battery industry and in the critical materials needed to produce them.

[46] Kammer (2023).

[47] Semiconductor Industry Association (2021).

The IRA also contains positive-sum measures, however, like generous R&D subsidies, to encourage the development of new green technologies, products and services and to speed and scale their deployment. Indeed, the IRA has triggered a "subsidy war" between the US and Europe that could have beneficial effects on hastening the energy transition to achieve net-zero goals. Policymakers in the US have been clear that a key objective for them is to maintain a technological edge over China in high-value technology sectors. Billion-dollar subsidies to profitable multinational firms may be a small price to pay for continued technological dominance. Even before the CHIPS Act, the top five corporate spenders on R&D were all American (Amazon, Alphabet, Meta, Apple, and Microsoft). Whether or not the "Chip War" or the IRA subsidy war escalates further remains to be seen.[48] It is clear, however, that the return of industrial policy marks a significant inflection point for the global economy: the US is now openly embracing the strategic importance of technological leadership in place of its erstwhile free-market principles.[49] Moreover, the emphasis on high-value technology sectors risks neglecting other areas of the economy that also require investment while precipitating an arms race in other digital technologies deemed significant for national security, particularly AI.

Splinternet

The internet emerged as a crucial dimension of the global economy during the highpoint of neoliberal globalization in the 1990s. The US pursued a laissez-faire regulatory approach facilitating global access to information and services. By the late 1990s, the internet had become ubiquitous in developed nations and was rapidly expanding in the developing world. In the mid-2010s, the impact of internet platforms became evident. This led to increased attention from national and international regulators. The US, as the primary beneficiary of the previously unregulated online environment, has been hesitant to introduce substantial measures, instead focusing on stricter antitrust enforcement to curb the market power of the global platform giants, headquartered in the US. Outside the US, however, national responses

[48] Miller (2022).

[49] Posen (2023).

vary greatly depending on political objectives, domestic political alliances, and available policy tools. All are framed by the strength of the US platform companies.

The EU's response has been contradictory. Initially aligned with neoliberal ideology, the EU did little to impede the adoption of larger, better-funded US platforms. The EU's push for a digital single market in the 1990s and 2000s led to policies that facilitated cross-border data flows and harmonized national laws that ultimately favored US platform firms over domestic rivals. However, this shifted as the influence of the US platform firms, fears of cybercrime, and US surveillance programs became more apparent. The EU and national European governments established regulations to limit the power of platform giants. This began with privacy regulations, attempts to limit platform self-preferencing, and the introduction of the Digital Markets Act and the Digital Services Act. The lack of native platforms and technical expertise in managing truly large datasets leaves Europe with limited homegrown capacity to emerge as a substantial player in the platform economy or the AI field.

In contrast, China acted early to develop a domestic high-technology industry and internet economy separate from the rest of the world. In a speech on China's ascension to the WTO in 2000, President Clinton remarked: "Now there's no question China has been trying to crack down on the Internet. Good luck! That's sort of like trying to nail jello to the wall."[50] Within the borders of the "Great Firewall," the Chinese government supported the growth of its own domestic platform giants like Alibaba, Tencent, and Baidu. The Chinese government is currently rolling out a program to migrate government IT infrastructure from Microsoft Windows to homegrown KylinOS. Even though Chinese platform firms have so far failed to penetrate global markets, the massive domestic market provides the scale necessary for growth and innovation. And recently, some Chinese app companies like TikTok, Shein, and Temu have become some of the most popular apps globally.

Differences in national priorities and policies might potentially lead to a fragmentation of the global internet—splinternet. "Splintering" can be broadly defined as the establishment of varying regulations or technical protocols for the operation of online platforms across

[50] Clinton (2000).

jurisdictions. These regulations could pertain to the flow of data, news, and services through the internet within and across political boundaries, motivated by economic, political, or national security reasons. Additionally, nations could also differ in the rules mandating the pre-installation of an application or operating system.[51] The Chinese case reveals that there never was a truly "global" internet. The outcome of these struggles and divergent national goals and policies could impact not only the American platform giants who dominate the global internet but also the interoperability of the underlying systems. The question now is how far down the technological "stack" splintering will go.

AI: Is This Time, At Last, Different?

Regardless of how the "splinternet" story plays out, the crucial question at hand is how the current wave of innovation in AI will affect national economies and societies and the global connections among them. Our digital infrastructure has been built in successive stages, with each wave of innovation laying the foundation for the next. Radical increases in processing capabilities, data storage, and networking/communications have enabled the realization of radical ideas once constrained by technological limitations. Throughout each phase, both economies and societies have undergone adaptations, sparking serious debates about the benefits and drawbacks, and the winners and losers. Will the AI technological revolution mark a significant departure from the past? According to many observers, the answer is yes because AI is a general-purpose technology (GPT), much like electricity and the steam engine, with potentially wide ranging effects. Historically, GPTs have been responsible for driving economic growth and structural change. GPTs are defined by three characteristics: 1) they are pervasive, 2) they improve over time, and 3) they spawn complementary innovations.[52]

As a general-purpose technology, AI has broad applications that will transform economies, societies and even geopolitics. Moreover, AI technologies can be rolled out rapidly through the internet, the ubiquitous digital infrastructure already in place. Both Microsoft and Google are already incorporating AI tools in their search engines and office suites, and humans

[51] For example, visitors to the 2022 World Cup in Qatar were required to download the Hayya app.

[52] Bresnahan and Trajtenberg (1995).

are already interfacing with large language models (LLMs) using natural language rather than special codes or commands. And the widespread social consequences of AI are already apparent in digital platforms from Amazon through Twitter and TikTok that can target information to and surveil particular groups or even individuals.

A recent phase of AI, beginning around 2010, was based on machine learning using deep learning.[53] In a 2022 article, we characterized this first phase as "routine-biased technological change on steroids," noting that it adds intelligence to automation tools that substitute for humans in physical tasks and also for humans in routine and increasingly non-routine cognitive tasks. For this phase, we predicted that AI will displace humans in new tasks in both manufacturing and services that are shaped by AI-enabled digital platforms. Our conjecture was that AI will continue, even intensify, automation's adverse effects on labor, including the polarization of employment, stagnant wage growth for middle- and low-skill workers, growing inequality, and a lack of good jobs. Though there likely will be enough jobs to keep pace with the slow growth of the labor supply in the advanced economies, we were skeptical that AI and ongoing automation will support the creation of enough good jobs. We doubted that the anticipated productivity and growth benefits of AI will be widely shared, predicting instead that they will fuel more inequality.[54]

A new phase of "generative" AI is emerging with the development of LLMs based on "transformers." OpenAI released the first commercially viable LLM (GPT-3) in the middle of 2020. The subsequent releases of ChatGPT in late 2022 and GPT-4 less than six months later showcased the remarkable ability of these models to perform a wide range of useful tasks. Today, many companies are offering and advancing their own LLMs. Microsoft and Google, for instance, have both integrated their LLMs into their respective business productivity suites. Since the cost of assembling and processing the data for these new tools is extremely high (the cost of training GPT-4 is rumored to have exceeded $100 million), it is likely that giant tech firms will dominate the development game and enhance their market power. But while LLMs may be expensive to develop, they are cheap to operate and can be built on top of the existing

[53] Nitzberg (2023).

[54] Tyson and Zysman (2023a).

ICT infrastructure, reducing expenditure on complementary capital equipment. Consequently, LLMs may deploy much more rapidly compared to previous transformational technologies.

The applications of these tools are expected to have far-reaching effects, although the exact nature and extent of these consequences for politics, society, and the economy are uncertain and difficult to predict. In its most basic form, ChatGPT predicts the next word within a sequence, spanning a dozen to several thousand words. However, despite lacking a true understanding of queries or directives, it has showcased the capacity to generate responses that are remarkably relevant and applicable. Such proficiency has led the majority of users to believe that it will ultimately enhance their productivity. Importantly, the mechanisms at work are not fully understood, nor are the limits, nor the sources of often bizarre errors. Loosely put, what we do know is that LLMs can create highly credible "deep fakes" not just of text but of image and sound. With the reach of the Internet, the consequences of these fake, or alternate, realities, can be enormous.[55] Let us set aside for this discussion the likely extraordinary impact on social and political life, and focus on the economy.

What will be the consequences of this phase of AI for work and productivity? According to a recent paper, 80% of the workforce could have at least 10% of their tasks affected by LLMs while about 18% could have at least 50% of their tasks affected, where the exposure threshold is a 50% reduction in time to complete a task while maintaining quality.[56] The distribution of exposure is similar whether measured across occupations or employment. This study found that while there are many low-wage occupations with high exposure and many high-wage occupations with low exposure, overall higher-wage occupations are associated with increased exposure. This conclusion is consistent with the findings of another recent study by Goldman Sachs which found that generative AI can substitute for humans in one-fourth of current work tasks and globally exposes the equivalent of 300 million full-time jobs to AI automation.[57] But the exposure varies significantly by industry and by job, with high exposures in administrative and office support, legal services, business and financial operations, management and sales,

[55] Kenney (2023).
[56] Elondou et al (2023).
[57] Goldman Sachs (2023).

and low exposures in physically intensive professions such as construction and maintenance and in services like personal care and food/hospitality services. Many of these low-exposure occupations are in the non-traded goods and services sector.

With ever increasing digital capabilities, AI-based automation has moved from the factory into agriculture and services and from routine physical and cognitive jobs to many high-level complex cognitive jobs. Instead of middle-skill jobs bearing the brunt of disruption, many of the highest paying jobs, with significant educational credentials, are likely to be affected. And the widespread social consequences of AI are already apparent in digital platforms from Amazon through Twitter and TikTok that can target information to and surveil particular groups or even individuals. An array of professions, including legal and accounting services, will be the most vulnerable, along with an array of middle management tasks. There is uncertainty about which tasks will be augmented, which tasks will be displaced, which new tasks will be generated and the implications for skill requirements and for wages. But the overall disruption in labor markets is likely to be significant, although it may take considerable time.

Whether the technology is used to automate or substitute for human labor or to complement and enable human labor is not primarily a technical matter, but one of costs and incentives. In the US and other market economies, profit-motivated businesses rather than governments will make these decisions. Governments, however, can affect these decisions through different policy choices to achieve different outcomes just as they did to mitigate the labor market consequences of routine-biased technological change.[58]

In any case, we must push beyond that dichotomy and pose the questions we have often heard: given the new AI capabilities, how can a business reimagine its mission and offerings as well as the organization and delivery of its existing products. More than a decade ago, for example, firms began imagining themselves selling services rather than just physical products (e.g., fleet provision of tires or aircraft engines as ongoing maintenance and services). If the cost of particular tasks is reduced by AI, automation, then the bar for choices of projects to be implemented is lowered. Consider, for example, the challenge in a major corporation of

[58] Autor, Mindell, and Reynolds (2020).

maintaining sales materials and service materials in multiple languages. Will AI improve translation? Reduce the number of translators? Or increase the array of materials and languages in which a company can operate? To avoid translation errors, and increase the translation capacity for client firms, Lilt inserts a native speaking translator into the process.[59] Overall it can undertake a range of translation tasks that is not otherwise possible, and at lower costs. Does the ChatGPT tool become a less expensive law clerk allowing lawyers to in fact handle more materials? Because generative AI makes mistakes, it is now assumed by some firms that keeping humans in the loop is a necessity. As the technical obstacles to automating some tasks go down, and the number of projects that are then above the adoption bar go up, the employment and productivity consequences will shift and will be harder to predict. Early studies suggest, however, that the potential productivity gains are real and substantial as are the effects on employment, skills and wages.[60]

To date, the overall adoption of AI in both the US and Europe has been low, but the roll-out of LLMs has been more rapid, producing some of the fastest growing apps ever. To date, the evidence reveals that larger and more digitalized firms are more likely to adopt AI technologies than smaller ones, with a handful of US and Chinese digital platforms far ahead. Adoption has also varied across activities and sectors, with greater adoption in activities like office and administrative support and business and financial operations and in sectors like finance and retail.

A significant increase in productivity growth and the creation of new occupations are likely to accompany and offset some of the disruption in labor markets as AI changes existing tasks and occupations, automating some and augmenting others. Historically, the emergence of new occupations following technological innovations accounts for the vast majority of long-term employment growth. But history also confirms that the disruption effects on labor markets can be rapid, while the pace of both the productivity gains and the creation of new occupations can be considerably slower. In the US technological change displaced workers and created new occupations at roughly the same rate for the first half of the post WWII period, but

[59] http://www.lilt.com

[60] Baily, Brynjolfsson, and Korinek (2023).

displacement has occurred at a faster pace than new occupation creation since 1980, when neoliberal globalization took hold.

History also confirms that there are both winners and losers from technological innovations and that the winners and losers are different—different in education, in sectors, in location, in access to capital, in income and in wealth, in gender, in ethnicity. While such innovations produce aggregate benefits, they impose significant costs that are not compensated and tend to increase income and wealth inequality. A new book by Daron Acemoglu and Simon Johnson presents a sobering assessment of how past technological change has affected the majority of workers and the middle class in the US and other advanced industrial economies and warns that generative AI will have similar negative effects unless they are offset by policy.[61] Rather than simply accept the future that AI technological breakthroughs will generate, policymakers should act boldly to create a better and more equitable and sustainable future—in education, in health care, in climate policy, in work—made possible by these breakthroughs.

The effects of AI on the economic interconnections among nations–the next phase of globalization–are uncertain and difficult to predict. Trade will likely become increasingly based on services and digital flows will continue to expand rapidly. But if AI displaces or augments human labor in the provision of services and digital products in the developed countries, this could reduce their demand for inexpensive cognitive labor and dampen trade between them and the developing economies. Take the example of call centers where generative AI can speed up, scale, and improve the customer experience and reduce the demand for inexpensive workers running call center services in developing countries. If AI further increases the productivity of manufacturing in the developed countries, this could reduce their demand for imports of manufactured products from lower-cost emerging and developing economies and could support the re-shoring of such activities. Take the example of how workers in a US global manufacturing company can ask generative AI expert technical questions about operating procedures.

[61] Acemoglu and Johnson (2023).

The energy sector in the US provides an illustrative example of how technological innovation can affect productivity, product innovation, and trade. In recent years, the US has emerged as the world's largest oil producer and is now a net oil exporter, driven in large part by fracking technologies, supported by the US government. In a similar fashion, AI could increase competitiveness, productivity, incomes, employment, and trade in sectors of importance to many developing economies such as agriculture, forestry and other natural resources, and certain services. What appears to be clear, however, is that China's export-led rapid growth as a global manufacturing center based on offshoring by the developed economies, its low-cost labor, digitally-enabled supply chains, and neoliberal globalization rules cannot be replicated by other emerging nations. Instead, many developing economies will have to grapple with "premature deindustrialization," and pursue other growth strategies focusing on services, infrastructure, natural resources, education, and health care—much of which will be non-traded activities.[62]

Finally, it is essential to acknowledge that although discussions of globalization focus on things that can be traded across borders, most workers throughout the world, irrespective of the development level of the countries in which they work, are employed in non-traded activities—e.g., local construction, local infrastructure, the provision of products and services for local markets, and in education, health, and government services. AI technologies may affect both routine and non-routine physical and cognitive tasks in non-traded activities, with important effects on local labor markets—wages, training, job security, career ladders, surveillance and bias. But these effects will not show up in international trade and globalization measures. A question for another paper is how digitalization and, in particular, AI will affect workers in non-traded activities throughout the world.

CONCLUSION

US power is in relative decline and the global order is fragmenting. The emergence of transformative technologies raises important questions about the potential reshuffling of the

[62] Rodrik (2016).

existing global system. As technological advances redefine the economic landscape, they may well also disrupt existing power structures and give rise to new geopolitical tensions.

The world is moving from a positive-sum approach to globalization in which interdependence is perceived as mutually beneficial, to a zero-sum approach in which one nation's gain is viewed as another's loss. Nationalist competition will displace collaboration and cooperation straining relations even among allies. In the absence of a liberal hegemon to maintain global order and stability, the emerging landscape will be defined by increased volatility, unpredictability, and uncertainty. This instability will be more costly as nations grapple with the consequences of increased uncertainty and the resulting conflicts.

As the leading global power, the US has enjoyed immense economic prosperity. For domestic politics, however, the growth argument—a rising tide lifts all boats—has been overwhelmed by distributional and inequality concerns. The era of neoliberal globalization was beneficial for the nation. Today, however, many US policymakers take different views. While Yellen argues the US economy is strong, Sullivan presents a contrasting narrative of decline over several decades, attributing it in part to globalization and in part to the rise of China.[63] Sullivan advocates a "domestically-led foreign policy," focusing on rebuilding the US from the middle out and bottom up to regain its competitive edge.[64] Surprisingly, in their recent speeches, neither Yellen or Sullivan acknowledged the role of technology as a major source of job displacement and growing income and wealth inequality.

In the realm of international trade, economic interconnections among nations are projected to expand, albeit in a more fragmented and regional manner. Digital trade is set to increase as a proportion of total trade, reflecting continuing digital transformation of trade and new labor dynamics in the service sector. And the weight of Asia–both south and east–in the global economy and South-South trade will continue to grow.

Climate change presents a shared global challenge requiring enforceable international agreements. This issue is directly related to global interconnectedness: the challenge is universal and the solution requires collaboration among all nations. Cooperation between

[63] Yellen (2023) and Sullivan (2023).

[64] For a very different assessment of the role of US power in the world, see Economist (2023).

China and the US is essential—they are the number one and number two carbon emitters in the world. A sectoral free trade agreement for green technology could be a powerful platform for strengthening global cooperation via trade and investment. A case in point is the trade agreement in the IT sector introduced in 1996 under the auspices of the WTO and expanded through the present day reduced tariffs on almost all world trade in IT products, which spurred innovation, trade, investment, and the creation of global supply chains that reduced the costs and increased the use of these products.

Just as digital technologies drove globalization during the last several decades, new digital technologies, especially AI, will have profound social, political, and geopolitical effects within individual nations and on the interconnections among them. In a sobering recent open letter, a group of leading AI technology experts from around the world warned that AI should be considered a societal risk of the same priority as pandemics and nuclear war. Even industry leaders argue that there is a clear need for robust regulations and industry standards in AI to foster its benefits while containing its risks. Different societies will adopt different AI norms on privacy, dissent, and personal rights, reflecting their unique cultural contexts and values. But all societies face common AI risks: e.g., the risk that AI will disrupt labor markets, eliminate good jobs and increase income inequality; the risk that AI can be weaponized to build chemical and nuclear weapons; the risk that AI will drive an increase in the volume and spread of misinformation that undermines trust in governance and governments; the risk that AI could further increase the market power of a handful of global companies; the risk of digital and cyberwarfare enabled by AI. In a recent Foreign Affairs essay, Ian Bremer and Mustafa Suleyman argue that AI marks the beginning of a world-changing technological revolution that will initiate a seismic shift in the structure and balance of global power that threatens the status of nation-states as the world's primary geopolitical actors.[65] In their words, AI is a global commons problem that requires a global AI governance structure to contain the common risks. As the two lead nations in AI, it is the responsibility of the US and China to spearhead the

[65] Bremmer and Suleyman (2023).

creation of the governance rules and institutions required for a stable and secure interconnected global economy in the age of AI.

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