



**Remarkably Resilient:
The Transatlantic
Economy in 2023**

The transatlantic economy has proven to be remarkably resilient in the face of seismic shocks that have shaken the world. Despite full-blown war in the heart of Europe, ongoing pandemic uncertainties, supply chain disruptions, dramatic energy shifts, high inflation, tightening financial conditions, and tensions with China, the key drivers of the transatlantic economy – investment, trade and income – posted strong results again in 2022.

Transatlantic trade in goods reached an all-time high of \$1.2 trillion last year. U.S. goods exports to Europe rose by 25%, led by surging U.S. energy flows. U.S. goods exports to Europe rose by 25%, led by surging U.S. energy flows. U.S.-EU trade in goods in 2022 – a record \$909.45 billion – exceeded EU-China goods trade of \$897.36 billion and was 25% higher than U.S.-China goods trade of \$690.56 billion. U.S. foreign affiliate income earned in Europe reached a record \$325 billion in 2022, while European affiliates in the U.S. earned an estimated \$151 billion – less than in 2021 (\$167 billion), but still the second largest annual figure ever.

U.S. foreign direct investment (FDI) flows to Europe dropped by just 4%, to \$235 billion, in 2022, according to our estimates. That’s a solid figure considering Europe’s energy crunch and

war on the continent. And it follows record U.S. investment in Europe of \$244 billion in 2021 – the second strongest annual level on record.

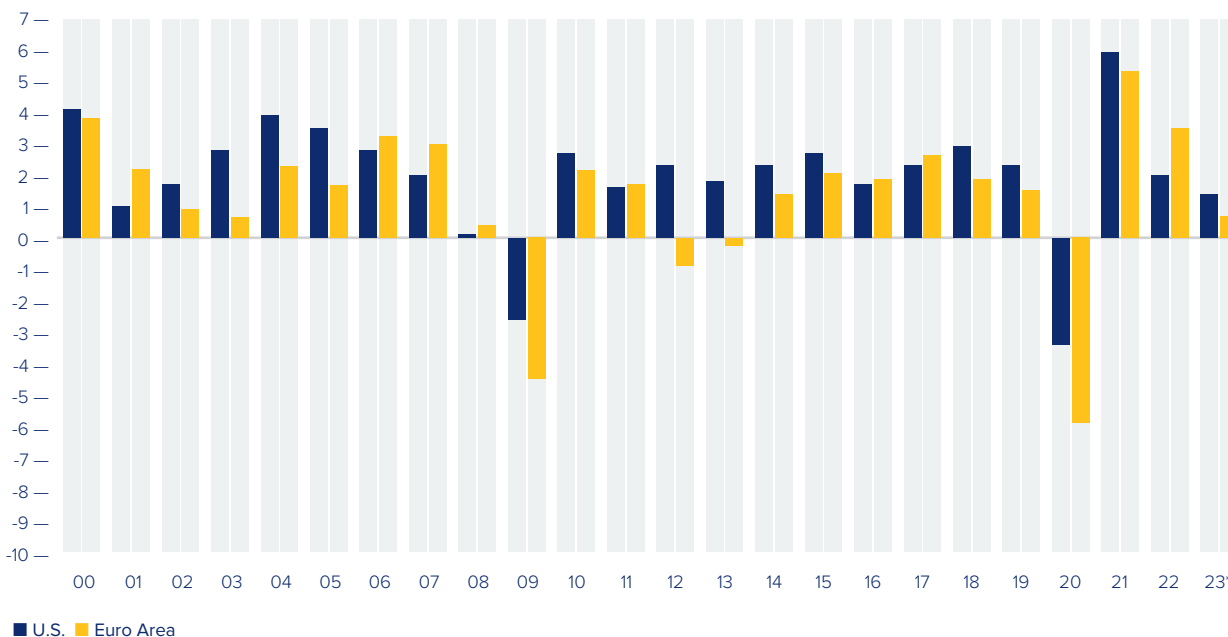
These figures are emblematic of the dense ties that bind North America to Europe and form the solid geoeconomic and geostrategic ground from which each side of the North Atlantic can address tremors still to come in 2023 and beyond. The \$7.1 trillion transatlantic economy remains the largest and wealthiest market in the world, employing 16 million workers in mutually “onshored” jobs on both sides of the Atlantic.

Transatlantic Tremors

U.S. and European economic growth is likely first to slow and then to gather speed over the course of this year. Overall for 2023, the International Monetary Fund expects the U.S. economy to grow by 1.4% and the euro area to grow by 0.7%. These levels are down from 2021 and 2022, but still positive. Growth is expected to accelerate in 2024.

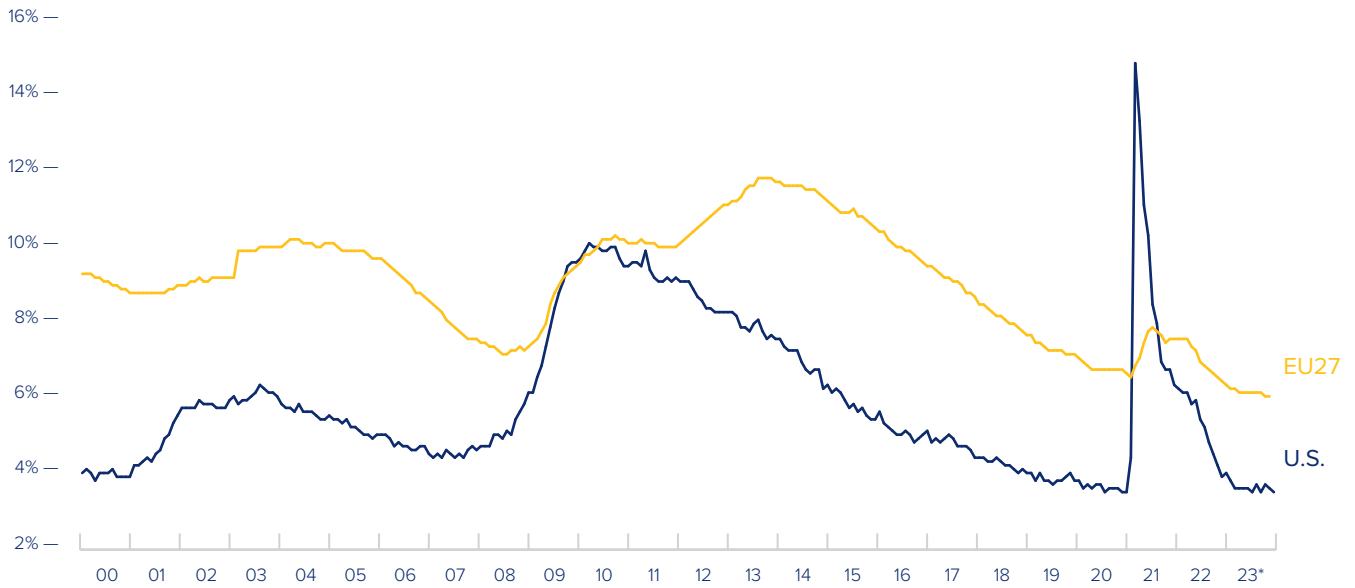
One hinge variable is the war in Ukraine, which has replaced the pandemic as the greatest strain on global trade.¹ Russia’s aggression may have shaken the world economy, but it has also reinvigorated the Atlantic alliance. North American-

Table 1. U.S. vs. Euro Area Real GDP, Annual Percent Change, 2000-2023



IMF Estimates for 2021 and 2022. *IMF Projection for 2023.
Data as of January 2023.
Source: International Monetary Fund.

Table 2. U.S. vs. EU Unemployment Rate Harmonized Unemployment Rate, % of Labor Force (Monthly)



Source: OECD.
U.S. data through December 2022. EU data through November 2022. EU excludes the UK.

European unity has been remarkable, exemplified by tough and coordinated sanctions and export controls against Russia; herculean efforts to wean Europe off its dangerous dependence on Russian energy; considerable sums of military, political, financial and humanitarian support for Ukraine; and actions to strengthen NATO defenses. As U.S. Treasury Secretary Janet Yellen noted at the G20 Summit in November 2022, “ending Russia’s war is the single best thing we can do for the global economy.” We discuss Western efforts to support Ukraine and to sanction Russia in Boxes 3 and 4.

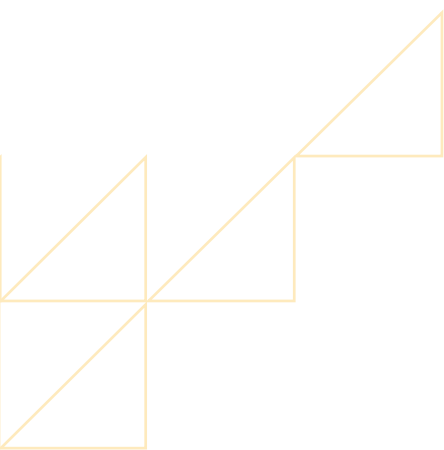
The war does, however, complicate the challenges facing the world’s central banks. Rarely has the world seen such aggressive monetary action from the stewards of credit. Leading the way, the U.S. Federal Reserve raised its benchmark rate seven times last year, from 0.25% to over 4%. The European Central Bank (ECB) boosted rates four times in 2022, taking the rate to 2.5% at year-end, while the Bank of England raised its rate eight times in 2022. Monetary policy works with a lag, so the residual effects of tighter global credit conditions (softer final demand, lower capital investment, reduced earnings) will become more evident in 2023.



2022: a year of resilience
Transatlantic trade in goods
\$1.2 trillion

FDI flows
(2022 estimates)
\$235 billion
U.S. to Europe
\$170 billion
Europe to U.S.

Growth
(2023 estimates)
1.4%
U.S.
0.7%
Euro Area

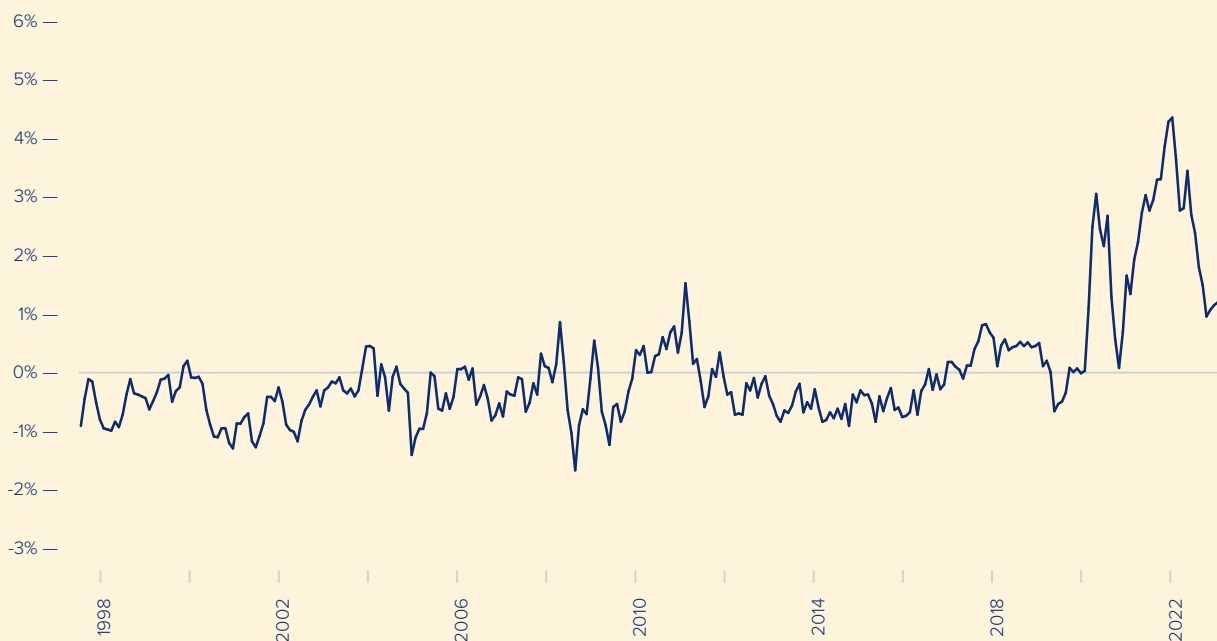


Box 1. Supply Chains Still Under Pressure

The transatlantic economy has been rattled by disturbances to the supply chains that account for over half of global trade in goods.² While the U.S. Federal Reserve reports that the most acute disruptions have eased, supply chain pressures remain at levels far higher than pre-pandemic times, except for a brief flare-up in

2011 (Table 3). According to the European Bank for Reconstruction and Development, more than three-quarters of all firms participating in global supply chains have implemented at least one measure to make their supply chains more resilient.³

Table 3. Global Supply Chain Pressures, 1997-2023 (Standard deviation from average value)



Source: Federal Reserve Bank of New York, <https://www.newyorkfed.org/research/policy/gscpi#/interactive>.

One risk for 2023 is that central banks on both sides of the pond err on the side of keeping policies too tight for too long, as they focus on pulling headline inflation back to target. The prospect that each side of the Atlantic might flirt with recession in 2023 has tempered future inflation expectations. Indeed, it seems increasingly likely that economies on both sides of the economy may be able to find the elusive “soft landing,” avoiding a recession entirely while also continuing to manage headline inflation.

U.S. headline inflation, after reaching a peak of 9.1%, began to reverse in July 2022 and was running at a year-over-year rate of 6.5% in December. Slowing demand and easing supply chain constraints has helped alleviate pricing pressures on goods, while services inflation is expected to peak in early 2023.

Inflationary pressures in Europe have also peaked, with lower energy costs helping to slow year-over-year price increases to 9.2% in December, versus 10.1% in November. Energy price caps, lower commodity prices, unclogged supply chains, and the cyclical effects of slower economic growth have converged to ease transatlantic inflationary expectations. The European Commission predicts 6.4% consumer price growth and 5.6% euro area inflation in 2023. Still, U.S. and euro area inflation rates are well above the Fed/ECB targets of 2%.

Price stability in Europe remains challenging given the war and the continent’s vulnerabilities to global oil and natural gas prices. Europe has avoided a full-blown energy crisis and in less than a year accomplished a remarkable reduction in energy imports from Russia. Gas prices have largely returned to levels seen before the war but are still roughly six times higher than those across the Atlantic. We discuss the transatlantic energy economy in Chapter 4.

Box 2. The Windsor Framework and UK-EU Relations Post-Brexit

After two tense years following the UK's departure from the EU, London and Brussels inked the "Windsor Framework" at the end of February 2023 to clarify contentious elements of the Northern Ireland protocol to the UK-EU Withdrawal Agreement. The Framework could remove a major thorn in relations and pave the way to a more robust partnership.

The Withdrawal Agreement treats Northern Ireland, which is part of the UK, as being within the EU customs area, to prevent the need for a hard border on the island of Ireland. But it also required checks on goods within the UK flowing from Great Britain to Northern Ireland. This essentially created a customs border in the middle of the Irish Sea. London insisted on revisions to dispense with those checks and diminish the role of the European Court of Justice in settling disputes. Pro-UK unionists in Northern Ireland refused to take their seats in the region's elected assembly at Stormont until the issues were resolved to their liking.

Northern Ireland continues to follow EU rules for goods trade, but the Windsor Framework simplifies and clarifies arrangements in five areas. First, goods within the UK coming from Great Britain to Northern Ireland will now be channeled through paperwork-light "green lanes" if destined for Northern Ireland and paperwork-heavy "red lanes" if intended for the EU. The EU will accept the UK's public health standards so agri-food can enter Northern Ireland, although those goods must be labeled "not for EU" by 2025.

Second, the UK will now review most Northern Ireland subsidies so they do not have to be referred to Brussels. Third, UK domestic value-added-tax (VAT) changes will apply to Northern Ireland. This had previously been prohibited under the Northern Ireland protocol. The UK agreed not to undercut most EU minimum VAT rates immediately, although both parties will now negotiate a list of goods where this could be possible over the next five years.

Fourth, the Northern Ireland legislative assembly can now pull an "emergency brake" to stop the implementation of new or updated EU rules in "exceptional circumstances." Finally, the European Court of Justice remains the ultimate arbiter of UK-EU arrangements, despite calls by some in the UK to create instead an international

arbitration mechanism, but London says that the Windsor Framework now severely circumscribes the number of EU laws that are applicable in Northern Ireland.⁴

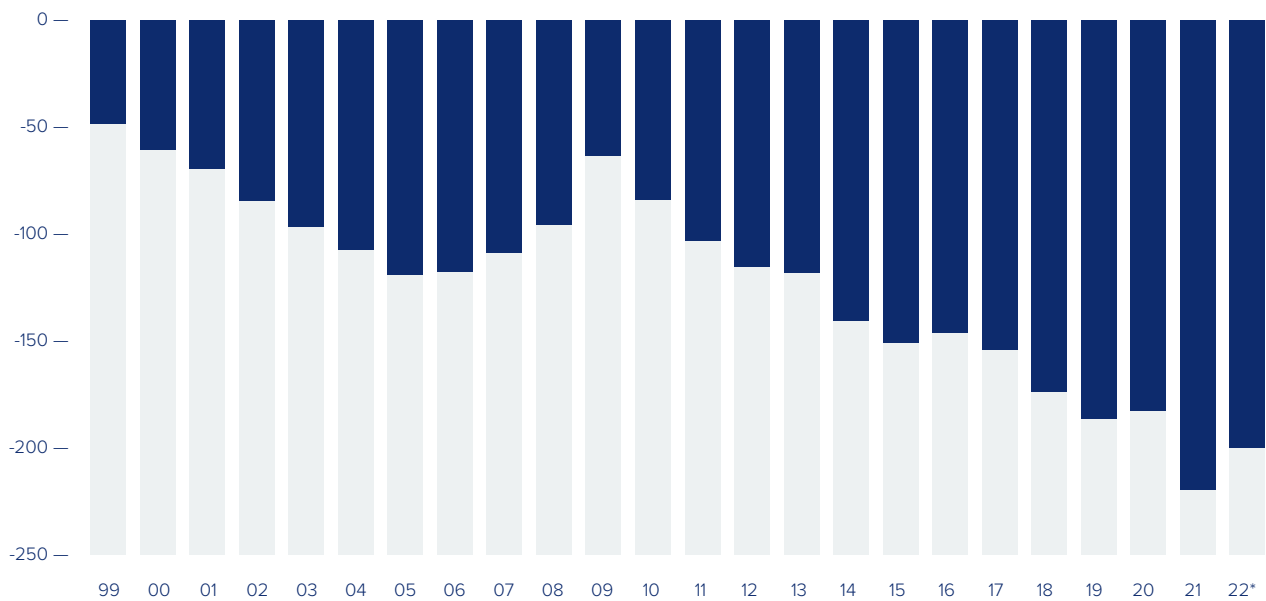
The Windsor Framework could help spark the UK economy, which is the only G7 country yet to surpass its pre-Covid GDP. It could also get UK-EU relations back on track: bilateral trade has recovered to pre-pandemic levels, but the EU's trade with other major partners has rebounded far more robustly.⁵ As of this writing, however, it is unclear whether the Framework will find majority support within the UK Parliament or in the Northern Ireland Assembly at Stormont.

Additional uncertainties also loom. Before the Windsor Framework, the two sides kept deferring deadlines for some types of customs provisions, rules-of-origin declarations, medicines labelling, and food controls, along with product conformity assessments. Now the UK has introduced a Retained EU Law Bill that proposes to review thousands of laws developed by the EU when the UK was a member, and revoke them by default by the end of 2023 unless an active decision is made to keep or adapt them.⁶ This portends significant further turbulence for many companies if the measure is adopted in its current form and on its current timeline.

Clearer UK-EU arrangements promise to boost the UK's economic relationship with the United States. In recent years, U.S. companies in Europe reported concerns about new regulatory barriers to trade, geographic restrictions on services, and rules-of-origin requirements. The loss of access to the EU Single Market from the UK had repercussions for U.S. services companies and manufacturers operating in Europe. U.S.-UK talks on a possible free trade agreement are still on hold.

Still, U.S.-UK commercial ties are robust and thriving. Measured on an historic cost basis, U.S. companies had invested a record \$1 trillion in the UK economy and British firms roughly \$512 billion in the U.S. economy by 2021 – directly supporting 2.75 million jobs in both countries. U.S. FDI in the UK in 2021 was 8 times more than such investment in China. The United States is the UK's top trading partner in both goods and services, exporting £161.5 billion (\$199.1 billion) in goods to the UK, and importing £101.2 billion (\$124.8 billion), in 2022.⁷

Table 4. U.S. Merchandise Trade Balance with the EU27 (\$Billions)



*2022 author estimates.
 Source: U.S. Census Bureau.
 Data as of January 2023.

Goods are no longer the preeminent driver of global connections; flows of services, international students, and intellectual property grew about twice as fast as goods flows in 2010-2019.

Navigating Globalization’s Shifting Currents

Global turmoil has led to suggestions that the world has entered a period of de-globalization. A closer look reveals that technological, policy and commercial drivers are interacting to reshape, not curtail, global flows. Technological drivers are accelerating globalization, while policy and commercial considerations are leading to strategies of “derisking” and diversification, as we discuss in Chapter 3. These drivers are carving currents that carry some risks, but far greater opportunities, for the transatlantic economy.

Global flows of people, capital, and goods are facing steeper policy barriers, yet migration was at historic highs in 2020 and 2021, capital flows grew by more than 50% a year in 2019-2021, and goods flows hit a record high in 2021. Global trade in goods in September 2022 was 10% higher than the average for the pre-crisis year 2019, and slightly higher than the level before Russia’s renewed invasion of Ukraine. Still, goods are no longer the preeminent driver of global connections; flows of services, international students, and intellectual property grew about twice as fast as goods flows in 2010-2019. Data flows grew by nearly 50% annually during this period, and were turbocharged during the pandemic years, as we discuss in Chapter 5.⁸

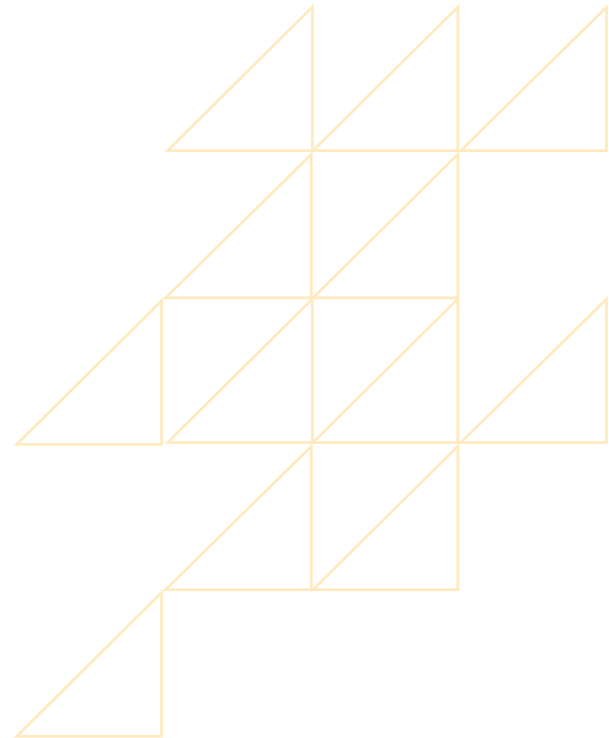
These flows are all strengths of the transatlantic economy. Knowledge-intensive and intangible-heavy global value chains are also more concentrated than others, largely in deeply-intertwined North Atlantic connections, which we explore in this book.⁹

North America and Europe have been among the main beneficiaries of the expansion of global flows, as we demonstrate in our annual surveys. Given the turbulence and tensions of recent years, officials on each side of the Atlantic are now acting to mitigate strategic vulnerabilities and to ensure that people and workers across our economies benefit from this increasing interconnectivity. We discuss the U.S. and EU “protect and promote” agendas in Chapter 3.

On each side of the Atlantic there is a rising chorus calling for “reshored” production and greater self-sufficiency. In Europe, some call for greater “sovereignty” in the digital sphere or in other sectors like medicines or critical materials. The risk is that such calls could lead to more entrenched protectionism that hampers the ability of transatlantic firms to compete fairly in markets on both sides of the pond and beyond. Particularly relevant in this context are current debates about the impact of the U.S. Inflation Reduction Act and the EU’s Green Deal and related subsidy measures, which we discuss in Chapter 4.

The transatlantic economy remains the most interconnected, robust, and resilient commercial artery in the world.

Lost in these debates is the fact that U.S. and European companies over many decades have woven a dense web of deep transatlantic connections that is proving to be a strength, not a burden, for both in a more competitive and disruptive age. The transatlantic economy remains the most interconnected, robust, and resilient commercial artery in the world, as we explain in the following chapters.



Box 3. Supporting Ukraine

Russia’s ongoing aggression against Ukraine has replaced the pandemic as the leading strain on global trade, according to BCG analysis. The war has not only devastated Ukraine, it has amplified global financial instabilities and supply chain distortions, wreaked havoc on food and energy markets, and generated the largest refugee crisis since World War II. Ending the war, says U.S. Treasury Secretary Janet Yellen, “is the single best thing we can do for the global economy”.

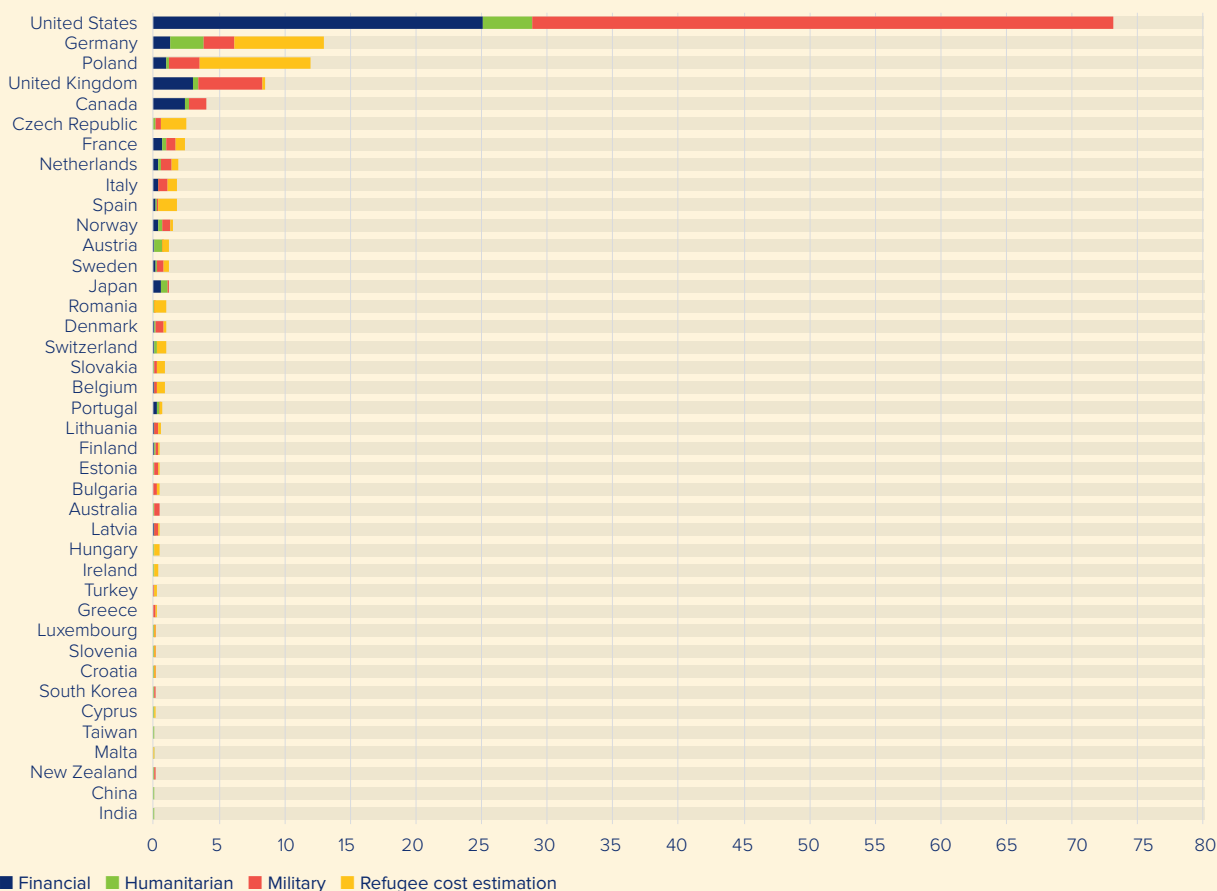
The transatlantic partners have spearheaded international efforts to support Ukraine. During the one year between January 24, 2022 and January 15, 2023, €143 billion in government-to-government commitments were made to support Ukraine, according to the Kiel Institute for the World Economy. The United States has by far been the largest single bilateral supporter, having committed

€73.18 billion, more than 50% of total commitments. The U.S. is not only the largest absolute donor, it is among the top donors as a share of national GDP.

Total EU commitments amounted to €54.92 billion – about 75% of the U.S. level and less than one tenth of the €570 billion that European governments spent to shield their own societies from the energy shocks generated by the war. Of the total, EU member states committed €19.9 billion bilaterally, €29.92 billion through the EU Commission and Council, €3.1 billion via the European Peace Facility, and €2 billion through the European Investment Bank.

If contributions via EU channels are reapportioned to the individual EU states that provided them, then the U.S. remains the largest individual donor (€73.18 billion), followed by Germany

Table 5. Top 20 Donors to Ukraine, January 2022-January 2023: Total Bilateral Commitments plus Refugee Costs (€Billions)



Includes bilateral commitments to Ukraine and cost estimates for refugees. Refugee costs are taken from the OECD Migration Report 2022. Does not include private donations, and aid by international organizations. Source: Trebesch, et al.

(€13.33 billion), the UK (€8.31 billion), France (€7.66 billion), Italy (€5.44 billion), and Poland (€5.02 billion). In terms of bilateral commitments in percent of donor country GDP, the top five donors are Estonia, Latvia, Lithuania, Poland, and the United States.¹⁰

More than 10 million Ukrainians have fled their homes, almost 5 million of whom left the country. Poland is the leading host country, taking in over 1.56 million refugees. Germany is second (1.06 million), while the Czech Republic (486,133), Italy (169,306) and Spain (161,012) rank third, fourth, and fifth, respectively. In terms of share of population, Estonia tops the list (4.96%), the Czech Republic is second (4.54%), Moldova is third (4.15%) and Poland is fourth (4.12%).

When the Kiel Institute adds estimated refugee costs to bilateral support levels, the United States remains in first place (€73.18 billion), followed by Germany with (€12.96 billion, incl. €6.81 billion

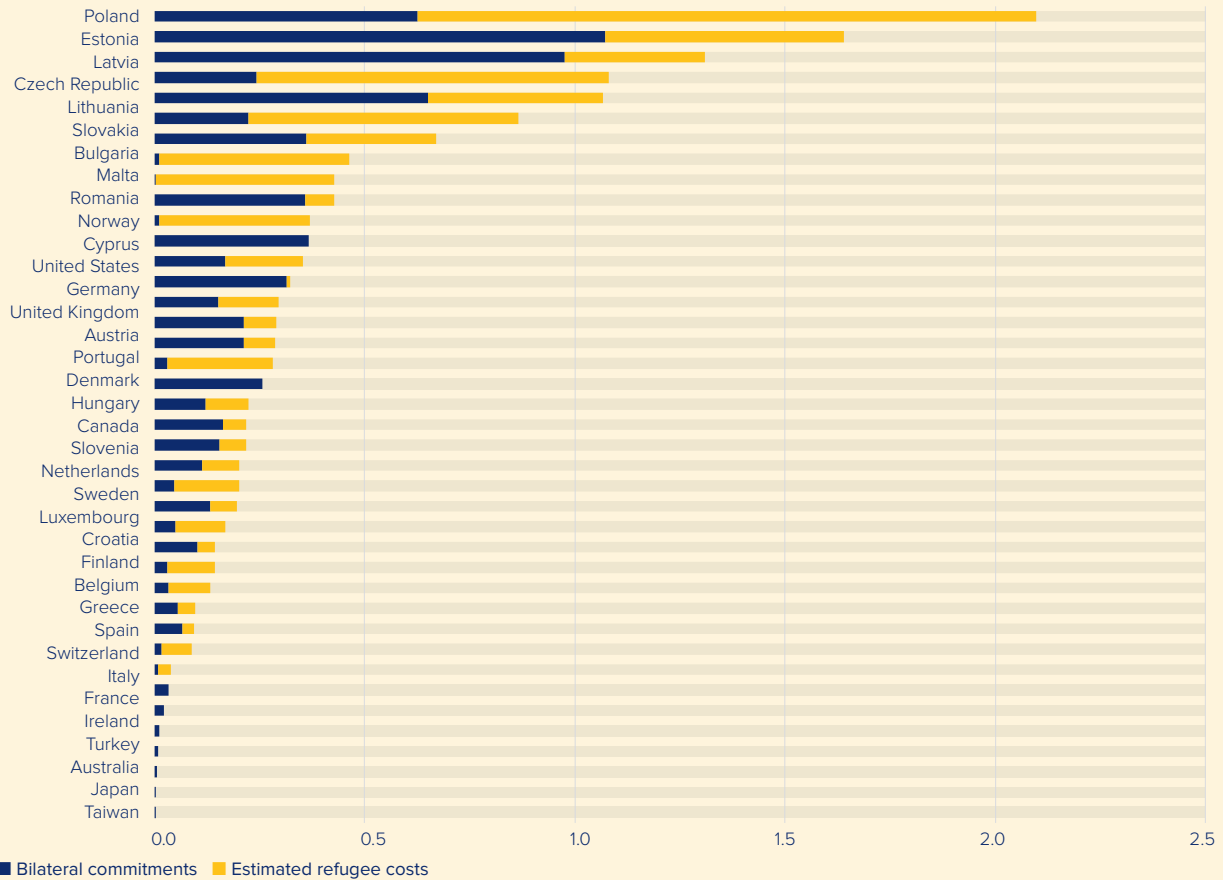
in refugee costs) and Poland (€11.92 billion, incl. €8.36 billion in refugee costs).

In terms of financial commitments, the EU institutions lead (€30.32 billion), followed by the United States (€25.11 billion), but with an important difference: the EU sum consists almost exclusively of loans, whereas U.S. commitments are entirely grants that do not need to be repaid. As of January 15, 2023, only 48% of the committed financial aid had been disbursed.

The Kiel Institute reports €13.27 billion in additional financial aid by multilateral organizations like the IMF, World Bank, UN and the European Bank of Reconstruction and Development (EBRD).

The EBRD forecasts a rise in Ukraine’s GDP of 1% in 2023, which would stabilize the country’s real output at around 70% of its level before Russia’s February 2022 invasion. The Bank predicts 3% growth in 2024.

Table 6. Total Bilateral Commitments to Ukraine Plus Refugee Costs (Percent of GDP)



Includes bilateral commitments to Ukraine and cost estimates for refugees. Refugee costs are taken from the OECD Migration Report 2022. Does not include private donations, and aid by international organizations. Source: Trebesch, et al.

Box 4. Sanctioning Russia

Russia's renewed invasion of Ukraine in 2022 prompted North America and Europe to expand drastically the sanctions they had already enacted following the Kremlin's 2014 interventions. The current sanctions, unprecedented in scope and scale, are intended to impose severe consequences on Moscow for its actions and to hamper its ability to sustain its war. More than \$300 billion of Russian central bank assets and \$22 billion of Russian oligarchs' money have been frozen. Travel bans and asset freezes have been imposed on over a thousand individuals and hundreds of entities. Most of the Russian financial sector has been disconnected from the SWIFT payments network. Exports of high-tech components and other materials critical to the Russian economy have been blocked, as have flights, shipping, maintenance and insurance services. Foreign investment has dried up. Broadcasting activities and licenses of several Kremlin-backed disinformation outlets have been banned in many countries. Additional sanctions have been imposed on Belarus, for its involvement in Russia's invasion, and on Iran over the supply of drones to Russia. Notably, the sanctions do not block the export of and transactions related to food and agricultural products.¹¹

The U.S and Canada, which traditionally have had limited economic links with Russia, curtailed practically all commercial ties. Many European economies took similarly drastic action, despite their far deeper commercial relations with Russia. EU exports to Russia halved within weeks of the outbreak of war. Many imports were banned. However, a full and abrupt cutoff of commercial ties was difficult because many European countries had grown dependent on Russian energy. For that reason, prohibitions were introduced gradually on Russian energy imports.¹²

One year on, Europe has accomplished the truly remarkable. It has largely weaned itself off Russian energy. Gas demand fell by more than 20% between August and December 2022, thanks to efficiency measures and lower energy use. Norway, the United States, Algeria, and Qatar stepped in to supply more gas. Five new floating LNG terminals were set up in record time, with more due to come online this year and next. By January 2023, the flow of Russian

gas through pipelines to the EU+UK was almost 90% lower than a year earlier.¹³ The EU has now banned imports of Russian coal and other solid fossil fuels, crude oil, and refined petroleum products, with limited exceptions. Adjustable price caps have been introduced on seaborne crude oil, petroleum oils and oils obtained from bituminous minerals which originate in or are exported from Russia. The intent is to curtail Russia's oil revenues while limiting price surges and mitigating adverse consequences on energy supplies to third countries.¹⁴

Impact on Russia

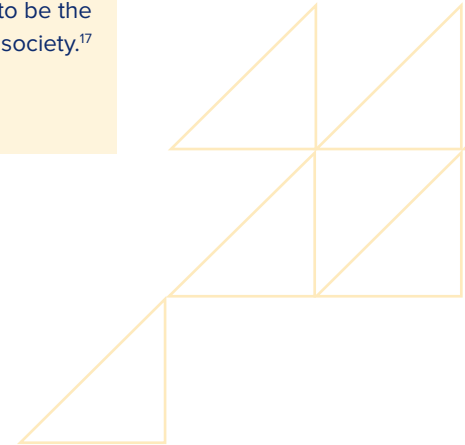
The short-term impact of these measures on Russia has been mixed. The pain points are numerous. Russian living standards have eroded. Observed inflation, or how the public views price increases, is at 16%, much higher than the 12% official figure. Ten percent of the Russian workforce is without consistent work, a level comparable to the years following the dissolution of the Soviet Union. The Russian central bank projected capital flight from Russia in 2022 to total \$251 billion. Finished steel output fell by 7% and commercial car production is just a fourth of what it was a year ago. Russia's monthly budget revenues from oil and gas fell in January 2023 to their lowest level since 2020 – 46% below where they were a year earlier. Revenue from other sources was down by 20% in October 2022 from a year earlier, and was on a downward spiral. The Russian Finance Ministry has been forced to nearly triple its daily foreign currency sales to make up for the shortfall. Russia's 2022 budget deficit of \$47 billion was its second highest deficit in the post-Soviet era. Moscow's weapons production capacity has been degraded, and it has been forced to turn to Iran for drones and drone parts, and to North Korea for artillery shells and rockets.¹⁵

In other respects, however, the Russian economy has weathered the situation better than expected. Russia's central bank avoided a catastrophic financial crisis by imposing capital controls and hiking interest rates. The IMF estimates that the Russian economy shrank 2.2% in 2022, far less than forecasts made a year ago. It expects the Russian economy to grow by 0.3% in 2023 and 2.1% in 2024.

Despite international sanctions, Moscow recorded a \$227 billion current account surplus in 2022. It has diverted exports of energy and other key commodities to Asian, Middle Eastern, Latin American and African states. Imports initially crashed, but then stabilized as exporters from China, Hong Kong, and Turkey stepped in. China now accounts for over 36% of Russia's imports and 20% of its exports. China and Hong Kong now supply about 40% of Russia's chips – although the U.S. Treasury says that close to half of them are proving to be defective. Chinese state-owned defense companies have been shipping navigation equipment, jamming technology and jet-fighter parts to Russian defense companies. A significant shadow trade has emerged to circumvent the sanctions. And although many companies based in G7 countries had announced plans to leave the Russian market or abandon investments there, analysts estimate that no more than 15% have actually divested one of their Russian subsidiaries.¹⁶

As time wears on, however, Russian prospects look much bleaker. Bloomberg Economics

estimates that Russia's economy is on track to lose \$190 billion in GDP by 2026, relative to its prewar path. Heavy government spending on the war is bleeding the Kremlin's reserves. The ruble's seeming stability relies on unsustainably strict currency controls. Energy bans and price caps are having some effect: Moscow's tax income from oil and gas in January 2023 was among its lowest monthly totals since the pandemic depths of 2020. Moscow is still selling oil to countries like India and China, but mostly at steep discounts. By some estimates, Russia is set for a \$100 billion loss in its oil exports receipts and a \$50 billion loss in its gas export revenues in 2023. Moreover, its land-based energy infrastructure points west; it cannot easily switch out China and India for Europe. And it will be unable to maintain, let alone expand, its energy production without Western technology. Russian planes are flying only because those on the ground have been cannibalized for parts. Hundreds of thousands of talented and educated Russian professionals are leaving the country. In the end, this vast brain drain may prove to be the most crippling for Russia's economy and society.¹⁷



Notes

- 1 See Marc Gilbert, Nikolaus Lang, Georgia Mavropoulos, and Michael McAdoo, "Protectionism, Pandemic, War, and the Future of Trade," BCG, January 17, 2023, <https://www.bcg.com/publications/2023/protectionism-pandemic-war-and-future-of-trade>.
- 2 Uri Dadush, "The Future of Global Value Chains and the Role of the WTO," WTO Staff Working Paper ERS2-2022-11, August 2, 2022, https://www.policycenter.ma/sites/default/files/2022-08/ersd202211_e.pdf.
- 3 Lucas Kitzmüller, Helena Schweiger, Beata Javorcik, "The reshuffling of global supply chains is already happening," VoxEU/CEPR, November 24, 2022, <https://cepr.org/voxeu/columns/reshuffling-global-supply-chains-already-happening>.
- 4 Peter Foster, Andy Bounds and Jim Pickard, "How the Windsor framework changes Northern Ireland's trading arrangements," *Financial Times*, February 28, 2023.
- 5 *The Economist*, "Careful assembly required," January 5, 2023; John Springford, "The cost of Brexit to June 2022," Centre for European Reform, December 21, 2022; Office of Budget Responsibility, "Brexit analysis," last updated May 26, 2022, <https://obr.uk/forecasts-in-depth/the-economy-forecast/brexit-analysis/>.
- 6 AmCham EU, "Two years later: Brexit's impact on US companies in Europe," January 25, 2023, <https://www.amchameu.eu/blog/two-years-later-brexit%E2%80%99s-impact-us-companies-europe>.
- 7 UK Government, "UK trade in numbers," February 17, 2023, <https://www.gov.uk/government/statistics/uk-trade-in-numbers/uk-trade-in-numbers-web-version>.
- 8 Janet Bush, ed., "Global flows: The ties that bind in an interconnected world," McKinsey Global Institute, November 2022; Gabriel Felbermayr, Guntram Wolff, "How Europe can share changes in the world economy," *Internationale Politik Quarterly*, January 4, 2023, <https://ip-quarterly.com/en/how-europe-can-shape-changes-world-economy>.
- 9 Bush.
- 10 Christoph Trebesch, et al., The Ukraine Support Tracker, Kiel Institute for the World Economy, https://www.ifw-kiel.de/fileadmin/Dateiverwaltung/IfW-Publications/-ifw/Kiel_Working_Paper/2022/KWP_2218_Which_countries_help_Ukraine_and_how_/KWP_2218_Trebesch_et_al_Ukraine_Support_Tracker.pdf, last accessed February 21, 2023.
- 11 European Commission, "EU sanctions against Russia explained," <https://www.consilium.europa.eu/en/policies/sanctions/restrictive-measures-against-russia-over-ukraine/sanctions-against-russia-explained/#sanctions>; Nicholas Mulder, "Sanctions Against Russia Ignore the Economic Challenges Facing Ukraine," *New York Times*, February 9, 2023.
- 12 Arnau Busquets Guardia and Charlie Cooper, "The delayed impact of the EU's wartime sanctions on Russia," *Politico*, February 2, 2023.
- 13 Georgi Kantchev and Joe Wallace, "Europe Cuts Addiction to Russian Energy, Yet Fuel Scramble Continues," *Wall Street Journal*, February 3, 2023.
- 14 Andrew Duehren, Laurence Norman and Joe Wallace, "G-7 Expands Sanctions on Russian Oil Industry," *Wall Street Journal*, February 3, 2023.
- 15 "Remarks by Deputy Treasury Secretary Wally Ademo on International Sanctions Against Russia," U.S. Treasury Department, February 21, 2023; Vladimir Milov, "The Sanctions on Russia Are Working," *Foreign Affairs*, January 18, 2023; *Politico Weekly Trade*, January 30, 2023.
- 16 Ademo; Douglas Busvine, "Western firms say they're quitting Russia. Where's the proof?," *Politico*, February 28, 2023; Jeffrey Sonnenfeld, et al., "The Russian Business Retreat - How the Ratings Measured Up One Year Later," SSRN, January 31, 2023, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4343547; Simon Evenett and Niccolò Pisani, "Less than Nine Percent of Western Firms Have Divested from Russia," SSRN, January 31, 2023, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4322502; "Macro note – China steps in to supply Russia," Institute of International Finance, February 1, 2023; Mulder; *The Economist*, "Dodged penalties," February 1, 2023; Naomi Garcia, "Trade Secrets: Exposing China-Russia Defense Trade in Global Supply Chains," C4ADS, July 15, 2022, <https://c4ads.org/reports/trade-secrets/>; Ian Talley and Anthony DeBarros, "China Aids Russia's War in Ukraine, Data Shows," *Wall Street Journal*, February 4, 2023.
- 17 Ademo; Milov; Guardia and Cooper; Mulder; Georgi Kantchev and Paul Hannon, "Russia to Cut Oil Output, Sending Prices Higher," *Wall Street Journal*, February 10, 2023; Janis Kluge, "Russian oil and gas revenue in 2022," Twitter thread, February 2, 2023, <https://twitter.com/jakluge/status/1621440460408365056>.

