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DHL GLOBAL CONNECTEDNESS INDEX 2021 UPDATE

Globalization Shock and Recovery in the Covid-19 Crisis

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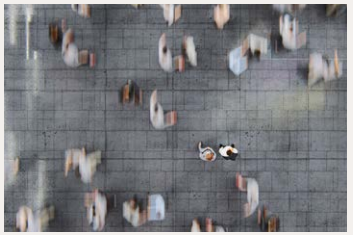
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“After digesting this analysis, the word that sticks in my mind is ‘resilience.’”

DEAR READER,

Of all the DHL Global Connectedness Index reports I’ve overseen as CEO of Deutsche Post DHL Group, this is the one I’ve been most impatient to read. In 2020, the world’s trading system experienced its toughest stress test to date: cities came to a standstill, ports were closed, and flights were grounded. We knew our industry faced turmoil, but how has this crisis impacted the wider flow of people, information, trade and capital around the world?

The short answer is: not in ways many feared. The advantage of commissioning an annual analysis of global connectedness is that we are among the first to be able to put the events of 2020 – 21 into context. This report provides an extensive overview of *what actually happened*.

Yes, trade collapsed, but within months it began to recover. It’s now gone beyond pre-pandemic levels. Then, even amid heightened uncertainty, international business investment started coming back. Information flows across borders rocketed, but then their growth slowed again.

International travel declined by 73% in 2020, a breathtaking statistic, but when you compare the overall impact of the coronavirus to the financial crisis of 2008 – 09, the early conclusions suggest the damage is not as bad. We’re recovering faster this time around. The long-term effects, of course, remain unknown, but the data available at this point provide strong grounds for optimism.

This report offers a fascinating snapshot of how societies react in a crisis. It also highlights how factors that pre-date the pandemic continue to shape developments. Tensions between China and America were weighing on their trade flows in 2019, but they actually traded more during the pandemic. Nonetheless, trade protectionism and the impasse at the World Trade Organization are still major areas of concern.

Public perceptions often exaggerate economic and social cross-border flows, and this has also contributed to opposition to globalization in recent years. While global connectedness provides great benefits, we can still improve the ways we connect across borders. That’s why this report includes recommendations on how we can overcome vulnerabilities and expand the opportunities on offer in a connected world.

After digesting this analysis, the word that sticks in my mind is ‘resilience.’ Let’s remember that global connectedness has played key roles in delivering essential goods and services, and it has kept families in close contact even from a distance. Despite the pandemic, populism and protectionism, I hope, when you finish reading, you’ll be reassured that global connectedness still represents our best hope for a healthy, prosperous and sustainable future.

Yours sincerely,



Frank Appel
CEO, Deutsche Post DHL Group

DEAR READER,

As 2021 draws to a close, globalization looks far stronger than it did in the early stages of the Covid-19 crisis. The swift recoveries of trade and other flows highlight how international connections expand our capacity to overcome challenges. When a crisis strikes, there is a natural impulse to hunker down behind borders. But the more extreme the challenge, the more urgent it becomes to draw upon the best ideas and resources from at home and abroad.

This DHL Global Connectedness Index Update draws on more than 3.5 million data points to provide an extensive "health check" for international flows of trade, capital, information, and people. Most flows plummeted as the pandemic shocked the world, but many have also roared back to play crucial roles in the fight against the virus and in the economic recovery.

While globalization has proven far more resilient than many expected, the pandemic has also highlighted important vulnerabilities, such as supply chain bottlenecks and slower recoveries in low-income countries. We can learn from this globalization "stress test" and take steps now to strengthen our global connections for a healthier, more prosperous, and more resilient future.

I am grateful to Caroline Bastian, who has co-authored this report as well as each edition of the DHL Global Connectedness Index since 2018. Her insights and analytical contributions have substantially strengthened this body of work. We also continue to build on DHL Global Connectedness Index co-creator Pankaj Ghemawat's profound insights on the strengths and limits of globalization.

I would like to thank Klaudia Kokoszka, Ryan Li, and Md. Shah Naoaj for meticulous research assistance, Sinziana Dorobantu, Thomas Hout, Niccolò Pisani, Robert Salomon, and Robert Seamans for reviewing preliminary drafts, Björn Schuman and Keir Bonine for editorial support and proofreading, and Dirk Hrdina for turning our text and graphics into a compelling visual product. My sincere thanks also to Anita Gupta and Irene Casanova for steadfast and insightful collaboration on the development and publication of this report.

Finally, at an institutional level, I am profoundly grateful to Deutsche Post DHL Group for its longstanding support of this research and its sponsorship of the DHL Initiative on Globalization at NYU Stern's Center for the Future of Management. Our research initiative aims to be a leading center of excellence for data-driven globalization research. To learn more about our work, please visit our website at **www.stern.nyu.edu/globalization**.



"As 2021 draws to a close, globalization looks far stronger than it did in the early stages of the Covid-19 crisis."

Steven A. Altman
Senior Research Scholar and
Director of the DHL Initiative on Globalization, NYU Stern

TEN KEY TAKE-AWAYS





1 Covid-19 has not caused globalization to collapse. The DHL Global Connectedness Index declined modestly in 2020, and it is on track to rise in 2021.

2 Trade in goods has surged to well above pre-pandemic levels, powerfully supporting the global recovery even as capacity challenges and trade tensions persist.

3 The pandemic dealt a major blow to international capital flows, but portfolio equity flows stabilized in mid-2020 and foreign direct investment began a strong rebound in 2021.

4 A spike in the growth of digital information flows at the onset of the pandemic was short-lived. The globalization of information flows has reverted to a slower growth trend.

5 The pandemic hit international people flows the hardest, and they are on track to recover the slowest. International travel remained down more than 80% in the first half of 2021.

6 Global flow patterns show no evidence of a major shift from globalization to regionalization. Long-distance trade has grown faster than short-distance trade during the pandemic.

7 U.S.-China decoupling was evident in international flows in 2019, but it went into reverse in 2020 as the pandemic boosted trade between the world's two largest economies.

8 The world's poorest countries are falling behind in the globalization recovery. Their trade and FDI flows were still below pre-pandemic levels in the first half of 2021.

9 Global connectedness is still limited in absolute terms. Domestic activity far surpasses international activity, and international flows are strongest among neighboring countries.

10 Stronger global connectedness could accelerate the world's recovery from Covid-19. Vulnerabilities highlighted by the pandemic should be addressed for a more prosperous and resilient future.

EXECUTIVE SUMMARY

The DHL Global Connectedness Index measures globalization based on international flows of trade, capital, information, and people. This update highlights key developments in these four areas for the world as a whole, with a focus on the Covid-19 crisis. Overall, globalization is emerging from the pandemic far stronger than many expected. The DHL Global Connectedness Index declined modestly in 2020, and there is clear evidence of a recovery underway in 2021. Nonetheless, the pandemic has also highlighted vulnerabilities that should be addressed in order to fortify and expand the benefits of global connectedness.

As the Covid-19 pandemic swept the world in early 2020, trade in goods plummeted at the fastest pace on record, but trade began rebounding strongly in mid-2020 and, by the end of the year, had even surpassed pre-pandemic levels. By early 2021, global trade volumes were setting new records.[1] Trade in products used to fight Covid-19 soared, helping to ameliorate pandemic-driven shortages.

Trade in services suffered a larger decline than trade in goods and has been slower to recover. However, the drop in services trade was driven almost entirely by steep falls in travel and transportation services. Trade in most other types of services has been much more resilient.[2] Moreover, forecasts call for trade in both goods and services to grow faster than GDP in 2021 and 2022, expanding trade's contribution to the global economy.[3]

Capital flows were also hit hard at the onset of the pandemic, but they have also shown clear signs of recovery. Portfolio equity flows snapped back quickly when financial markets stabilized early in the pandemic. Foreign direct investment (FDI) flows fell 35% in 2020, but they are on track to achieve pre-pandemic levels in 2021.[4]

Digital information flows surged as in-person interactions went online to curb the spread of Covid-19. This caused the growth rate of international internet traffic to double in 2020, but it did not lead to a sustained acceleration in the globalization of information flows.[5] In 2021, international internet traffic reverted to the slowing growth trend observed before the pandemic. There have also been slowdowns in recent years in the globalization of voice calls, scientific research collaboration, and payments for the use of intellectual property.

People flows, unsurprisingly, have been hit the hardest by the pandemic. International travel fell 73% in 2020, reversing three decades of growth, and was down more than 80% over the first six months of 2021. There are glimmers of hope for a travel recovery, with international travel starting to pick up in mid-2021, but most forecasts do not foresee international travel returning to pre-pandemic levels before 2023 or 2024.[6] The growth of international migration slowed—but did not reverse—in 2020. The full impact of the pandemic on international education cannot yet be quantified, though early indicators, unsurprisingly, point to negative effects on student mobility.

As these trends across trade, capital, information, and people flows clearly demonstrate, there has been no wholesale



"The DHL Global Connectedness Index declined modestly in 2020, and there is clear evidence of a recovery underway in 2021."



retreat from international activity. But what about predictions that the pandemic would cause a shift from globalization to regionalization? To the contrary, international flows between different regions grew faster than flows within regions during the past year. Trade, in particular, stretched out over longer distances as major Western economies relied more on imports from Asia.

As tensions have flared between the U.S. and China, the relationship between the world's two largest economies has emerged as globalization's most sensitive fault line. The analysis in this report shows a modest level of U.S.-China decoupling before the onset of the Covid-19 crisis. However, it also shows that this decoupling trend went into reverse in 2020, as these economic giants traded more with each other during the pandemic.

Digging deeper into the data, we see one important exception to globalization's strong recovery trend. The world's poorest countries are still dangerously disconnected, and there is mounting evidence that they are falling even further behind in the recovery. For countries at the bottom of the global income distribution, trade and FDI inflows were still below pre-pandemic levels in the first half of 2021. Limited access to Covid-19 vaccines appears to be a major factor hindering recovery in these countries.

The Covid-19 stress test for globalization has also exposed longstanding vulnerabilities that demand attention from policymakers and business leaders. In the concluding section of this report, we highlight four priorities to reinforce and expand the benefits of a connected world moving forward: (1) fortify global and regional supply chains, (2) bolster trade agreements and international institutions, (3) prevent the world's poorest countries from falling further behind, and (4) secure the future of digital globalization.

Bolstering the foundations of a connected world—and better integrating the world's poorest countries—should be urgent priorities in the present context. Most countries remain far below their pre-pandemic growth trajectories, and many are confronting high inflation. Stronger global connectedness could help countries grow faster and reduce some of the pressure on price levels. Ultimately, a connected world—leveraging the diverse strengths each country can bring to bear—offers the best prospects for a strong and sustainable recovery.

“The world's poorest countries are still dangerously disconnected, and there is mounting evidence that they are falling even further behind in the recovery.”



SECTION II

RECENT DEVELOPMENTS IN GLOBAL CONNECTEDNESS

This section analyzes the trajectory of globalization. We begin by highlighting shifts in the development of trade, capital, information, and people flows during the Covid-19 pandemic. Then, we put recent changes into historical context. Next, we examine the possibility of a shift from globalization to regionalization. Finally, we consider the evidence on decoupling between the world's two largest economies—the U.S. and China.

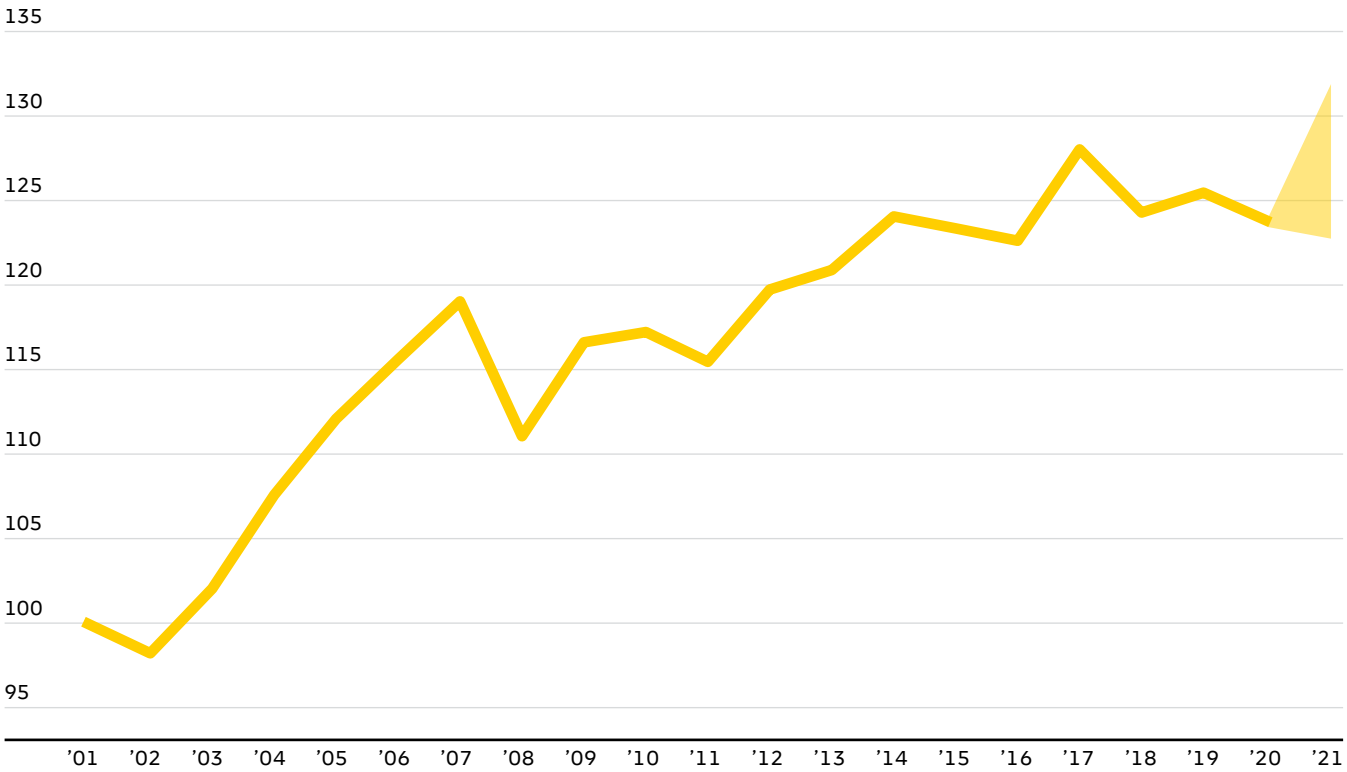
1 GLOBALIZATION DURING THE COVID-19 PANDEMIC

The Covid-19 pandemic that swept the world in 2020 has confronted globalization with its greatest stress test in decades. Borders slammed shut, geopolitical tensions flared, and industries faced unprecedented shocks to both demand and supply. But more than a year and a half since the onset of the pandemic, data clearly refute early speculation that Covid-19 would spell the end of globalization.[7] World trade in goods has soared to well above pre-pandemic levels, and most other types of international flows are clearly recovering. Of the flows covered in the DHL Global Connectedness Index, only international travel has remained severely depressed in 2021.

The DHL Global Connectedness Index measures globalization based on trade, capital, information, and people flows.[8] As shown in **Figure 1**, the index declined in 2020.[9] But the pandemic has not caused a collapse in the world's overall level of connectedness. In fact, the Covid-19 blow to globalization has turned out to be much smaller than the decline caused by the 2008-09 global financial crisis, and global connectedness is likely to increase in 2021. Despite extreme turbulence and challenges, the world's connectedness remains close to its all-time high.

To begin to explain the surprising resilience of global connectedness during the Covid-19 pandemic, **Figure 2** separates the overall index into four *pillars*: trade, capital, information, and people. These pillars summarize connectedness trends across the individual types of flows (and stocks accumulated from prior year flows) that comprise the index (listed on page 13). They highlight the fact that the

FIGURE 1: DHL GLOBAL CONNECTEDNESS INDEX, 2001 – 2021*



The Covid-19 pandemic caused a modest decline in the world's overall level of global connectedness in 2020.

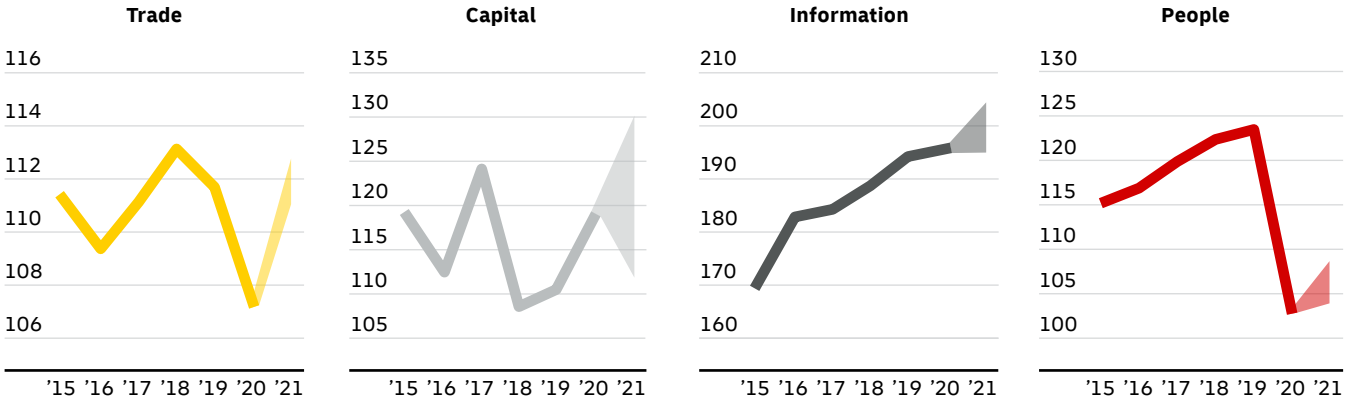
*2021 projected

pandemic has dealt a sustained blow only to international flows of people. The globalization of capital and information flows increased in 2020, and the pandemic's damage to international trade flows was much smaller than initially expected.

While trade and people flows both contributed to the decline in overall global connectedness in 2020, they followed strikingly different patterns during that year and into 2021. As shown in the left panel of **Figure 3**, trade in goods plummeted at the onset of the pandemic, only to bounce back to above pre-pandemic levels over the course of just six months, and continued growing strongly into early 2021. In stark contrast, the pandemic halted most international people flows, and international travel was still more than 80% below pre-pandemic levels over the first half of 2021.

The **surge in international trade since mid-2020** is particularly noteworthy, considering the severe disruptions the pandemic has caused to supply chains across many industries. Port shutdowns, container shortages, and a six-day blockage of the Suez Canal dominated the headlines. But the global volume of trade in goods still rose to 5% *above* its pre-pandemic level. Several factors contributed to the swift rebound of global trade. Most notably, demand for traded goods surged in response to economic stimulus measures and shifts in spending patterns from in-person services to heavily traded goods, such as electronics and medical supplies. And manufacturers and distributors found ways to fulfill most of this elevated demand.

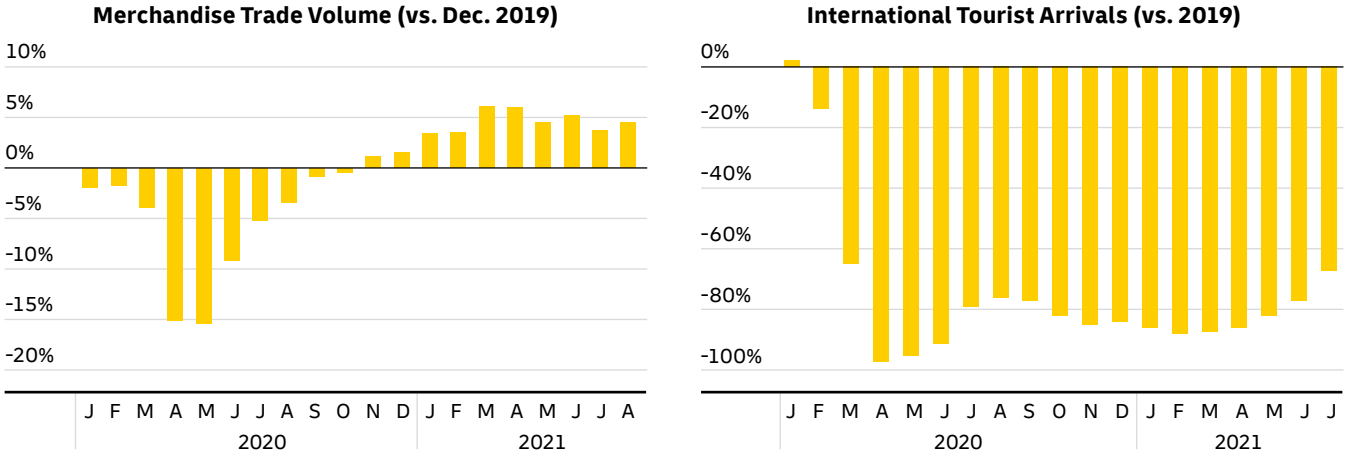
FIGURE 2: FOUR PILLARS OF GLOBAL CONNECTEDNESS: TRADE, CAPITAL, INFORMATION, AND PEOPLE, 2015 – 2021*



International people flows suffered an unprecedented collapse in 2020, while other aspects of globalization turned out to be substantially more resilient.

*2021 projected

FIGURE 3: INTERNATIONAL TRADE VERSUS TRAVEL DURING THE COVID-19 PANDEMIC



International trade rebounded strongly during the Covid-19 pandemic, while international travel was largely put on pause.

Note: Percent change in trade volume versus December 2019, seasonally adjusted.
Data source: CPB World Trade Monitor

Note: Percent change in international arrivals versus same month in 2019, including business travel. Data source: UNWTO



> *Digital information flows helped the world to stay connected from a distance, while enabling crucial advances such as the rapid development, production, and distribution of Covid-19 vaccines.*

The geography of global trade has also defied predictions during the pandemic. As we discuss later in this section, the pandemic prompted talk of more local and regional sourcing, adding to the attention these themes were already receiving due to geopolitical, technological, and economic shifts. But data on actual trade flows tell a starkly different story. Major Western economies have actually relied *more* on distant supply sources since early 2020. A large-scale shift from global to regional trade remains an important possibility to monitor, but such a shift has clearly not (yet) taken place.

Alongside trade, **international capital and information flows also played crucial roles** in the response to the pandemic. International capital flows quickly stabilized in 2020 in response to bold action by governments and central banks, which prevented the global public health crisis from turning into a global financial crisis. Digital information flows helped the world to stay connected from a distance, while enabling crucial advances such as the rapid development, production, and distribution of Covid-19 vaccines.[10]

In contrast to this general pattern of resilience, **people flows were strictly limited** due to their potential to spread the virus and its variants. All destinations worldwide implemented some form of travel restrictions, and 29% still had their borders completely closed to international tourism as of June 2021.[11] (For additional detail on recent trends driving the evolution of international trade, capital, information, and people flows, refer to **Section IV**.)

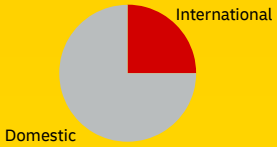
All told, the Covid-19 shock to globalization has proven to be far more modest than many initially expected. This perspective will become even clearer when we put recent developments into historical context in the next section.

HOW GLOBAL CONNECTEDNESS IS MEASURED IN THIS REPORT

Very often in the public debate, globalization is equated with international trade. In this publication, we take a broader view that observes cross-border flows of trade, capital, information, and people around the globe.

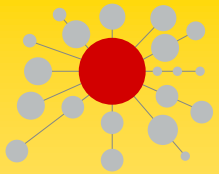
We could measure these flows by just tracking metrics such as the quantity of traded goods, the amount of international investment or the number of migrants. But a sole focus on such absolute numbers says little about the actual extent of globalization. As an example, should we be afraid of hyper-globalization if the world's exports reach $30 trillion dollars? And has globalization really progressed if trade has grown by 2%? We can only answer such questions by putting numbers like these in perspective. We do this in two ways:

Depth
International flows relative to domestic activity



1. **We measure the *depth* of international flows:** This means we compare each cross-border flow to relevant domestic activities. For trade, for example, we compare exports to total economic output. This and other ratios help us evaluate the significance of the respective international flow. In other words, depth measures indicate how international the world really is with respect to each type of activity.

Breadth
Geographic Distribution of International Flows



2. **We measure the *breadth* of international flows:** This means we evaluate the extent to which flows are distributed broadly around the globe rather than concentrated between specific origins and destinations. After all, in a truly globalized world, one would expect countries to trade with a wide variety of nations rather than just a few neighbors.

The DHL Global Connectedness Index results reported in this publication measure the depth and breadth of international flows of trade, capital, information, and people over the period from 2001 to 2020. Altogether, this analysis draws on more than 3.5 million data points across the 12 measures of country-to-country flows listed below.

TRADE
- Merchandise Trade
- Services Trade

CAPITAL
- Foreign Direct Investment (FDI) Stocks
- Foreign Direct Investment (FDI) Flows
- Portfolio Equity Stocks
- Portfolio Equity Flows

INFORMATION
- Telephone Call Minutes
- Scientific Research Collaboration
- Trade in Printed Publications

PEOPLE
- Tourists
- University Students
- Migrants (Foreign Born Population)

→ **For more about the DHL Global Connectedness Index methodology and a list of data sources, refer to Section VI at the back of this report. A full technical description of the index methodology is provided in Section VI of the DHL Global Connectedness 2020 report, available for free download at dhl.com/gci.**

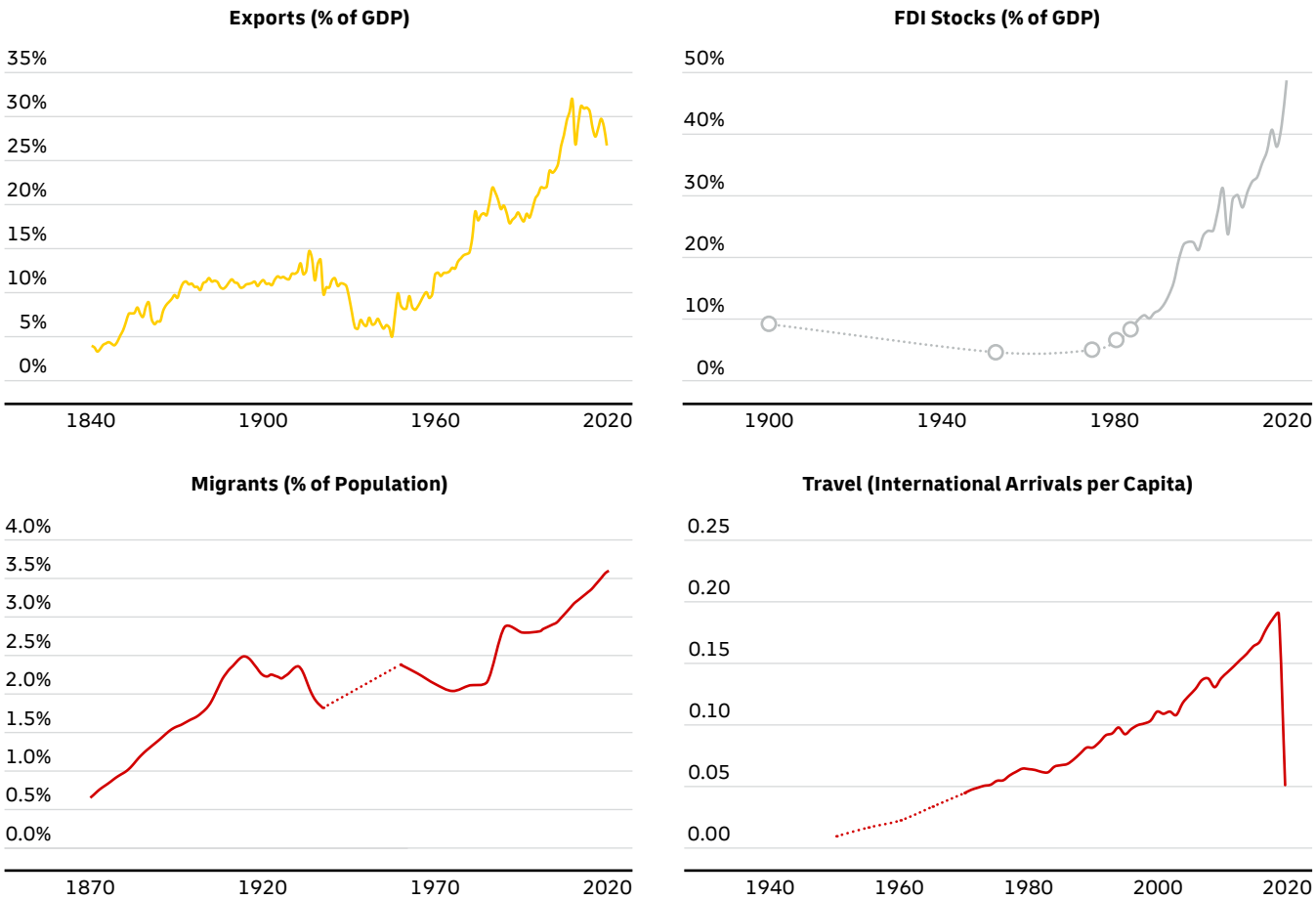
2 RECENT TRENDS IN HISTORICAL PERSPECTIVE

To provide a balanced view of recent shocks to international flows, it is helpful to consider them in relation to long-run patterns. We begin by looking back at the growth of international trade, investment, migration, and travel over time spans ranging from several decades to almost two centuries. Then, we zoom in on the period since 2001 to highlight four recent phases in the evolution of global flows.

Figure 4 tracks **long-run trends** in the globalization of trade, foreign direct investment (FDI), migration, and travel. It shows how all of these aspects of globalization have soared over the last few decades. Exports as a share of world GDP in 2020 was 12% higher than in 2000, almost twice as high as in 1970, and more than five times higher than in 1945. FDI stocks relative to world GDP had soared to 10 times their 1980 level by 2020, and immigrants as a share of the world population were up 70% over the same period. By 2019, international trips per capita had nearly tripled compared to 1980, before travel restrictions due to Covid-19 sent this measure (at least temporarily) back to a level last seen in the early 1970s.

This long-term perspective highlights how the world remains at or close to a record high level of globalization along multiple dimensions, despite all of the recent turbulence in the international environment. FDI stocks as a percent of world GDP and migrants as a share of the world population reached new record levels in 2020. Exports as a percent of GDP has fluctuated below its all-time high over the past decade, but most of the large increase on this

FIGURE 4: LONG-RUN TRADE, FDI, MIGRATION, AND TRAVEL TRENDS[12]



The world is at or close to a record high level of globalization based on selected trade, investment, and migration measures, and international travel was at a record high before the Covid-19 pandemic.

measure over the preceding decades is still intact. And tourism experts expect international travel to match or surpass its pre-pandemic peak within the next two to three years, as we will discuss in **Section IV**.

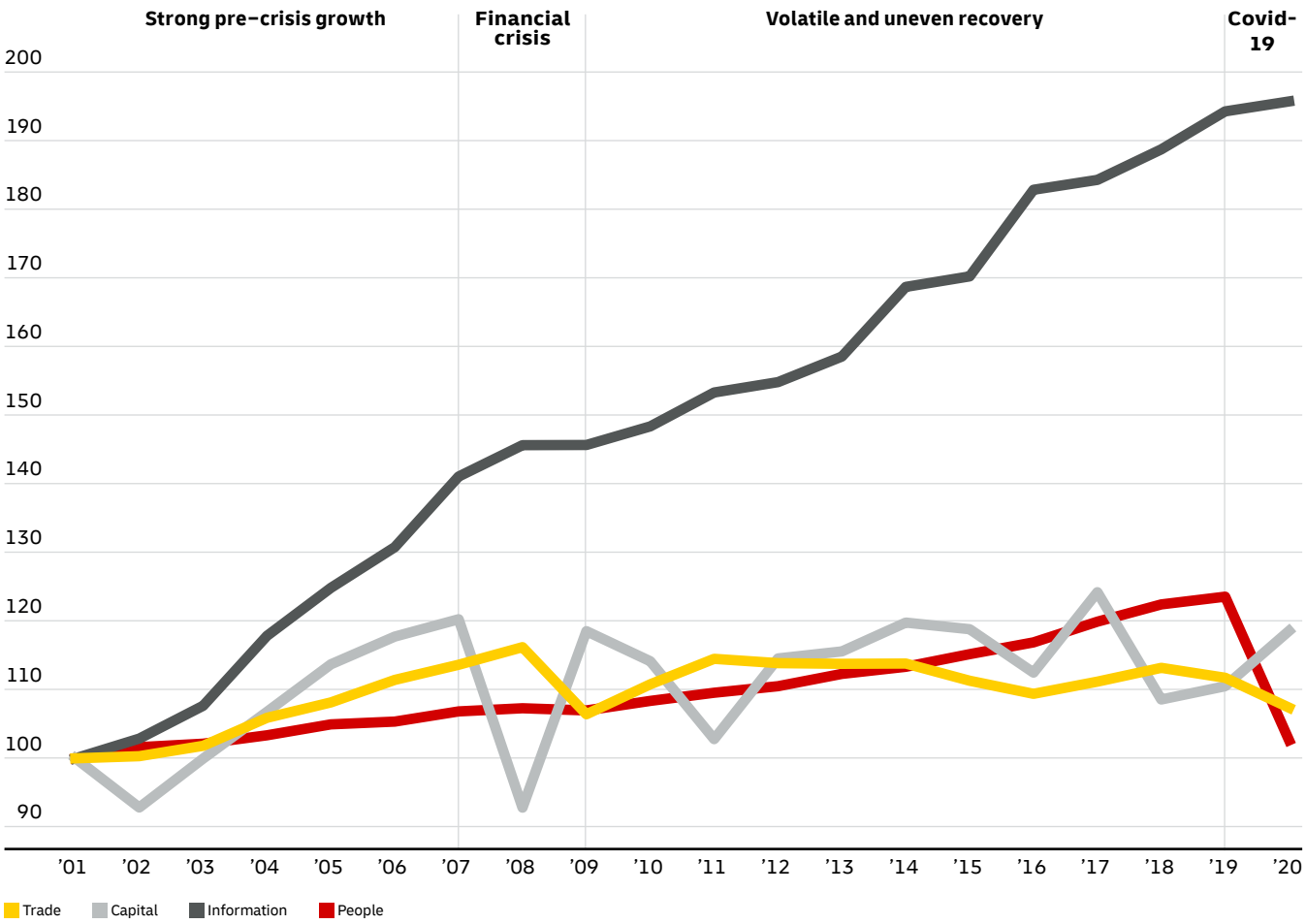
While the measures included in Figure 4 have the advantage of very extensive historical coverage, they only capture four specific types of international activity. The full DHL Global Connectedness Index, which extends back to 2001, tracks a wide variety of trade, capital, information, and people flows, and provides a more comprehensive view of recent trends.

Over the **last two decades**, four distinct phases stand out in the development of global flows (see **Figure 5**):

- 2001 – 2007: Strong pre-crisis growth
- 2007 – 2009: Global financial crisis
- 2009 – 2019: Volatile and uneven recovery
- Since 2020: Covid-19 pandemic

2001 – 2007: Strong pre-crisis growth. After a recession-related dip at the beginning of the millennium, global connectedness increased steadily between 2002 and 2007. Trade, capital, information, and people flows all intensified in parallel, propelled by supportive public policy developments, technology trends, and macroeconomic conditions. Countries focused on opening markets and attracting foreign investment. The internet's explosive growth expanded international information flows. To many, globalization seemed like an unstoppable force.

FIGURE 5: FOUR PILLARS OF GLOBAL CONNECTEDNESS, 2001 – 2020



Trade and capital flows steadily grew more globalized before the 2008–09 global financial crisis but have since generally fluctuated below their pre-crisis peaks. Information and people flows, on the other hand, continued to set new records until the Covid-19 pandemic caused people flows to collapse.

The dramatic changes in globalization levels over recent years are mostly driven by changes in the intensity of globalization (the depth dimension). Because flow volumes can expand or contract sharply due to macroeconomic or other shifts, this is the dimension that varies most over time and typically drives overall connectedness.

The distribution of international flows (the breadth dimension) changes much more modestly. The patterns of which countries are most connected to each other tend to change more slowly—in part due to the persistent effects of countries' geographic locations.



2007 – 2009: Global financial crisis. The global financial crisis that began to unfold in 2007 brought about the sharpest decline in the DHL Global Connectedness Index on record. Capital flows plummeted first, as financial markets cratered and investors sought safety. Trade was the next domino to fall, as the "great trade collapse" reverberated through multi-country supply chains.[13] Information and people flows, on the other hand, continued to rise.

The sharp declines in trade and capital flows during the crisis period cracked the confidence that dominated discourse about globalization in the early 2000s. Mainstream observers began to seriously consider the possibility of a shift to "deglobalization."[14] In January 2019, *The Economist* adopted Adjiedj Bakas's term "slowbalization" to describe the period since 2008.[15]

2009 – 2019: Volatile and uneven recovery. After the crisis, the DHL Global Connectedness Index began to rise again, though slower and with greater volatility than during the pre-crisis period. In many parts of the world, economic recovery was painfully sluggish. Protectionist trade policies outnumbered liberalizing policies, and the proportion of new

investment policy measures favoring foreign direct investment was lower than before the crisis.[16]

In 2016, the twin shocks of Brexit and the election of U.S. president Donald Trump on his "America First" platform were the most potent symbols of a new wave of turbulence for globalization. By 2018, a trade war was underway between the U.S. and China, and by the end of 2019, the World Trade Organization (WTO)'s Appellate Body lacked a quorum, crippling the multilateral system for settling trade disputes. Beyond trade, the last few years of this period also saw heightened scrutiny of foreign investments due to national security concerns, new restrictions on international data flows, and, in many countries, continued tensions around the issue of immigration.

Against this policy backdrop, the period between the Global Financial Crisis and the Covid-19 pandemic was marked by uneven growth across different types of international flows. The intensity of global trade and capital flows generally fluctuated below their pre-global financial crisis peaks. Both of these pillars of the index rebounded from their crisis-era lows, but neither resumed the steady pattern of increases that prevailed before that crisis. In contrast, information and people flows continued to advance, albeit with a notable slowdown of information flows since 2016.

Since 2020: Covid-19 pandemic. In early 2020, as Covid-19 was spreading around the world, international trade, capital, and people flows plummeted, while digital information flows surged as in-person interactions went online. Capital flows quickly stabilized, however, and trade in goods rebounded to above pre-pandemic levels before the end of the year, while the globalization of information flows reverted back to its longer-run pattern of slower growth. Only people flows remained severely depressed throughout 2020 and into 2021. Overall, the DHL Global Connectedness Index shows that Covid-19 has struck only a modest blow to the world's overall level of connectedness.

What lessons should we take away from these historical trends? Perhaps the most important lesson is that expectations about the future of globalization often swing to extremes, but the actual development of global flows tends to follow a steadier course. This is what Pankaj Ghemawat has termed the "globalization yo-yo effect."[17] In the late 1990s and early 2000s, talk of a "flat world," where borders and distance would soon become irrelevant, was much too rosy.[18] By the same token, declarations that globalization is "dead" in the wake of the 2008 – 09 global financial crisis, Brexit, and the Covid-19 pandemic have been too pessimistic.[19]

So, if globalization is not going away, could a major transformation of global flows be underway? In the next two sections, we examine the evidence of a potential shift from globalization to regionalization and of decoupling between the world's two largest economies—the U.S. and China.

> *"Expectations about the future of globalization often swing to extremes, but the actual development of global flows tends to follow a steadier course."*

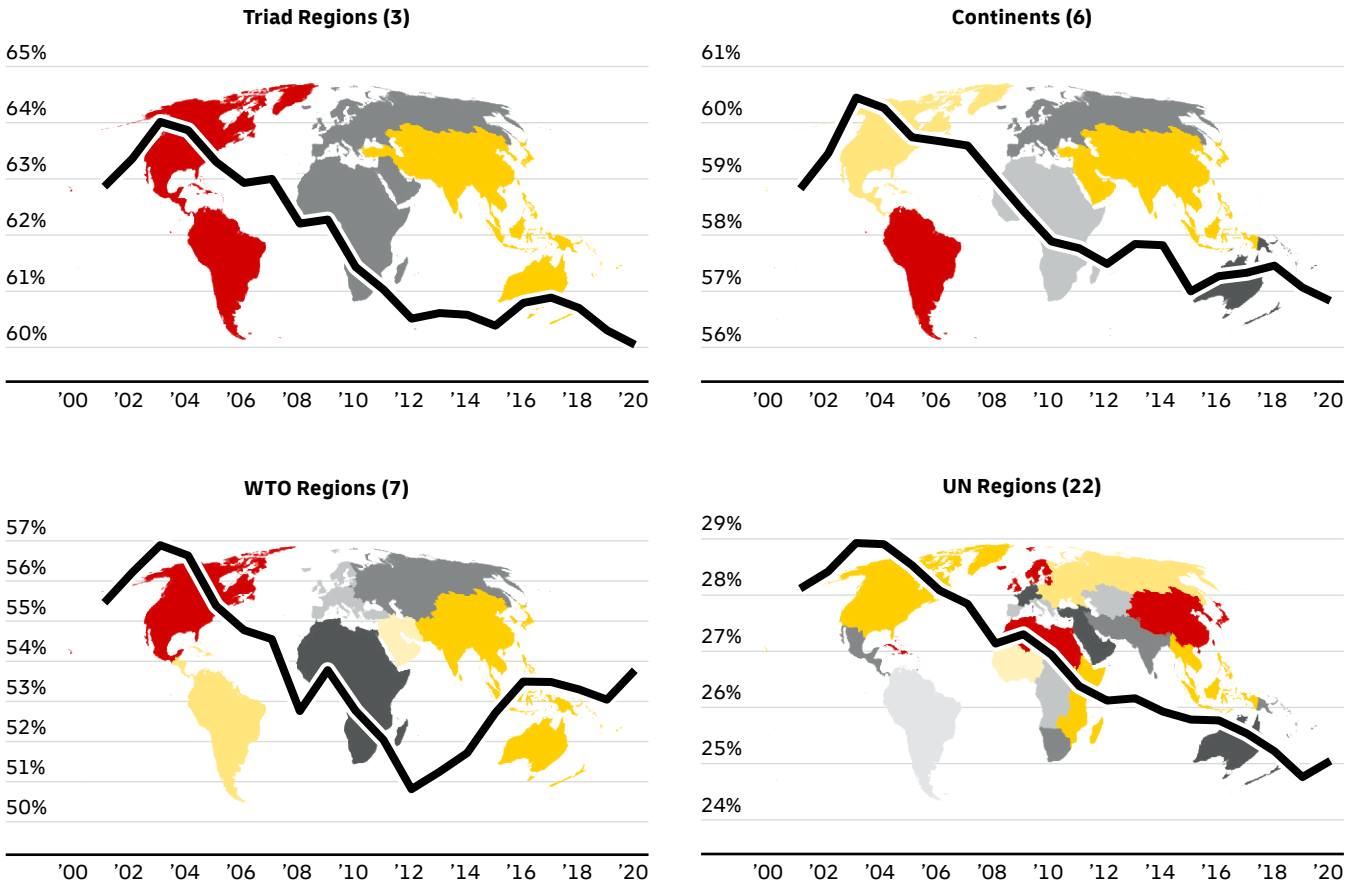
3 IS GLOBALIZATION GIVING WAY TO REGIONALIZATION?

One of the major themes in recent analyses of globalization is the contention that the world could be fracturing along regional lines.[20] Supply chain disruptions due to the Covid-19 pandemic caused a spike in interest among companies in producing goods closer to their destination markets. That spike has already begun to fade, but longer-term geo-political and technological shifts could also favor a more regionalized world. So what do the numbers say? Hard data on actual flows between countries do not indicate that a clear regionalization trend is underway. In fact, major Western economies have actually relied *more* rather than less on distant suppliers during the pandemic.

In April 2020—with countries locking down and trade plum-meting—a survey of international business executives revealed that 83% of their companies were contemplating nearshoring to regionalize supply chains. When the same survey was conducted in March-April 2021, that proportion was down to 23%.[21] Nevertheless, this still reflects substan-tial business interest in shortening supply chains, which fits with pre-pandemic predictions of a transition to more regionalized production networks.[22] This is why we devote most of this section to trade flows, before zooming out at the end of the section to look at regionalization trends in capital, information, and people flows.

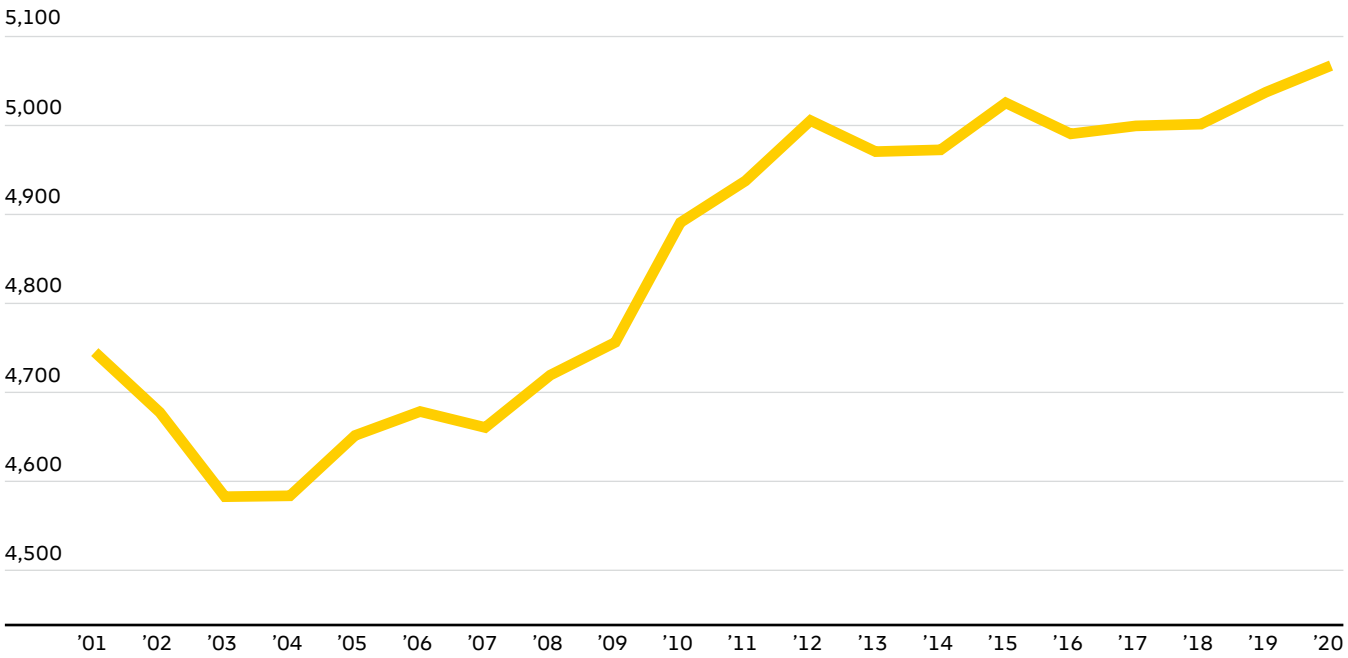
Is there really a trend underway toward more regionalized trade patterns? Contrary to much recent discussion in busi-ness and public policy circles, data on actual trade flows do not show a robust pattern of rising regionalization. To demonstrate this point, **Figure 6** tracks the percentage of

FIGURE 6: MERCHANDISE TRADE, PERCENT INTRA-REGIONAL WITH DIFFERENT REGION CLASSIFICATIONS[23]



Recent data do not show a robust trend toward more regionalized trade patterns. Trend directions vary depending on how countries are grouped into regions.
Note: These maps are stylized and not to scale. They do not reflect a position by Deutsche Post DHL Group or NYU Stern on the legal status of any country or area or the delineation of any frontiers. Data sources: UN Comtrade Database and IMF Direction of Trade Statistics

FIGURE 7: AVERAGE DISTANCE TRAVERSED BY MERCHANDISE TRADE (KILOMETERS), 2001–2020



The average distance traversed by trade flows is an alternative way to measure shifting trade patterns (and more objective than measures of regionalization). The general trend has been toward more long-distance trade, albeit at a slower pace in recent years.
Data sources: UN Comtrade Database and IMF Direction of Trade Statistics

world merchandise trade taking place within regions using four different systems of grouping countries into regions.[24] While there was a clear trend toward *less* regionalized trade flows between 2003 and 2012, no clear trend appears in more recent years. The WTO's seven-region classification scheme does indeed result in a rise in regional trade between 2012 and 2016, but even that upward trend subsequently flattened out. According to the other three region classifications, trade regionalization has either been falling or holding steady in recent years.

Clearly, different approaches to grouping countries into regions can lead to very different conclusions. In the end, all such classification schemes involve subjective judgments, which is why it is preferable to focus on a more objective measure of shifts in global trade patterns: the average distance traversed by merchandise trade flows.[25] If there really were a robust shift toward regionalization, one would expect trade, on average, to take place over shorter distances. However, **Figure 7** shows that **trade has stretched out over longer distances** since 2004 (the opposite of what one would expect during a regionalization wave), albeit at a slower pace since 2012.

We can also see in Figure 7 that merchandise trade has traversed longer distances on average (not shorter) since the onset of the Covid-19 pandemic.[26] This raises significant questions about the role of regionalization in strategies for reducing supply chain risk. The case for nearshoring to boost resilience would be stronger if short-distance trade had clearly outperformed long-distance trade during the pandemic.



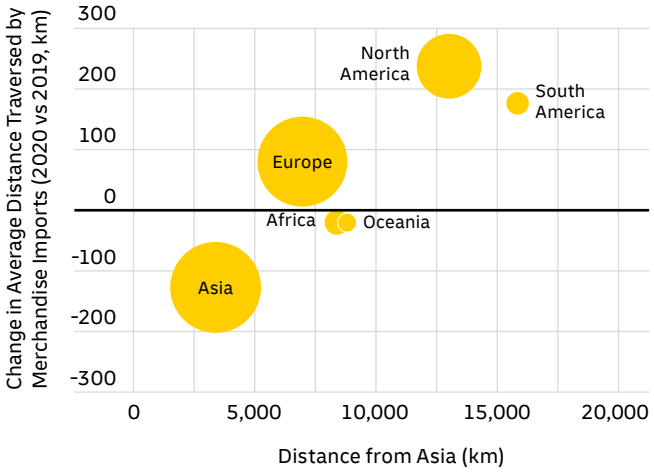
“The resilience of Asian manufacturing operations and rising demand for products for which Asia is a major supply source tilted the world toward a more Asia-centric trade architecture.”

A deeper examination shows that trade traversed greater distances in 2020 in part because of Asia’s rising share of world exports (up 1–1.5 percentage points in 2020 to around 42%). The **resilience of Asian manufacturing** operations and rising demand for products for which Asia is a major supply source tilted the world toward a more Asia-centric trade architecture. As shown in **Figure 8**, Asian economies imported goods over shorter distances, while countries in the Americas (and Europe to a more moderate extent) imported goods over longer distances.

Beyond trade flows, data on our remaining globalization pillars—**capital, information and people**—also fail to indicate a clear or robust trend toward rising regionalization. On the contrary, these data highlight the growth of flows between different regions. As shown in **Figure 9**, most other types of international flows have also stretched out over greater distances during the past two decades.

Looking forward, it is still plausible that a multipolar world, with fraying relations between the largest economies, could lead to a higher proportion of international flows happening within regions. New technologies that make it more efficient to produce goods closer to their final markets could have a similar effect. Moreover, Covid-induced supply chain reconfigurations might accelerate after international travel restrictions are lifted, facilitating the development of new business relationships. At the same time, there are powerful forces driving more long-distance trade, such as the continuing growth of emerging economies and the ongoing march of technologies that ease long-distance transactions.

FIGURE 8: REGIONS FARTHER AWAY FROM ASIA IMPORTED OVER LONGER DISTANCES IN 2020

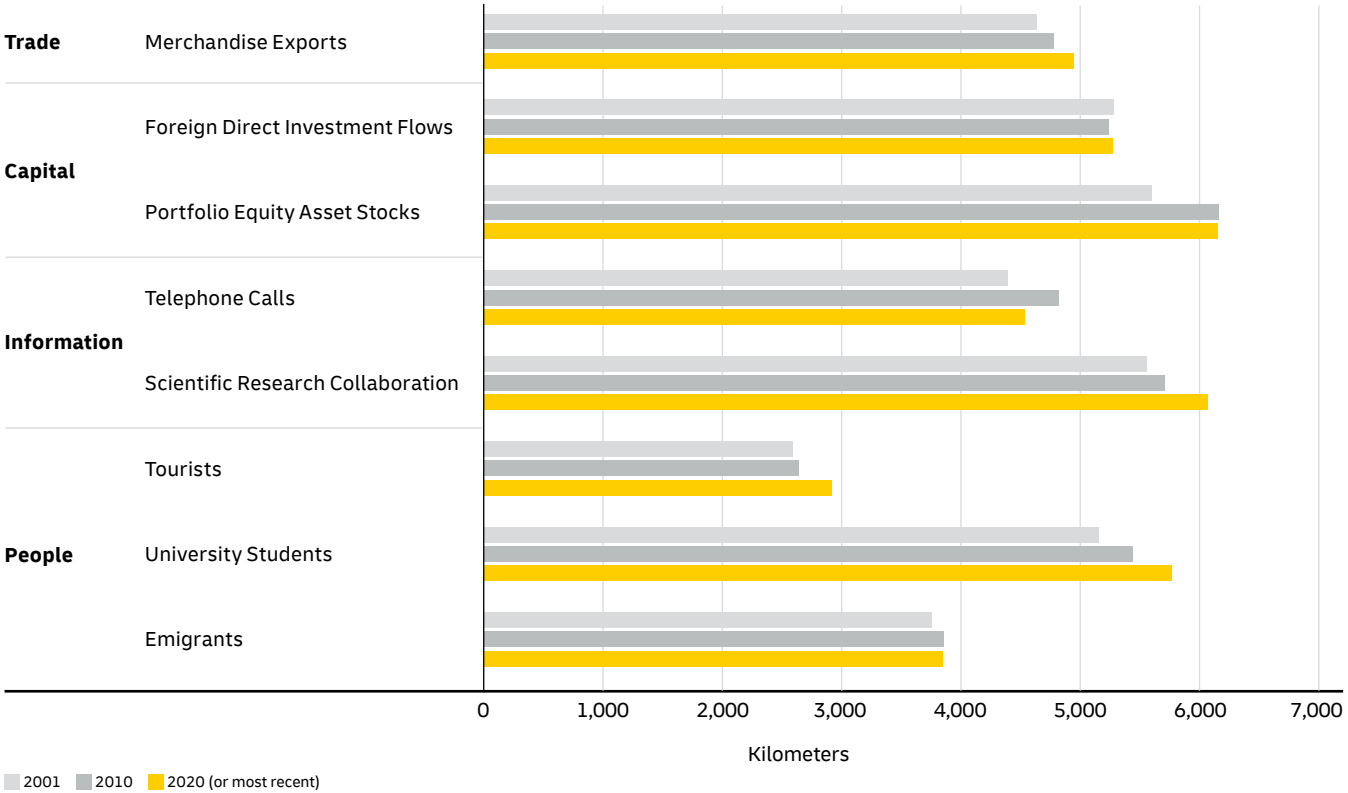


A major contributor to the growth of long-distance trade flows in 2020 was the greater reliance of other regions on imports from Asia.
Note: Distance from Asia is measured based on the population-weighted distance between major cities in each region. Asia’s own distance from Asia is greater than zero because of the distance between Asian cities. Bubbles are proportional to the value of each region’s imports.
Data sources: UN Comtrade Database, IMF Direction of Trade Statistics, and CEPII GeoDist database

It is also important to keep in mind that roughly half of all international flows *already* take place within major world regions—three times more than one would expect if distance and differences between countries had ceased to matter. So regionalization is not a new phenomenon, and an incremental shift toward more regional activity would not fundamentally transform the nature of globalization.[27] As we discuss in our other 2021 report, *Connecting to the World: Lessons from 10 Years of the DHL Global Connectedness Index*, regional integration is not a substitute for globalization but rather a key foundation of a more connected world.

We will return to the limited *breadth* of globalization, of which regionalization is a key manifestation, in **Section III**. Meanwhile, we turn next to one of the key factors that could influence the balance between global and regional flows moving forward: the possibility of decoupling between the U.S. and China.

FIGURE 9: AVERAGE DISTANCE TRAVERSED BY INTERNATIONAL FLOWS, 2001, 2010, AND 2020



Most types of international activity took place over longer distances, on average, in 2020 than in 2010 or 2001.
Data Sources: See Table 2 on page 55

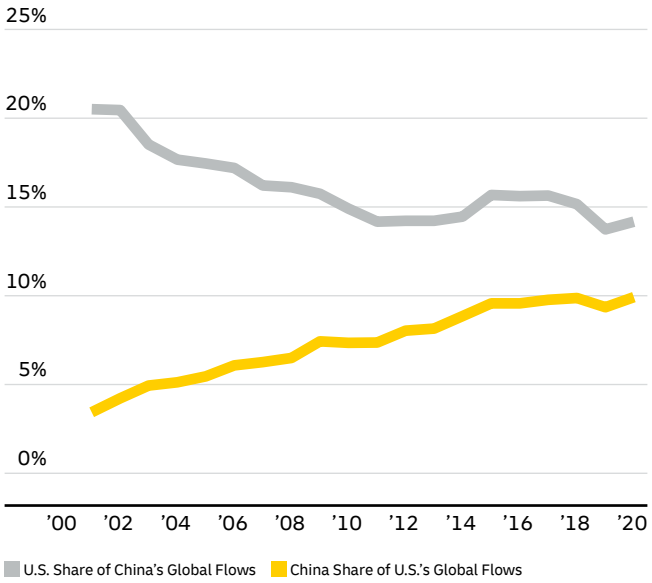
4 ARE THE U.S. AND CHINA DECOUPLING?

Rising tensions between the world's two largest economies, the U.S. and China, have turned their bilateral relationship into globalization's most sensitive fault line. The potential for a rupture between these economic giants is one of the primary reasons that many foresee a shift to a more regionalized world. In other words, the breakup of "Chimerica"[28] could cause the global economy to fracture into rival regional spheres. Is such a split underway? Data on global flows show only a modest decoupling trend, interrupted by rising trade interdependence since the onset of the Covid-19 pandemic.

For a big-picture perspective on U.S.-China interdependence, **Figure 10** tracks each country's share of the other's overall international activity (including trade, capital, information, and people flows). It shows that the U.S. is a bigger partner for China's international flows than vice versa. However, it also indicates that the U.S.'s share of China's flows was already declining in the early 2000s before stabilizing around 2010. In contrast, China's share of the U.S.'s flows had been on a gradual rising trend before slowing in 2015.

The only year with notable evidence of decoupling from both countries' perspectives was 2019. The U.S.-China trade war was in full swing, and tensions were also building about key technologies such as 5G networks. However, the dip in each country's share of the other's international flows—even in 2019—was quite small. Then in 2020, despite further tensions caused by the pandemic, both countries grew more intertwined as they relied more on trade with each other.[29]

FIGURE 10: OVERALL U.S.-CHINA CONNECTEDNESS BASED ON TRADE, CAPITAL, INFORMATION, AND PEOPLE FLOWS, 2001–2020



The U.S. and China shifted modestly away from flows with each other in 2019, but that development was partially reversed during the pandemic in 2020.

Data Sources: See Table 2 on page 55



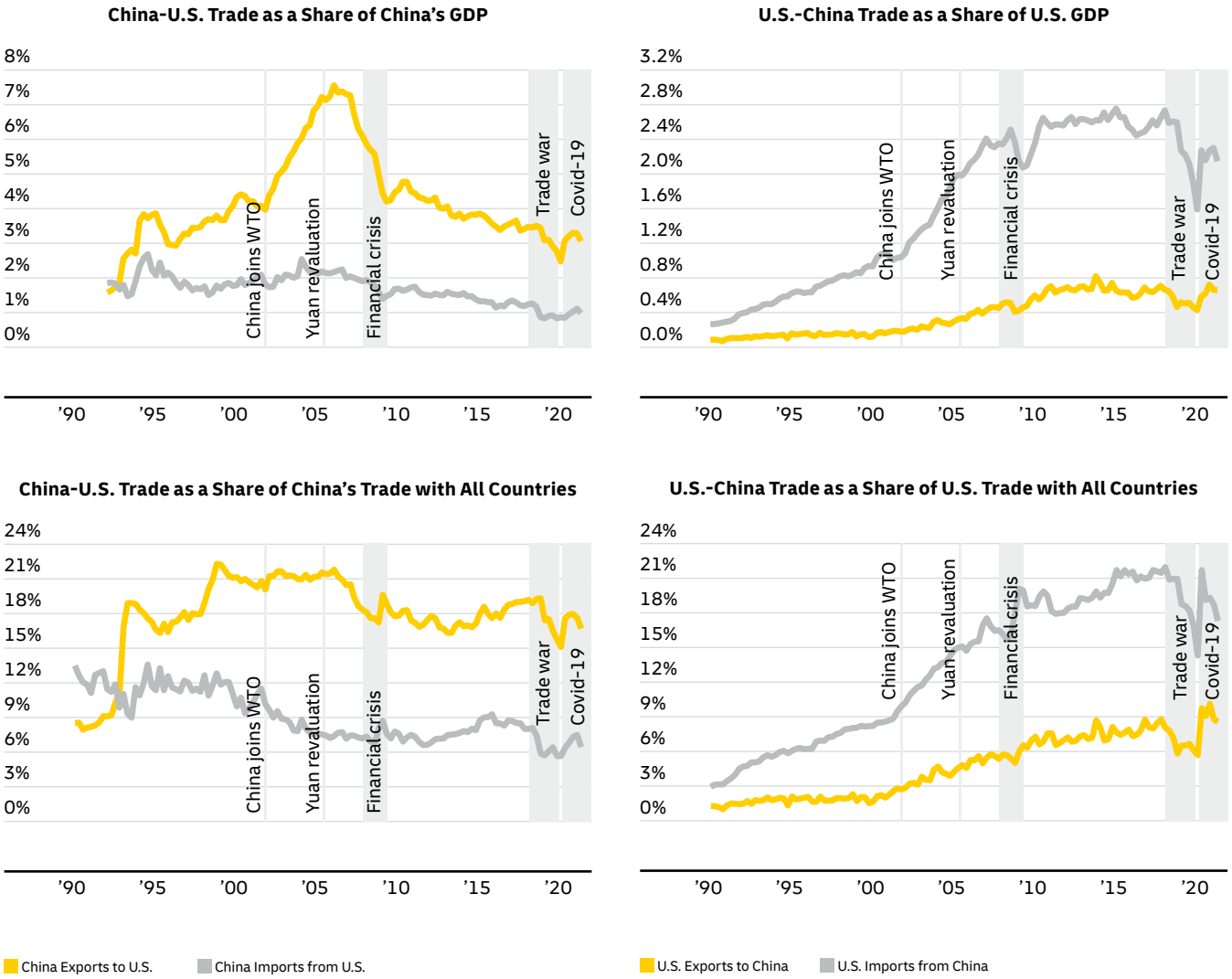
"Data on global flows show only a modest decoupling trend, interrupted by rising trade interdependence since the onset of the Covid-19 pandemic."

Zooming in on trade flows, Figure 11 highlights the evolution of trade between the U.S. and China in the context of both countries' overall economies since 1990. China had already become dramatically less reliant on exports to the U.S. before the trade war began in 2018. Exports to the U.S. as a share of China's GDP had already fallen from 7.4% in 2006 to 3.5% in 2017. This mainly reflected China's rebalancing away from export-led growth to a greater focus on domestic consumption and investment. The trade war then caused another dip, with exports to the U.S. falling to only 2.5% of China's GDP in the first quarter of 2020 (on a seasonally adjusted basis). From the U.S. perspective, the trade war began to reverse what had been a trend toward rising (and then stable) trade integration with China.

Since the onset of the Covid-19 pandemic, however, a large part of the U.S.-China decoupling wrought by the trade war has been reversed—at least temporarily. China's share of U.S. imports briefly shot all the way back up to its pre-trade war level, and the share of U.S. exports going to China rose to a new peak before starting to dip again. In large part, this pandemic-era reversal reflects China's swift rebound after strict lockdowns early in the pandemic, along with soaring foreign demand (including in the U.S.) for Chinese products, such as consumer electronics and personal protective equipment (PPE).

Looking beyond trade, it is noteworthy that evidence of a modest amount of decoupling in recent years is widespread across different types of international flows. FDI flows from China to the U.S. spiked in 2016 but have not reached a

FIGURE 11: U.S.-CHINA MERCHANDISE TRADE TRENDS IN PERSPECTIVE, 1990 – 2021 QUARTER TWO



The U.S.-China trade war accelerated China's long-run reduction in its reliance on the U.S. market, while reversing the U.S.'s pattern of rising then fairly stable trade integration with China. Then, both countries became more reliant on trade with the other during the Covid-19 pandemic.
Data Source: IMF Direction of Trade Statistics



similarly high level since then. Meanwhile, FDI from the U.S. to China held fairly steady from 2017 to 2019 before declining moderately in 2020.

Evidence of decoupling also shows up in measures of information and people flows. Before 2016, Chinese researchers collaborated with U.S. scholars on more than 30% of their internationally co-authored publications, but that proportion has gradually declined to 25% by 2020. U.S. researchers' collaboration with Chinese colleagues peaked in 2019, when 16% of their internationally co-authored publications were with Chinese researchers. In 2020, that proportion declined back to 15%. Turning to people flows, the share of China's diaspora residing in the U.S. has declined from 26% in 2015 to 21% in 2020. Meanwhile, China's share of the international tourists and business travelers visiting the U.S. peaked in 2017 at 4% before sliding back down to 3.5% in 2019.

So are the U.S. and China decoupling? The evidence to date suggests that this phenomenon remains quite limited. The effects of the trade war and the Covid-19 pandemic are fairly small in the context of the long-run development of this relationship. In fact, despite how much tensions have risen in recent years, the U.S. and China continue to maintain, by far, the world's largest long-distance relationship (based on combined trade, capital, information, and people flows).[30] So even if recent talk of "recoupling" by diplomats from both sides does not lead to closer ties, flows between the U.S. and China will continue to play a central role in shaping the future of globalization.[31]



SECTION III

THE EXTENT OF GLOBAL CONNECTEDNESS

How connected is the world today? Are we living in an age of hyper-globalization or are the world's flows not very globalized at all? This section examines these questions based on data measuring both the depth and the breadth of global flows.

1 DEPTH: HOW SIGNIFICANT ARE INTERNATIONAL FLOWS?

For any kind of activity that can take place either domestically or internationally, it is worth taking a closer look at how much actually crosses national borders. The answer turns out to be surprisingly consistent. For all types of flows measured on the DHL Global Connectedness Index, the majority is domestic rather than international.

Measures of the *depth* of globalization provide essential perspective for business and public policy decisions. When a high proportion of business activity crosses national borders, decisions must give more consideration to international market developments. Similarly, in public policy, high proportions of international activity imply that foreign policy action, often with cross-country coordination, is required to solve societal problems. In contrast, when most activity happens inside a country's borders, domestic considerations must be at the forefront to effectively tackle major challenges.

When we look at the data, we find that **domestic activity far surpasses international activity** (**see Figure 12**). For example, some 19% of all economic output generated around the world was exported in 2020,[32] roughly 7% of telephone calls (including calls over the internet) were international, foreign direct investment (FDI) flows equaled only 5% of gross fixed capital formation, and a mere 4% of people lived outside of the countries where they were born. In **Section IV**, we provide additional details about these metrics and discuss how they are trending. The key point here, however, is simply that most trade, capital, information, and people flows are domestic rather than international.

Prior research has shown that most people—including savvy international executives—significantly overestimate the extent of globalization. This has negative consequences in both business and public policy. In business, executives who overestimate globalization levels to a greater degree more often overlook the importance of carefully understanding and adapting to cross-country differences when doing business abroad. This can harm business performance and enflame societal backlashes against globalization.[33]

Likewise, exaggerated perceptions of global flows can have harmful consequences in public policy. Members of the public who overestimate levels of globalization more than others do are more likely to see globalization as a major cause of societal problems such as climate change and inequality. Exaggerated perceptions of global flows also allow leaders to divert blame abroad for problems that can only be solved effectively by hard domestic policy compromises.[34]

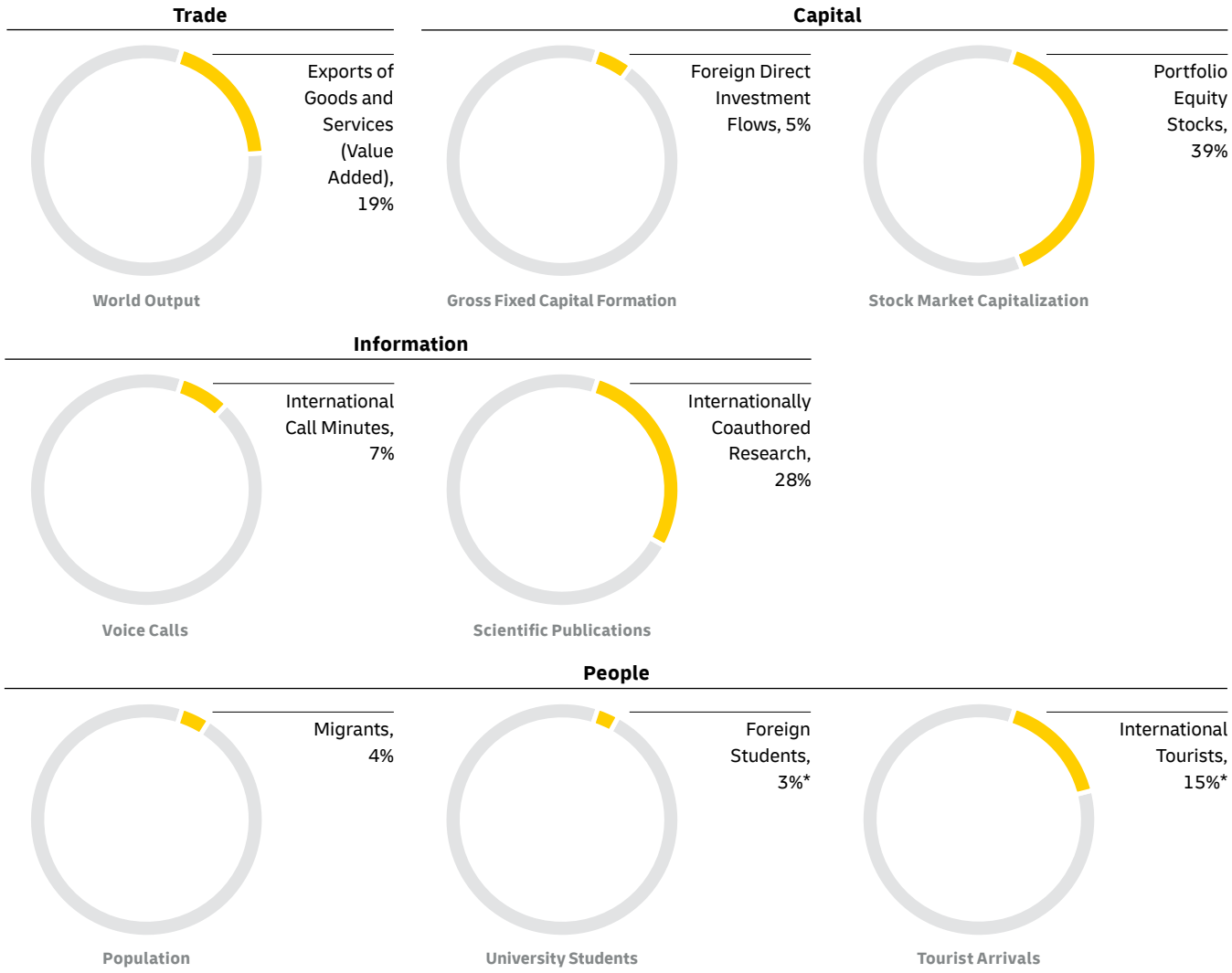
Some countries and industries, however, are much more globalized than the world as a whole. Smaller countries tend to have a much higher share of their activity taking place internationally (for country-level measures and rankings, refer to the *DHL Global Connectedness Index 2020* report). **Figure 13** highlights differences across industries. For some, such as electronics, gross exports exceed 80% of output, reflecting both a very high degree of product market globalization and extensive globalization of production via multi-country value chains. At the other end of the spectrum, the financial services industry remains primarily domestic, with less than 10% of its output exported across national borders.



Closer examination of Figure 13 highlights the general pattern that industries that produce physical goods tend to be much more globalized than those that deliver services. All of the industries at the top of the chart produce physical goods, while those at the bottom provide services. About 29% of global output in goods-producing sectors ends up in a different country from where it was produced, as compared to roughly 14% for services.[35]

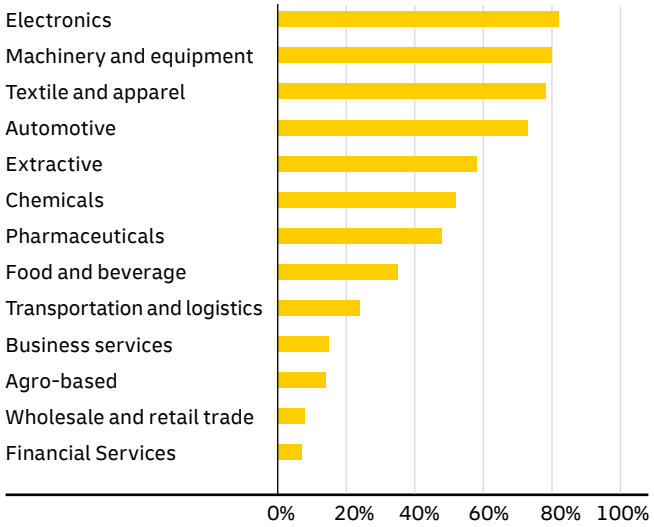
The dominance of services in the world economy helps to explain why the proportion of foreign labels on store shelves seems to be so high when, in fact, only 19% of world output ended up outside the country where it was produced in 2020. Roughly two-thirds of all final demand in the world economy is in the services sector, and a substantial part of what we are paying for when we buy foreign-made goods is actually domestic services. According to a study published by the Federal Reserve Bank of San Francisco, more than half of what Americans pay for goods imported from China goes to "U.S. businesses and workers transporting, selling, and marketing goods carrying the 'made in China' label."[36]

FIGURE 12: MOST FLOWS ARE PRIMARILY DOMESTIC RATHER THAN INTERNATIONAL (2020 OR MOST RECENT)[37]



Most flows that could take place either within or between countries are still domestic rather than international.
Note (*) For students and tourists, the most recent available data are from before the onset of the Covid-19 pandemic.

FIGURE 13: GROSS EXPORTS AS A PERCENTAGE OF OUTPUT BY INDUSTRY



Levels of globalization vary widely across industries, with goods-producing industries typically more globalized than industries in the service sector.
Source: UNCTAD World Investment Report 2020, p. 133.

The key lesson here is that, whenever globalization enters into a business or public policy decision, it makes sense to find out how much of the relevant activity actually crosses national borders. Focus can then be directed to the area—domestic or international—that is most relevant to driving the results in question.

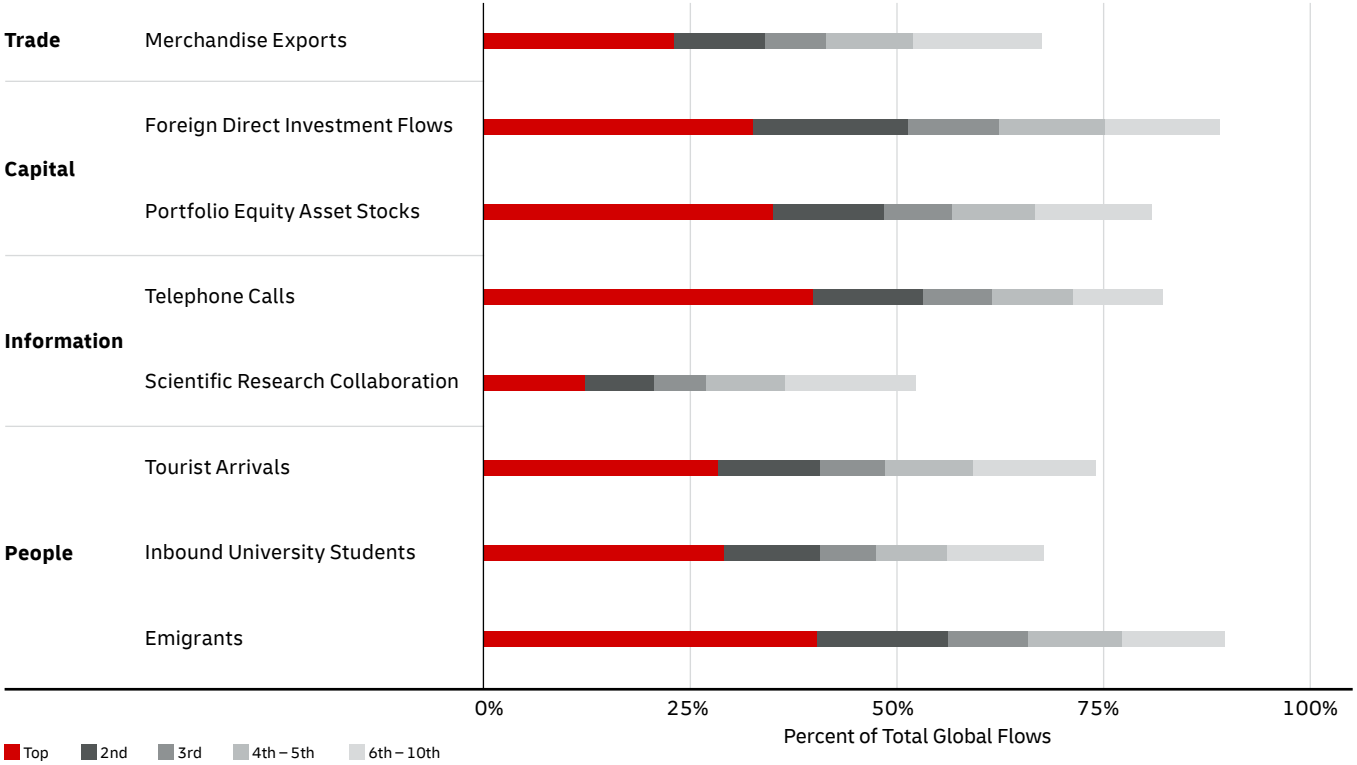
2 BREADTH: HOW GLOBAL ARE INTERNATIONAL FLOWS?

Are international flows broadly and evenly spread across the world or are they concentrated between countries and selected origins and destinations? The breadth of global flows, as it turns out, tends to be quite limited. Most countries' international flows are so highly concentrated with key partner countries (usually neighbors) that it hardly makes sense to think of them as global at all.

In **Section II**, we saw that international flows have stretched out over longer distances in recent years, casting doubt on the idea that there is a shift underway from globalization to regionalization. But we also noted there that closer integration between neighboring countries has long been a key foundation for globalization, and that roughly half of all international flows take place inside major world regions. That material provided a first indication of the limited breadth of globalization. Here, we take the point further to show that most countries actually maintain close ties to just a small number of other countries.

For starters, a sizeable percentage of the world's international flows take place between countries and just their single largest partners (e.g., their largest export destinations for trade). As shown in **Figure 14**, more than one-fifth of all merchandise trade and more than one-quarter of all other flows measured here (except scientific research collaboration) take place between countries and just their single largest partners. Migration is the most concentrated on this basis, with 42% of all migrants having moved to where their

FIGURE 14: PROPORTION OF INTERNATIONAL FLOWS BETWEEN COUNTRIES AND THEIR TOP PARTNER COUNTRIES



Most countries maintain strong connections to only a small number of other countries. Flows between countries and their single largest partners make up more than one-quarter of most types of international flows.
Data Sources: See Table 2 on page 55

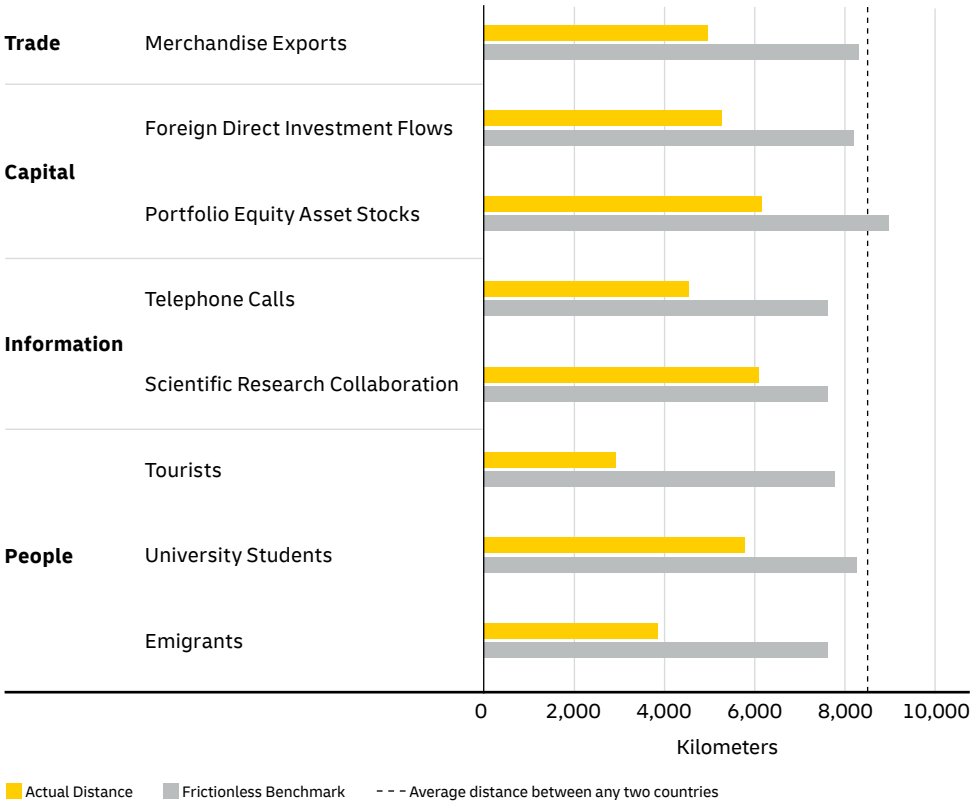
birth country has its largest diaspora population.[38] The contrast between scientific research collaboration and the other flows is particularly striking. Scientific research collaboration has, by far, the highest breadth among the flows analyzed here.

Moreover, for all measures except scientific research collaboration, more than *half* of global flows take place between countries and just their top five partners. Roughly speaking, even if each country engaged in trade, capital, information, and people flows *with just five foreign countries*—rather than the nearly 200 countries around the world—more than half of international flows would still remain.

The enduring effects of **geographic distance** go a long way toward explaining the limited breadth of globalization. For example, if one pair of countries is half as distant as another otherwise similar pair of countries, this greater physical proximity alone would be expected to increase the merchandise trade between the closer pair by more than three times, and to more than double the foreign direct investment (FDI) between them. Cultural and political similarities, which are often correlated with geography, also tend to increase international flows.[39] Sharing a common official language, for example, roughly doubles both trade and foreign direct investment between a pair of countries.[40]

Thus, despite all the advances in transportation and telecommunications, international flows are still far larger between countries that are close to each other. The average distance between all pairs of countries around the world is

FIGURE 15: AVERAGE DISTANCE TRAVERSED BY INTERNATIONAL FLOWS



The gray bars on this chart represent how far each flow might travel in a world where borders and distance were irrelevant. Under such conditions, we assume that each country's flows of a given type are proportional to benchmarks of the rest of the world's total activity. For example, each country consumes imports from every other country in proportion to every other country's share of world GDP.

International flows, even "weightless" flows such as portfolio equity investment and phone calls, diminish with geographic distance as well as other cross-country differences. On average the flows covered on the breadth dimension of the DHL Global Connectedness Index go only about 60% as far as they would if distance and cross-country differences had ceased to matter.

Data Sources: See Table 2 on page 55

about 8,500 km, but the flows covered on the breadth dimension of the DHL Global Connectedness Index averaged only 5,164 km in 2020.[41]

Figure 15 compares the distance traversed by specific types of flows to how far those flows would be expected to travel if distance and cross-country differences had ceased to matter.[42] On average, this sample of flows went only about 60% as far as they would in a "flat" world.

The key implication of this analysis of the breadth of globalization builds on what we concluded in the previous subsection about depth. When international flows are relevant to a business or public policy decision, it is crucial to look into the breadth of those flows. If most flows happen between neighboring countries—or inside regions or between countries that share key cultural or economic characteristics—the analysis should be scoped accordingly. Given the world's limited bandwidth for global coordination, global efforts should focus on truly global problems, such as climate change.[43]

Moreover, the data on both the depth and breadth of globalization make clear that we do *not* live in a hyper-globalized world. The depth data show that most activity that could happen either domestically or internationally is still domestic, and the breadth data show that most of the activity that does cross national borders is concentrated between proximate or otherwise similar countries.



"Data on both the depth and breadth of globalization make clear that we do not live in a hyper-globalized world"



SECTION IV

FOUR FLOWS THAT CONNECT THE WORLD

This section highlights the four pillars of the DHL Global Connectedness Index: Trade, Capital, Information, and People. It examines key developments within these four dimensions and considers the impact of current trends as well as future drivers in each area.

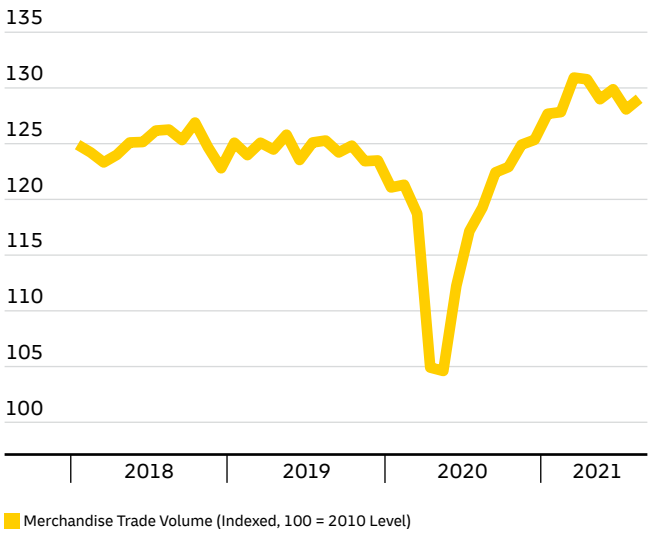
1 TRADE

After plummeting at the beginning of the Covid-19 crisis, merchandise trade has rebounded swiftly to above pre-pandemic levels, powerfully supporting the global recovery. The latest forecasts call for trade growth to outpace GDP growth through 2022, expanding the role of trade in global economic output. However, services trade has been hit harder than merchandise trade by the pandemic, and the proportion of global output traded across national borders remains below its peak level.

The Covid-19 shock caused the steepest decline in global merchandise trade on record, followed by an almost equally swift recovery, as depicted in **Figure 16**.[44] From February to April 2020, global trade volume plummeted 14%, but by September that entire plunge had been reversed, and growth continued all the way up to 5% above the pre-pandemic level by early 2021.[45] As a result, merchandise trade volume fell only 5% over the full year of 2020, and the value of world trade in U.S. dollars fell just 7%.[46]

The **trade rebound** was a positive surprise that also contributed to subsequent challenges. In April 2020, as trade was plummeting, the International Monetary Fund (IMF) forecasted an 11% full-year drop in global trade volume, far worse than the decline that ultimately took place. The World Trade Organization (WTO) was even more pessimistic, forecasting a drop of 13–32%.[47] Anticipating weak demand, many companies deferred supply orders and capacity expansion plans. Automakers, for example, held back on semiconductor orders, only to find they could not secure sufficient supplies when demand roared back.[48] The surge of international trade to well above its pre-pandemic level ran up against pandemic-induced capacity constraints, raising shipping costs and adding to the stress on supply chains. Delays at key ports and container shortages exacerbated these challenges.[49] But the fact that record amounts of goods were delivered to international buyers demonstrates both the resilience of trade and the important contribution it has made during the pandemic.

FIGURE 16: GLOBAL MERCHANDISE TRADE VOLUME, JANUARY 2018 TO AUGUST 2021



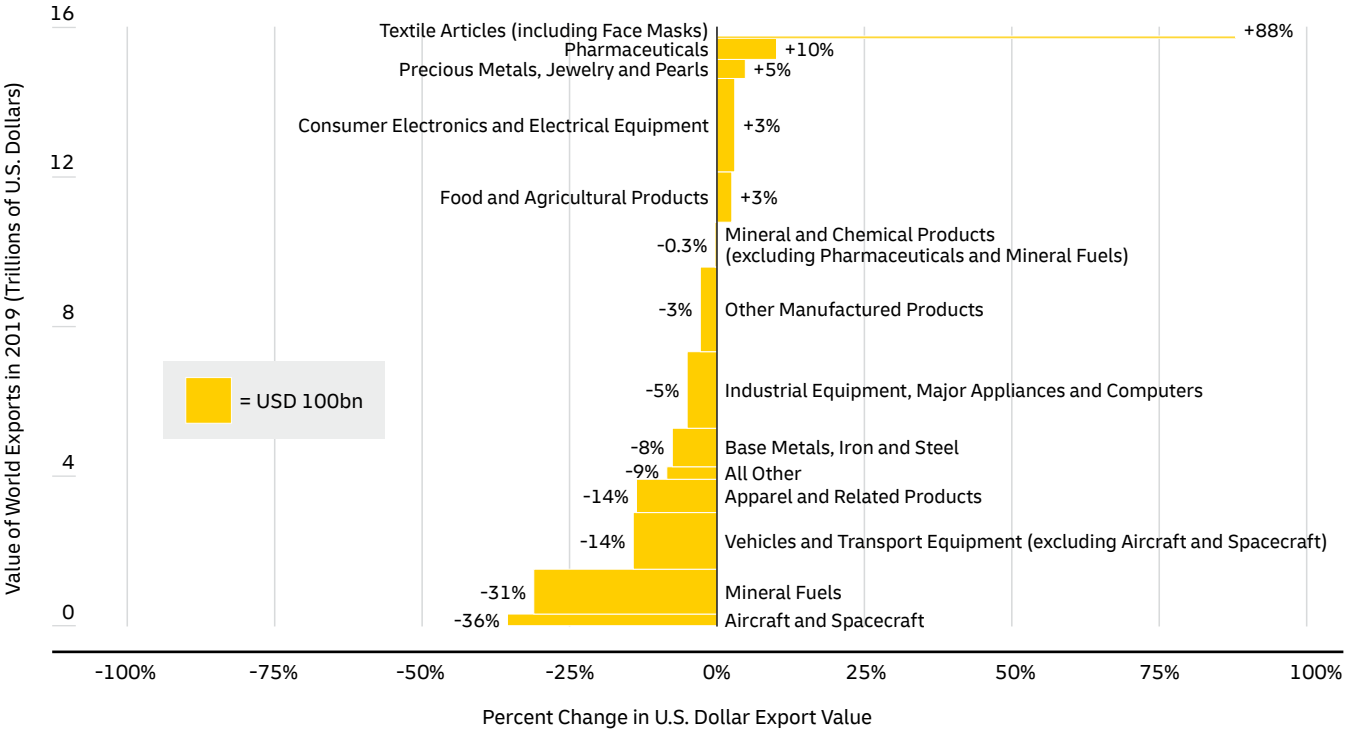
Global merchandise trade volume plummeted at the onset of the Covid-19 pandemic, but it rebounded to above pre-pandemic levels before the end of 2020. Data source: CPB World Trade Monitor



The rebound of international trade in 2020 is even more impressive when one considers how shifts in demand dramatically changed the mix of goods traded across national borders. The mix of products traded changed as much in 2020 as it normally does over a five-year period.[50] **Figure 17** breaks down how major product categories contributed to the overall change in the value of goods traded in 2020. It shows how plummeting trade in products such as mineral fuels, vehicles, and most types of apparel was partially offset by soaring trade in products where demand spiked due to the pandemic. These included electronics (for working, learning, and playing at home), pharmaceuticals (including vaccines), gold (a traditional safe haven commodity) and personal protective equipment (such as face masks).

There is, however, concerning evidence that the world's poorest countries are falling behind in the merchandise trade rebound. Between 2019 and the first half of 2021, merchandise trade declined 4% for countries in the bottom 10% on per capita income levels (and countries in the

FIGURE 17: SHIFT IN MIX OF PRODUCTS TRADED, 2020 VERSUS 2019[53]



This graph maps the composition of global trade in goods by product category and highlights the large changes that took place between 2019 and 2020. The heights of the bars show the value of world trade in each product category in 2019. The widths of the bars show how much trade in each category changed in 2020. The areas of the bars are proportional to each category's contribution to the change in total trade, and the square at left is sized to represent 100 billion U.S. dollars.

The Covid-19 pandemic caused large changes to the mix of goods traded in 2020. Rising trade in products used to fight the pandemic or to work from home partially offset falling trade in most other categories.
Data Source: UN Comtrade database

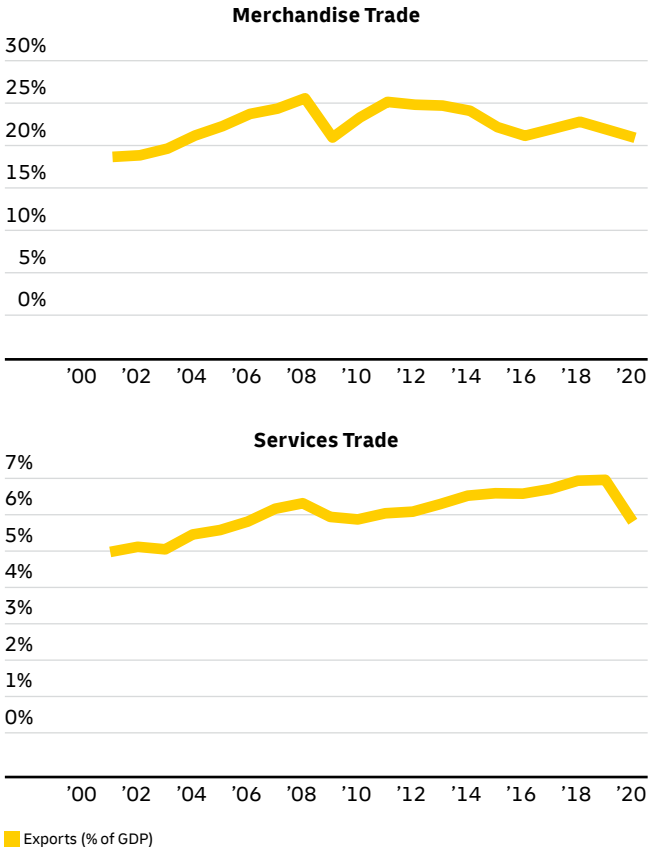


second-lowest 10% reported no trade growth).[51] While the world's least developed countries are lagging behind on the recovery of both exports and imports, the recent weakness is especially pronounced for imports.[52] This affects both current consumption and the capacity countries have to invest for future growth.

On a regional basis, merchandise exports from Asia have led the recovery. The WTO forecasts a 15% rise in Asia's exports from 2019 to 2021, as compared to 2% growth for South America, 1% for Europe, and declines of -1% for North America and the CIS countries, -2% for Africa, and -7% for the Middle East. By contrast, the growth of imports is spread somewhat more evenly across regions, with the latest forecasts calling for 9% growth in Asia, 8% in South America and the CIS countries, 6% in North America, 1% in Europe, and declines only in Africa (-1%) and the Middle East (-6%).[54]

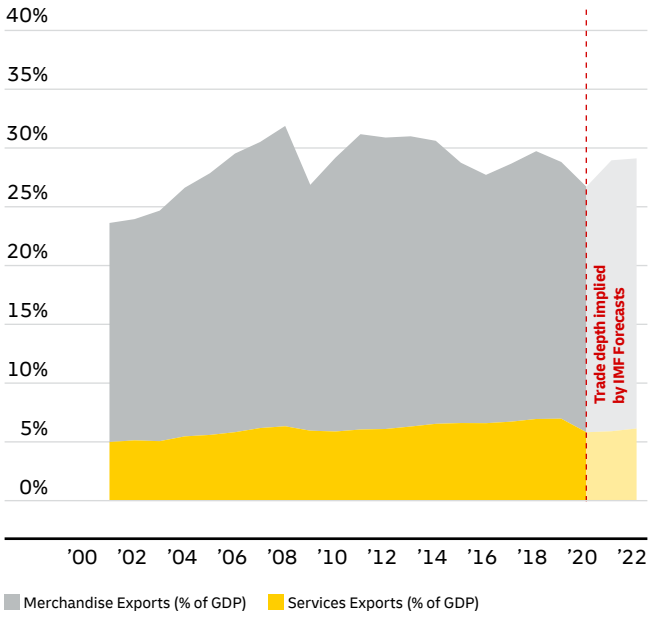
In contrast to the swift rebound and relative strength of merchandise trade during the Covid-19 pandemic, services

FIGURE 18: TRADE DEPTH TRENDS, 2001 – 2020



Merchandise and services trade both declined relative to world GDP in 2020 as the global pandemic temporarily disrupted commerce throughout the world.
Data Source: World Bank World Development Indicators

FIGURE 19: TRADE DEPTH, 2001-2020 AND IMF FORECASTS FOR 2021 – 2022



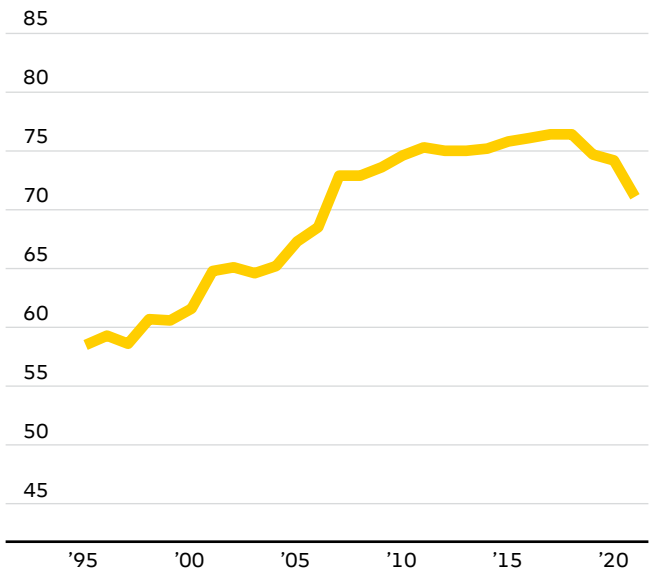
IMF forecasts call for exports as a percentage of global output to rebound in 2021 and to increase slightly in 2022.
Data sources: World Bank World Development Indicators and IMF World Economic Outlook

trade suffered a larger decline and has been recovering more slowly. The value of world trade in services fell 20% in 2020. The largest driver of this decline was the collapse of international travel. Trade in travel services plummeted 63%, and transportation services fell 19%. Meanwhile, other components of services trade (including financial services) remained far more stable.[55]

Turning to **trade's contribution to overall economic activity**, **Figure 18** tracks the value of merchandise and services trade relative to world GDP. This measure of merchandise trade intensity fell in 2020 to just below where it stood in 2016. The contribution of services trade to global output fell much more sharply, dropping all the way back to a level last seen in 2006.

Looking forward, the **latest forecasts** call for trade in both goods and services to continue recovering in 2021 and 2022. The IMF's October 2021 *World Economic Outlook* calls for trade in goods to expand 10.5% in 2021 and 6.0% in 2022 in volume terms (and 23% and 8% in U.S. dollars). This forecast also implies a major rebound in services trade, with 13% growth in 2021 and 12% in 2022 (both in U.S. dollar terms).[56] It also calls for trade to continue growing faster than global output through 2022, boosting trade's contribution to the world economy, as shown in **Figure 19**.[57] However, overall trade intensity is still expected to remain below its all-time peak recorded in 2008.

FIGURE 20: HERITAGE FOUNDATION TRADE FREEDOM INDEX, 1995 – 2021



A wave of trade liberalization lost momentum during the 2008 – 2009 global financial crisis, and recent data on tariffs and non-tariff barriers indicate a turn toward trade protectionism beginning in 2019.
Data source: Heritage Foundation Index of Economic Freedom

While the pandemic and the course of the macroeconomic recovery—still subject to substantial uncertainty—will be the primary drivers of short- and medium-term trade growth, **public policy developments** will also play major roles in shaping trade's future contributions to the global economy. Rising protectionism may have contributed to slower trade growth in recent years, and it has the potential to dampen trade growth moving forward.

For a broad measure of the policy context for international trade around the world, **Figure 20** shows the evolution of the Heritage Foundation's Trade Freedom Index. This index combines data on tariffs and non-tariff barriers, such as quantity and price restrictions as well as other regulations affecting international trade. It shows that efforts to open markets to international trade lost substantial momentum when the 2008-09 global financial crisis struck, and that policies started to become less conducive to trade in 2019.

Further evidence of **rising trade protectionism** is provided by the Global Trade Alert database, which shows that countries have enacted more than three times more discriminatory trade policy measures than liberalizing measures since November 2008.[58] Moreover, the dangers associated with new protectionist policies have been exacerbated by a breakdown of the world's system for resolving trade disputes. The WTO's appellate body ceased to function in December 2019, after U.S. officials blocked all new appointments to it.[59] As of this writing, the Biden Administration has yet to end the impasse, leaving the body completely vacant.[60] The Biden Administration did, however, endorse Ngozi Okonjo-Iweala to become Director-General of the WTO, ending a brief stalemate during the end of the Trump Administration.[61]

Nonetheless, the past year has also seen important **milestones favoring trade openness**. Trading under the African Continental Free Trade Area (AfCFTA) began in January 2021.[62] And in the Asia-Pacific region, the Regional Comprehensive Economic Partnership (RCEP) agreement will go into effect on January 1, 2022. This agreement links the 10 member countries of the Association of Southeast Asian Nations (ASEAN) with China, Japan, South Korea, Australia, and New Zealand. When it comes into force, RCEP will become the world's largest trade bloc, encompassing almost one-third of the world economy.[63] Also, in 2021, the United Kingdom, China, and Taiwan applied to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).[64]

KEY TAKEAWAYS: TRADE

- 2020 – 21 saw a swift rebound of merchandise trade to well above pre-pandemic levels.
- The slower rebound of services trade is due mainly to travel restrictions.
- Trade is forecast to grow faster than GDP in 2021 and 2022.
- Rising trade protectionism remains a threat, even as some countries continue opening markets.

2 CAPITAL

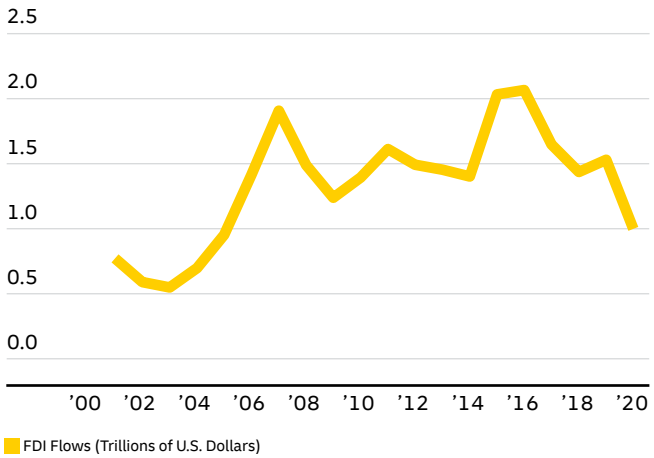
As with trade, international capital flows were hit hard at the onset of the Covid-19 pandemic, but swift action by governments and central banks prevented the public health crisis from turning into another global financial crisis. Foreign direct investment flows suffered a large full-year decline in 2020, but they began to rebound in the first half of 2021.

The capital pillar of the DHL Global Connectedness Index measures flows and stocks of foreign direct investment (FDI) and portfolio equity investment. The distinction between the two is that FDI gives the investor (typically a multinational corporation) a voice in the management of a foreign enterprise, whereas portfolio equity investment does not. For statistical purposes, if the investor owns at least 10% of the foreign company, it is normally classified as FDI; below 10% it is deemed portfolio investment.[65]

In 2020, **FDI inflows** fell 35% to $999 billion, the first time since 2005 that FDI inflows fell below $1 trillion (see **Figure 21**).[66] Even after removing various sources of noise in the FDI data, the underlying FDI trend, as calculated by the UN Conference on Trade and Development (UNCTAD), declined 25% in 2020.[67]

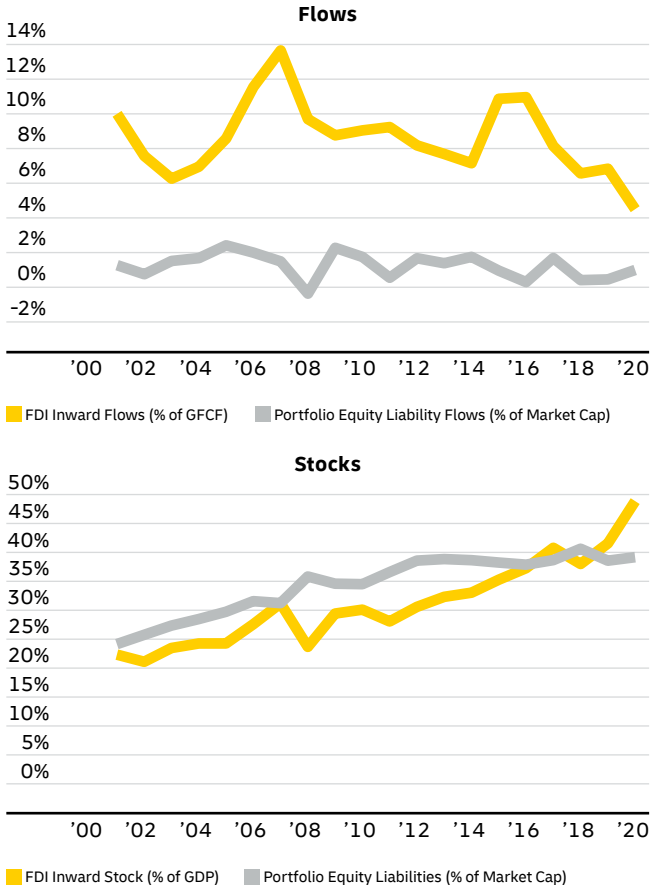
To provide a rough indication of the economic contribution of new FDI, the DHL Global Connectedness Index tracks the value of world FDI inflows as a percentage of global gross fixed capital formation (GFCF). On this basis, the intensity of new FDI has fallen to just 5% (see **Figure 22**), the lowest level recorded since 1994.[68]

FIGURE 21: FOREIGN DIRECT INVESTMENT INFLOWS, 2001 – 2020



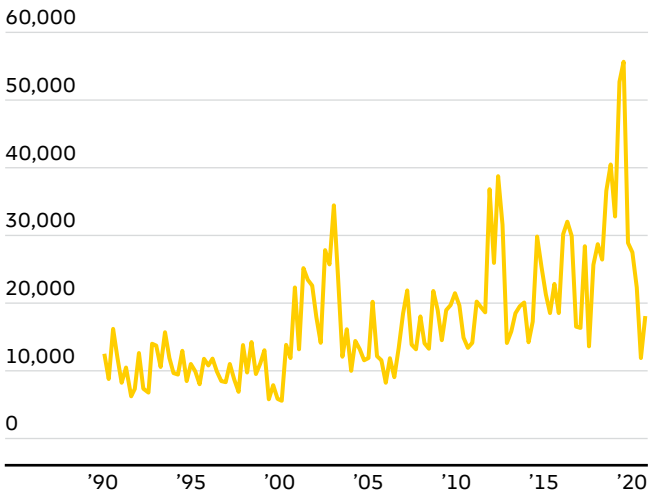
The Covid-19 pandemic caused foreign direct investment inflows to dip below $1 trillion for the first time since 2005.
Data source: UNCTAD World Investment Report

FIGURE 22: CAPITAL DEPTH TRENDS, 2001 – 2020



While the depth of FDI flows fell sharply in 2020, all of the other components of the capital pillar of the index increased.
Data sources: UNCTAD World Investment Report, IMF Coordinated Portfolio Investment Survey, World Bank World Development Indicators, Euromonitor Passport database, and World Federation of Exchanges database.

FIGURE 23: ECONOMIC AND POLICY UNCERTAINTY, 1990 – 2021 QUARTER TWO



Economic and policy uncertainty spiked to its highest level on record during the Covid-19 pandemic.
Data source: Ahir, H, N Bloom, and D Furceri (2018), "World Uncertainty Index," Stanford mimeo.

Several factors contributed to the decline in FDI flows during the Covid-19 pandemic, including a record spike in uncertainty about future economic and public policy conditions (see **Figure 23**). Facing unclear business prospects, worsening macroeconomic conditions, restrictions on business travel, and other challenges, many firms chose to defer or reduce international investments.

Most of the decline in FDI flows, however, took place during the first half of 2020. During the second half of the year, cross-border M&A activity started to grow again. New greenfield investment (e.g., companies investing in new factories abroad) continued to trend downward through the beginning of 2021, but at a much more modest pace than during the first half of 2020. By the first half of 2021, FDI was clearly on an upswing again, recovering more than 70% of its prior-year decline. As of October 2021, UNCTAD projected a return to pre-pandemic levels of FDI flows over the full year.[69]

One of the strongest aspects of the FDI rebound in 2021 has pertained to infrastructure investment. This trend drove a large increase in international project finance deals. Partial-year data for 2021 also show faster FDI growth in advanced economies, where FDI had declined more than in emerging economies in 2020. As we saw with trade, the world's poorest countries also appear to be falling behind in the FDI recovery. In the first half of 2021, FDI flows into low-income countries were down 9% (versus 2020, annualized), while they rose 30% in middle-income countries and 117% in high-income countries.[70]

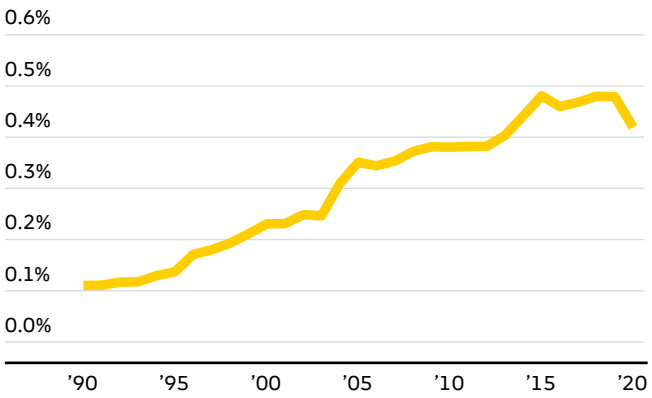
On a regional basis, FDI flows into Europe nearly quadrupled their severely depressed 2020 (full year) total during the first half of 2021 (up 666% on an annualized basis). FDI into the Americas also rebounded strongly (up 88%), while FDI grew at a more moderate pace into Asia (26%), where there had actually been growth from 2019 to 2020, and into Africa (16%). FDI into Oceania, on the other hand, declined 27%.



It is also noteworthy that, even as new FDI flows plummeted in 2020, **FDI stocks grew** dramatically both in absolute terms (up 14% in U.S. dollars) and relative to world GDP (as shown in Figure 22). This reflects, in part, the unusual behavior of global financial markets during the pandemic, with equity valuations soaring even as GDP fell. It is also in line with a broader pattern that multinational firms can still grow their international activity during periods of weak FDI flows.[71]

One of the drivers of growing international business activity in recent years, even as FDI flows have remained well below their peak, has been digitalization and the growth of technology-sector multinationals. Compared to manufacturing firms, tech companies do not rely as intensively on investments in physical assets in foreign countries. One

FIGURE 24: INTERNATIONAL PAYMENTS FOR USE OF INTELLECTUAL PROPERTY, PERCENT OF WORLD GDP



The value of international payments for the use of intellectual property relative to world GDP had been on a strong rising trend, but it stalled after 2015 and declined in 2020.
Data source: World Bank World Development Indicators



manifestation of this trend has been the rapid growth, since the mid-1990s, of international payments for the use of intellectual property (**Figure 24**). However, the most recent data on this indicator show a sharp drop in 2020. It will be important to monitor this moving forward to see whether future years bring a rebound or a shift to a new declining trend.

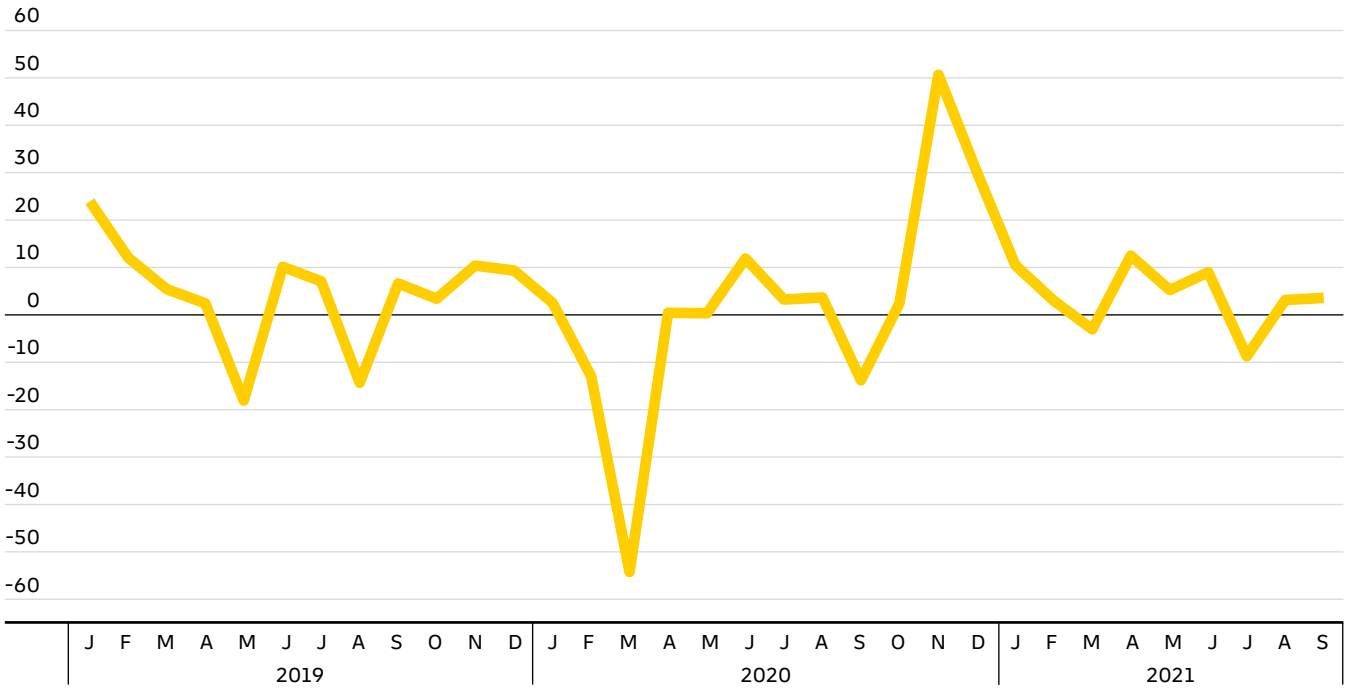
From a policy perspective, the majority (59%) of new investment policy measures introduced in 2020 focused on facilitating or liberalizing FDI (41% restricted or regulated FDI). However, this was the lowest percentage of favorable policies for FDI on record. In 2019, 76% of policy measures were designed to increase FDI, and this proportion had never before fallen below 68% (at least since the beginning of this data series in 2003).[72]

The primary factor behind this trend is the heightened scrutiny of foreign investments on national security grounds, which has gathered momentum since 2018, mainly across the world's advanced economies. Regulations implementing the EU's 2019 framework for screening FDI and the U.S.'s 2018 Foreign Investment Risk Review Modernization Act came into effect in 2020.[73] In contrast, most measures aimed at opening up to more FDI in recent years have been introduced by emerging economies.

Another major policy development with the potential to affect FDI flows moving forward is an international agreement on the taxation of multinational enterprises. In October 2021, 136 jurisdictions agreed to a 15% minimum corporate tax rate for companies with revenues over 750 million euros and a reallocation of taxing rights among countries.[74] While this agreement, if fully enacted, is likely to reduce tax-motivated FDI flows, it could lead to a future where there is a closer alignment between FDI patterns and the real activity of multinational firms.

Shifting focus from FDI to **portfolio equity**, the intensity of portfolio equity flows and stocks both rose modestly in 2020 (Figure 22). These relatively small full-year changes smooth over extreme volatility during the year. At the onset of the pandemic, the crisis prompted record withdrawals of portfolio equity investment from emerging markets (see **Figure 25**), far outstripping the outflows that took place over similar periods during other recent crises.[75] However, these flows quickly stabilized after governments and central banks stepped in to support financial markets.

FIGURE 25: NON-RESIDENT PORTFOLIO EQUITY FLOWS TO EMERGING MARKETS (BILLIONS OF U.S. DOLLARS)



There were record outflows of portfolio equity investment from emerging markets at the onset of the pandemic, but this pattern quickly turned around after robust support from governments and central banks stabilized markets.
Data source: Jonathan Fortun, IIF Capital Flows Tracker © 2020 Institute of International Finance, Inc. All rights reserved.

Portfolio equity stocks have remained fairly stable relative to global stock market capitalization since 2013. A small increase in 2020 reversed part of a modest decline in 2019. This recent pattern of stability follows a strong rising trend on this measure between 2001 and 2012.

KEY TAKEAWAYS: CAPITAL

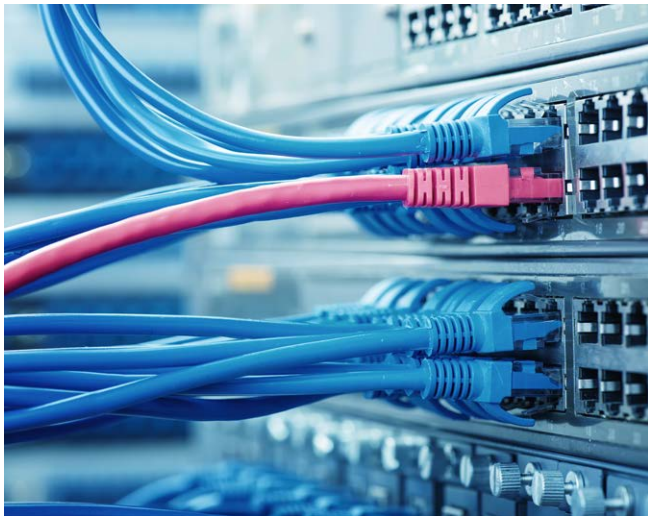
- FDI flows were hit hard by Covid-19, but they are recovering strongly in 2021.
- New FDI flows face greater scrutiny on national security grounds.
- FDI stocks grew in 2020 both in absolute terms and relative to world GDP.
- Portfolio equity flows and stocks both grew in 2020, despite extreme volatility early in the pandemic.

3 INFORMATION

The internet-fueled expansion of international information flows has launched what some have called the era of "digital globalization."[76] Digital information flows have surged both within and between countries, and there was a large spike at the beginning of the Covid-19 pandemic. However, these flows have since reverted to a longer-run slowing trend, with the growth of international information flows no longer strongly outpacing the growth of domestic flows of the same types.

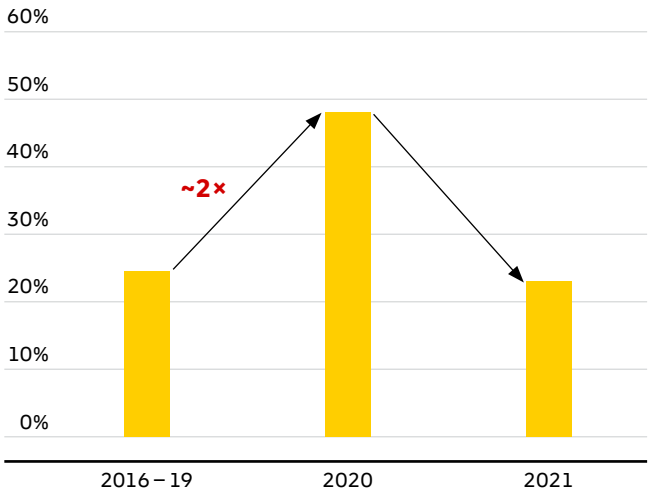
The broadest available measure of international data flows is the average volume of **international internet traffic**. In 2020, international internet traffic soared 48% as in-person activities transitioned online to control the spread of Covid-19. The growth rate of international internet traffic roughly doubled (see **Figure 26**). But this proved to be a one-time spike rather than the beginning of a sustained acceleration. In 2021, the growth of international internet traffic settled back down to 23%, consistent with a long run slowing trend that had been underway before the pandemic.[77] International internet bandwidth grew at its slowest rate in 15 years in 2019.[78]

The surge in international data flows during the pandemic was mirrored by a spike in domestic data flows. Available measures of international and domestic internet traffic are not perfectly comparable, so we cannot confirm which grew faster in 2020. However, the fact that most internet platforms are used primarily for domestic rather than international communication suggests that a large part of the spike in data flows involved local and national interactions going



online rather than a shift toward more globalized information flow patterns (see the box **How Global is the Internet Really?**).

FIGURE 26: ANNUAL GROWTH OF INTERNATIONAL INTERNET TRAFFIC



The growth of international internet traffic spiked in 2020 before reverting to a more typical level in 2021.
Data sources: Average International Internet Traffic Growth, as reported in Paul Brodsky, "Internet Traffic and Capacity in Covid-Adjusted Terms," TeleGeography Blog, August 27, 2020; Alan Mauldin, "Global Internet Traffic and Capacity Return to Regularly Scheduled Programming," TeleGeography Blog, September 7, 2021.



HOW GLOBAL IS THE INTERNET REALLY?

The internet is a global network, and internet giants such as Google and Facebook lead their categories in most countries.[79] But how much of the activity that takes place over major internet platforms actually crosses national borders? This varies widely depending on the platform and its audience.

Friendships on Facebook are not particularly globalized. In early 2020, just about 12% of friends on Facebook were located in different countries.[80] Earlier research indicates that 25% of Twitter followers are located in different countries from the people they follow.[81] While two-thirds of an average YouTube channel's views come from outside the creator's home country,[82] just 20% of trending videos on YouTube ranked among the top 10 videos in more than one country.[83] And when people go online to read the news, they almost always go to news websites based in their own countries.[84]

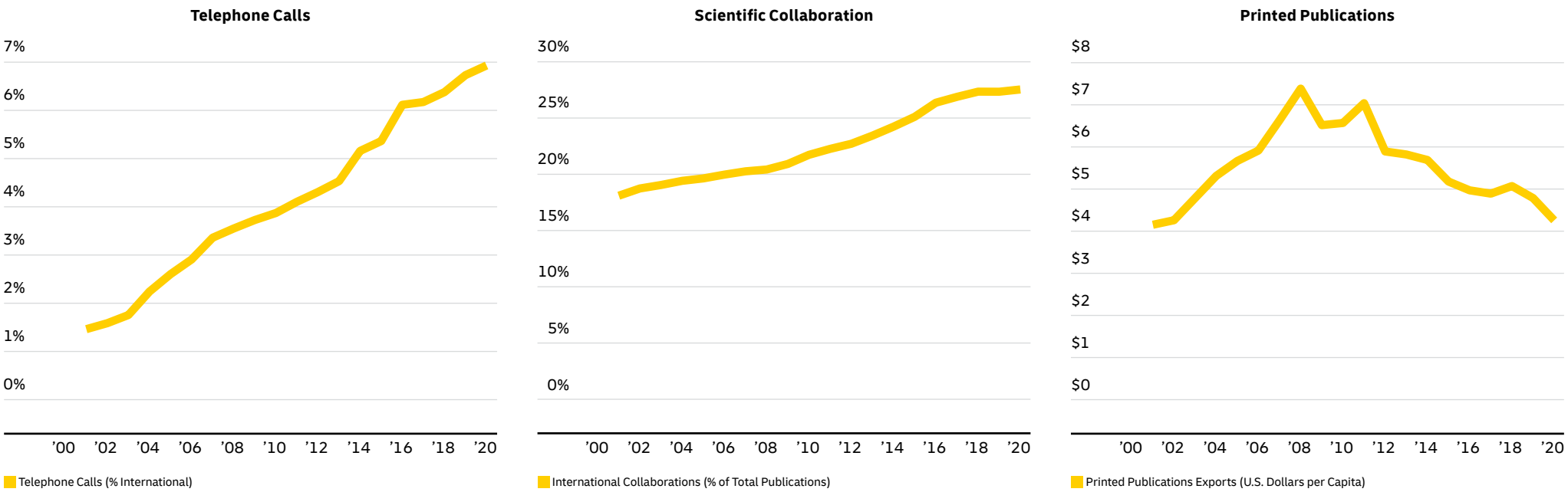
E-commerce transactions also take place primarily within countries. In 2019, cross-border sales accounted for roughly 9% of total business-to-consumer (B2C) e-commerce.[85] Data are not yet available on the cross-border share of e-commerce during the pandemic, but there are clear indications of a major e-commerce growth spurt. The proportion of retail sales taking place online jumped from 16% in 2019 to 19% in 2020.[86]

The pandemic-induced spike in data flows appears to be an isolated phenomenon that has not reversed the longer-term deceleration of the globalization of information flows. This is supported by data on the three measures used to calculate global trends on the information pillar of the DHL Global Connectedness Index: voice calls (including calls over the internet), international co-authorship of scientific research, and trade in printed publications (see **Figure 27**).[87]

The international proportion of **voice call minutes** (including calls over the internet) has soared from 1.5% in 2001 to nearly 7% in 2020.[88] A major contributor to the growth of international calling has been the rise of calls over internet-based services. According to TeleGeography, far more international calls are now placed via applications such as Skype, WeChat, and WhatsApp than over the networks of all the world's telecommunications carriers combined.[89] Free calls over the internet, however, are no longer a novelty, and the maturation of such services appears to be contributing to slower growth of international call minutes.

While the international proportion of call minutes more than quadrupled since 2001, most people still have very little direct phone contact with people outside their own country. In 2020, the average person around the world still spent only about eight hours talking to people in other countries (as compared to more than 100 hours spent on domestic calls).

FIGURE 27: INFORMATION DEPTH TRENDS, 2001–2020



The growth of information flow depth measures has slowed in recent years. Data sources: TeleGeography, Clarivate Web of Science, UN Comtrade Database, and UN DESA World Population Prospects

Early data showed a large (20%) spike in international calls in March 2020 compared to the same month in 2019,[90] but subsequent research suggests that the pandemic's effects on international voice traffic varied across countries, with some seeing growth and others a decline. Overall, the pandemic does not appear to have resulted in a sustained increase in international voice traffic.[91]

Turning to **international scientific collaboration**, we see another dramatic growth trend that has decelerated in recent years.[92] The proportion of scholarly articles with co-authors located in more than one country rose from 18% in 2001 to 28% in 2020 across the large sample of journals indexed in the Web of Science database.[93] However, this measure has grown by less than 1% for the second year

running in 2020. By contrast, from 2010 to 2018, the average growth rate was almost 3%. Growth began to slow in 2017 and has continued its deceleration since then.

Although the growth of international scientific collaboration has slowed, it is interesting to note that globalization of scientific research has been fueled by large increases in the scientific capacity of developing countries, which has boosted research output in both advanced and developing economies. According to one study, over the past 20 years, co-authored works with scholars from developing countries "account for all the growth in output among the scientifically advanced countries."[94]

Other measures provide mixed perspectives on the trajectory of scientific or technological globalization. Data on payments for the use of intellectual property corroborate the sense that a globalization wave has slowed down. As shown in Figure 24 in the previous subsection, international payments for the use of intellectual property peaked as a share of GDP in 2015 and declined in 2020. By contrast, data on patent applications continue to show strong growth. Excluding patents filed in China (where there has been a surge in domestic patenting activity), the share of patent applications filed by nonresidents rose from 35% in 2000 to 45% in 2019.[95]

Meanwhile, in contrast to the internet-fueled growth of telephone calls and scientific collaboration, **trade in printed publications** per capita has shrunk in favor of digital alternatives.[96] Just over $4 (USD) of printed material was exported per person in 2020, down from a peak of more than $7 in 2008.

Looking forward, the future globalization of information flows is clouded by an unusual amount of uncertainty as countries race to define and implement data flow regulations. Major economies such as the European Union, the United States, China, India, and Russia have each embraced distinct approaches to the governance of international data flows.[97] Mechanisms that facilitate secure and efficient data flows between countries with different regulatory approaches will be crucial to maximizing the benefits of digital globalization while addressing legitimate policy concerns.[98]

The inclusion of cross-border data flow policies in recent trade agreements is reason for some guarded optimism in this area. Nevertheless, it is important to recognize that a major fracture to global information flows could be very costly. Recent research by the Information Technology and Innovation Foundation has found that a 1-point increase in data restrictiveness for any given country results in a 7% decrease in trade output, almost a 3% reduction in productivity and a 1.5% long-term increase in prices for downstream industries.[99] More generally, a Deutsche Bank study estimates that a "tech cold war" could cost as much as $3.5 trillion due to reduced demand, costs of operating across rival platforms, and costs of relocating supply chains.[100]

KEY TAKEAWAYS: INFORMATION

- Data on internet traffic, voice calls, scientific collaboration, and payments for the use of intellectual property all suggest that the major upswing in the globalization of information flows has slowed in recent years.
- International data flows spiked in 2020, but this did not lead to a sustained acceleration.
- Countries are racing to define and implement policies governing international data flows.
- Secure and efficient data flows between locations with different regulatory approaches will be crucial to maximizing benefits of digital globalization while addressing legitimate policy concerns.
- A major reversal of the globalization of information flows would be very costly.

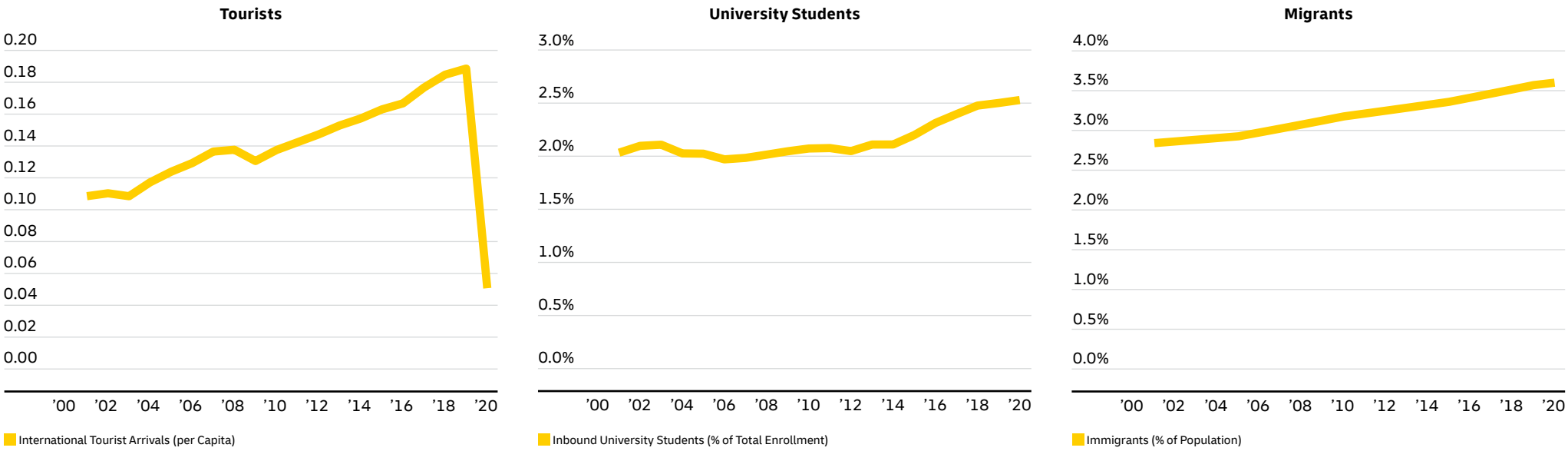
4 PEOPLE

People flows have been hit far harder by the Covid-19 pandemic than any of the other aspects of globalization measured on the DHL Global Connectedness Index. International travel has plummeted, and rough data suggest slowdowns in the growth of international education and migration.

Prior to the pandemic, **international travel** had been on a strong upward trajectory, with the number of people visiting foreign countries—for both leisure and business purposes—reaching more than five times its 1980 level by 2019.[101] But this growth trend ended abruptly in 2020, as the Covid-19 pandemic caused the number of people traveling to foreign countries to drop 73%.[102] There were 1 billion fewer international arrivals in 2020, setting this measure back to a level last seen three decades ago. The collapse of international travel has wrought severe economic damage, eliminating $1.3 trillion in export revenues and endangering 100 – 120 million jobs in the tourism sector.[103]

The DHL Global Connectedness Index measures international tourism based on international arrivals per capita. This measure has also fallen sharply: from 0.19 international trips per person in 2019 to 0.05 in 2020 (see **Figure 28**). Pre-pandemic, this measure had been expected to continue rising, as international tourist arrivals were projected to outpace population growth.

FIGURE 28: PEOPLE DEPTH TRENDS, 2001– 2020



International travel plummeted and migration slowed in 2020 due to the Covid-19 pandemic. The full effects of the pandemic are not yet apparent in the data on international university students.
Note: The 2020 value for students does not fully capture the effects of Covid-19, since reporting on international students is generally by academic year rather than calendar year and is often delayed.
Data sources: UNWTO, UNESCO Institute for Statistics, Euromonitor Passport database; UN DESA International Migration database, and UN DESA World Population Prospects

International travel has remained severely depressed through most of 2021, but the most recent available data show glimmers that a recovery may already be underway. Monthly international arrivals through May 2021 remained more than 80% below their pre-pandemic (2019) levels, but by July they were only down 67% (see Figure 3 on Page 11).

As Covid-19 vaccines and faster testing have become available, countries have opened up more to international travel. In June 2021, 29% of destination countries worldwide had their borders completely closed to tourism, down from 53% in July 2020 and 76% in May 2020. However, even as of mid-2021, most countries that had opened their borders continued to maintain special pandemic-related restrictions, such as vaccination, testing, or quarantine requirements.[104]

Looking ahead, a September 2021 survey of the World Tourism Organization's Panel of Tourism Experts indicated that international tourism is unlikely to return to its pre-pandemic level before 2023. Among the experts surveyed, 43% predicted a full recovery in 2023 while 45% expected that milestone to be reached only in 2024 or later.[105]

The severity of the downturn and expectations about the recovery vary widely across regions. Between January and July of 2021, international arrivals were down 95% in Asia and the Pacific, 82% in the Middle East, 77% in Africa and Europe, and 68% in the Americas.[106] The experts surveyed by the World Tourism Organization were most optimistic about a swift recovery in the Middle East, and most pessimistic about the pace of recovery in Asia and the Pacific.[107]

Considering international versus domestic tourism, travel within countries far eclipses travel between them. In 2019, approximately 15% of overnight tourists travelled outside of their home countries.[108] Although this measure cannot be calculated yet for 2020, the international share of tourism has clearly fallen during the pandemic. **Figure 29** shows how weekly domestic and international airline passenger seat capacity has evolved over the course of the pandemic. In 2020, between early March and early April, domestic flight capacity fell 47% and international flight capacity plummeted 84%. By early October 2021, domestic flight capacity was down only 7%, but international capacity was still down 38%.[109]

Business travel makes up just a fraction of international travel, but it is a significant enabler of international trade, investment, and economic development.[110] According to the World Travel and Tourism Council, spending on business travel decreased $790 billion in 2020, a 61% decline from the previous year.[111] By the second quarter of 2021, fewer than one in five companies had attained 25% of 2019 travel spending according to a Deloitte survey of professional travel managers. These professionals also indicated that they do not expect their companies to reach pre-pandemic spending levels on business travel in the near future.[112]

Some experts predict that up to 36% of business travel will be permanently lost due to structural changes to the global business environment brought on by the pandemic.[113] Many companies have discovered cost-savings and increased efficiency in a remote-work environment, making it difficult to



"International travel has remained severely depressed through most of 2021, but the most recent available data show glimmers of a potential recovery trend."

FIGURE 29: DOMESTIC VERSUS INTERNATIONAL FLIGHT CAPACITY DURING THE PANDEMIC



International passenger airline capacity declined more than domestic capacity and has been slower to recover.
Data Source: OAG





justify extensive travel. Aside from this, approximately one in three companies have made commitments to reduce their carbon emissions by a specific amount across a number of years.[114] Reducing business travel, especially by air, is often seen as an attractive contributor to such goals.

Visa policies are another factor that will shape the travel recovery. Prior to the pandemic, the prevailing trend was toward countries relaxing tourist visa requirements to boost international arrivals. In 2019, Arton Capital's Passport Index reached a peak level of global visa openness, with travel between 54% of all country-pairs worldwide permitted without obtaining a visa.[115] As countries strive to re-build their tourism sectors, many may again relax visa requirements to welcome more visitors.

The global effect of the pandemic on **international education** remains unclear due to data limitations. Currently available data indicate that the number of international university students, as a percentage of total enrollment, appears to have increased slightly in 2020, although this does not yet fully reflect the impact of the pandemic (data on international education are often reported by academic year and with substantial lags). What can be said with more certainty

is that the globalization of university education slowed in 2019 and this deceleration appears to have continued in 2020.[116]

Preliminary research indicates, unsurprisingly, that Covid-19 caused significant declines in international student mobility. According to one study, major education destinations saw international enrollment declines ranging from modest dips to drops of close to 20%. Falling enrollment of new students drove these declines, while relatively few students exited programs they had already started.[117] With many colleges and universities having transitioned to remote or hybrid instruction, many students studied at foreign institutions while remaining physically in their home countries.[118]

The United States, the world's top study destination, saw a 16% decline in the number of international students enrolled at its colleges and universities in fall 2020, and new enrollments for the term fell 43%.[119] Application trends, however, point to stronger results for the academic year starting in fall 2021. Twice as many U.S. colleges and universities reported increases in applications from foreign students as compared to the prior year.[120] Enrollment figures for the academic year beginning in fall 2020 in the UK (the second largest destination for international students) are not available yet, but international applications for undergraduate programs beginning in fall 2020 were up 5%. However, this was followed by a 6% decline for programs beginning in 2021. This decline reflects a 14% rise in applications from outside the EU partially offsetting a 43% decline in applications from EU students. Following Brexit, EU students face a large increase in the cost of studying at UK universities.[121]

The final component of the people pillar is **migration**. Like international students, this measure represents the stock of migrants living abroad rather than the flow. The proportion of the world's population living outside of their birth countries has been on a rising trend over the past few decades and continued to increase in 2020, albeit at a slowed pace. From 2001 to 2020, it rose from 2.8% to 3.6%, its highest level on record.

While the Covid-19 pandemic did not have a major impact on the stock of migrants living abroad, it did have a dramatic short-term impact on flows of migrants. The United Nations Population Division estimates that it slowed the growth of the total number of people living outside their birth countries by about 2 million people in 2020, roughly 27% less growth than pre-pandemic forecasts anticipated.[122]

Reduced migration flows appear to have exacerbated pandemic-induced labor shortages in some countries, compounding supply chain challenges. Migration to OECD countries for employment purposes fell sharply in 2020. However, there are already signs of tight labor market conditions contributing to a rebound in international migration.[123]

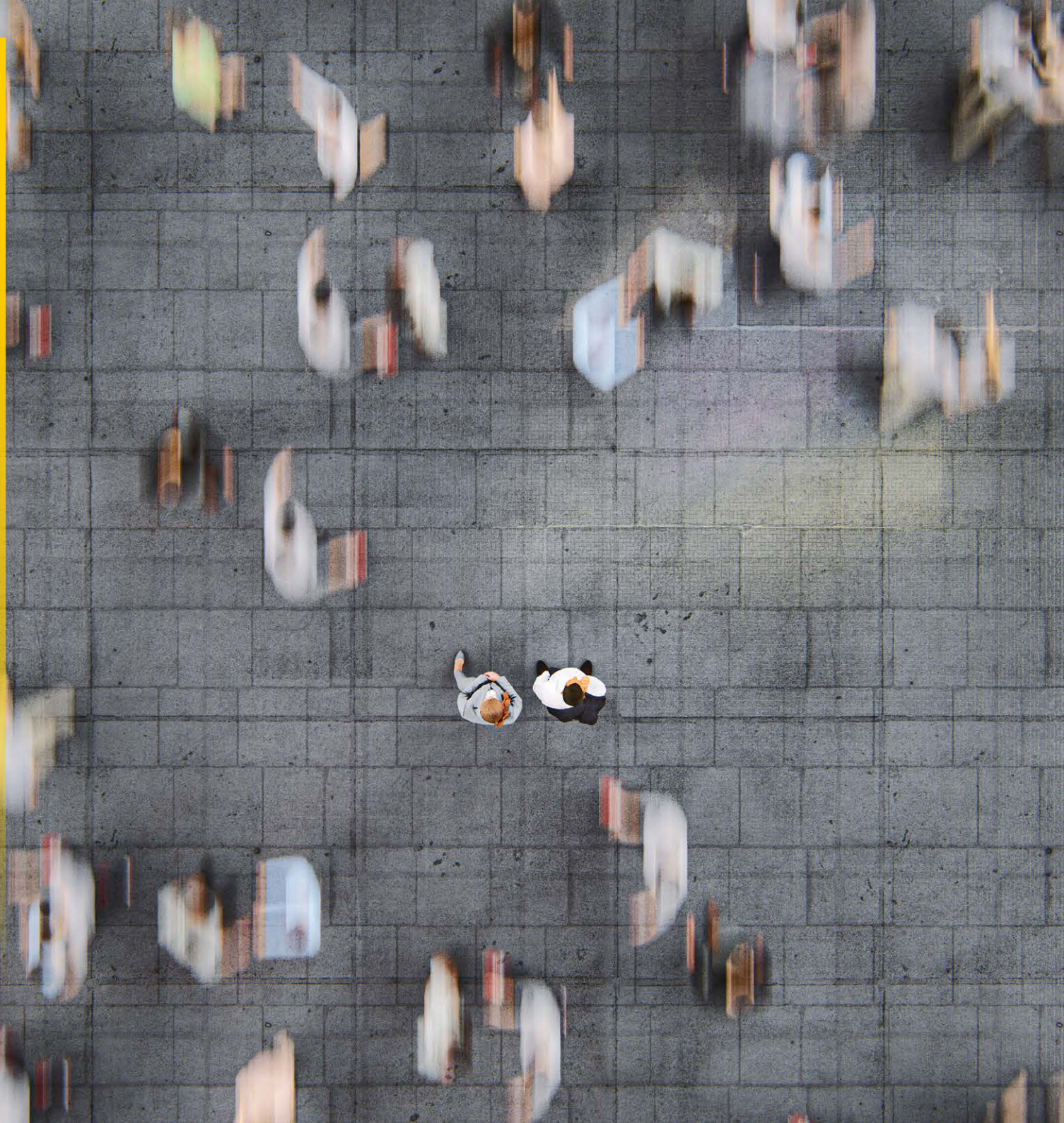
KEY TAKEAWAYS: PEOPLE

- International travel plummeted 73% in 2020 and a full recovery is not expected until at least 2023 or 2024.
- Leisure travel is expected to recover before business travel.
- The globalization of university education was slowing before the pandemic and the full effect of the pandemic remains unclear.
- The pandemic slowed—but did not reverse—the growth of international migration.

SECTION V

CONCLUSION

The concluding section of this report underscores the resilience of international flows, even as the pandemic has highlighted vulnerabilities that should be addressed moving forward. We propose four priority areas to strengthen global connectedness both to accelerate the recovery from Covid-19 and to build toward a safer and more prosperous future.



The analysis presented in this report has shown globalization to be far more resilient than many expected at the onset of the Covid-19 crisis. However, the pandemic stress test has also exposed vulnerabilities that demand the attention of decision-makers in business and public policy.

The DHL Global Connectedness Index shows that Covid-19's blow to globalization has been relatively modest. Digital flows surged early in the pandemic to keep the world connected from a distance, trade in goods was already back to pre-pandemic levels before the end of 2020, and foreign direct investment started bouncing back in the first half of 2021. International travel suffered the worst blow, but there were even glimmers of a potential travel recovery by mid-2021.

The resilience of global flows is good news, because higher levels of global connectedness can help boost economic growth and curb inflation.[124] This resilience also implies that globalization could play a larger role than many have presumed in supporting the recovery from Covid-19 and contributing to a safer and more prosperous world moving forward. But to maximize the benefits of globalization, we need to address longstanding vulnerabilities that became even more apparent during the pandemic.

Four priority areas stand out: (1) fortify global and regional supply chains, (2) bolster trade agreements and international institutions, (3) prevent the world's poorest countries from falling further behind, and (4) secure the future of digital globalization.

FORTIFY GLOBAL AND REGIONAL SUPPLY CHAINS

Trade has made large and often underappreciated contributions to the world's recovery from Covid-19. Pandemic shortages would have been far worse without access to goods from abroad.[125] Think, for example, of the deaths averted because trade in personal protective equipment (PPE) soared in 2020.[126] And beyond public health, trade played a large role in enabling the massive shift in consumption from services to goods during the pandemic.[127]

At the same time, the Covid-19 pandemic has also highlighted supply chain vulnerabilities that must be addressed moving forward. In October 2021, the International Monetary Fund (IMF) downgraded its global economic growth forecast due, in part, to pandemic-driven disruptions to global supply chains.[128]

To fortify global and regional supply chains, decision-makers should focus on three main approaches: capacity-building, diversification, and visibility. Public and private investment can be directed to relieving bottlenecks that have restricted the ability of supply chains to scale up in response to surging demand. The pandemic has also bolstered the longstanding case for diversifying supply chains to avoid over-reliance on single sources for essential inputs. In terms of visibility, carefully mapping supply chains can go a long way towards better understanding and mitigating vulnerabilities.[129]

These three approaches can strengthen both global and regional supply chains. This is important because the major



shift from globalization to regionalization that many have predicted in recent years is not confirmed by recent trade patterns. Trade in goods has stretched out over longer distances during the pandemic, as major Western economies relied more on imports from Asia. Nonetheless, more than half of world trade has long taken place inside major world regions, implying that global and regional value chains will both continue to play key roles moving forward.

Capacity-building, diversification, and improved visibility all take time to implement, and the ongoing pandemic and travel restrictions make swift progress more difficult to achieve. Focus on these areas, therefore, will need to be sustained long after the present disruptions are resolved.



BOLSTER TRADE AGREEMENTS AND INTERNATIONAL INSTITUTIONS

The strong rebound of international trade and other flows during the pandemic has been achieved despite unfavorable policy trends in several areas. As we discussed in **Section IV**, multiple measures point to rising protectionism, and the risks associated with this are exacerbated by the ongoing impasse over the WTO's dispute settlement mechanism.

The crucial contributions that trade has made to the fight against Covid-19 highlight the importance of turning these trends around. Moreover, recent analysis shows that trade agreements have helped to boost resilience during the pandemic. When trade declined in 2020, the dip was 40% smaller if countries were linked by a deep trade agreement (defined as a customs union or a free trade agreement that includes an economic integration agreement).[130]

We also saw earlier in this report how elevated economic and policy uncertainty has dampened international investment during the pandemic. International agreements and institutions play key roles in providing the stability required for the kinds of long-run investments that can do the most to boost productivity growth and prosperity.

The clear implication is to reinvigorate efforts to expand and strengthen trade agreements and international institutions more generally. With more favorable policies in place, trade and other international flows could play even larger roles in the global recovery from Covid-19.

PREVENT THE POOREST COUNTRIES FROM FALLING FURTHER BEHIND

Even as global trade was setting new records in early 2021, the countries with the lowest per-capita incomes were still trading *less* than they did in 2019.[131] Similarly, during the first half of 2021, FDI flows into low-income countries fell, while they grew strongly in middle- and high-income countries.[132] One reason is limited access, thus far, to Covid-19 vaccines. Only 2% of people in low-income countries had received at least one vaccine dose as of September 2021.[133]

These disparities exacerbate longstanding gaps in countries' levels of connectedness. The DHL Global Connectedness Index has consistently reported that advanced economies are more connected than emerging and developing economies, with less developed countries lagging behind the most on international information and people flows (and less so on trade and capital flows).[134]

An intriguing policy recommendation to boost the global connections of the world's poorest countries is the Global Value Chains for Least Developed Countries (GVCs for LDCs) initiative, proposed in the run-up to the 12th WTO Ministerial Meeting. This initiative calls for making economic value added in the world's least developed countries duty-free as

it moves through later stages of global value chains. This could boost exports from the world's least developed countries, with benefits for all countries—not only the poorest.[135]

More generally, our research has identified a number of policy focus areas that countries at all income levels can consider for boosting their benefits from global connectedness. These fall into five broad categories: peace and security, domestic business environment, international openness, regional integration, and societal support. (For details, refer to our 2021 report, *Connecting to the World: Lessons from 10 Years of the DHL Global Connectedness Index*.)

SECURE THE FUTURE OF DIGITAL GLOBALIZATION

Digital flows have been crucial to keeping the world connected during the Covid-19 pandemic. When in-person contact ground to a halt, the world swiftly turned to digital platforms for business, education, and personal interactions. But while international data flows soared in 2020, this acceleration was short-lived. Moreover, there have been slowdowns in recent years in the globalization of data flows, voice calls, scientific research collaboration, and payments for the use of intellectual property. Digital flows continue to expand both within and between countries, but it is no longer clear that our digital connections are becoming more globalized. In some spheres, they are probably becoming less global.[136]

Meanwhile, the Covid-19 pandemic also highlighted the vulnerability of digital flows. Online criminal activity spiked as



digital flows boomed. Internet crime complaints to the U.S. Federal Bureau of Investigation (FBI) rose 69% in 2020.[137] According to one analysis, the worldwide cost of cybercrime reached almost $1 trillion, up about 50% since 2018.[138]

Cybercrime, privacy concerns, and geopolitical tensions all contribute to the urgency of securing digital flows. However, the rise of different approaches to regulating data flows across economies has the potential to further fragment the digital business environment, significantly increasing the cost and complexity of doing business internationally.

To maximize the benefits of digital globalization while addressing legitimate concerns, it will be crucial to facilitate secure and efficient data flows between countries and regions with different regulations. Digital globalization proved its value during the pandemic—we need to strengthen it for the future.



LOOKING FORWARD

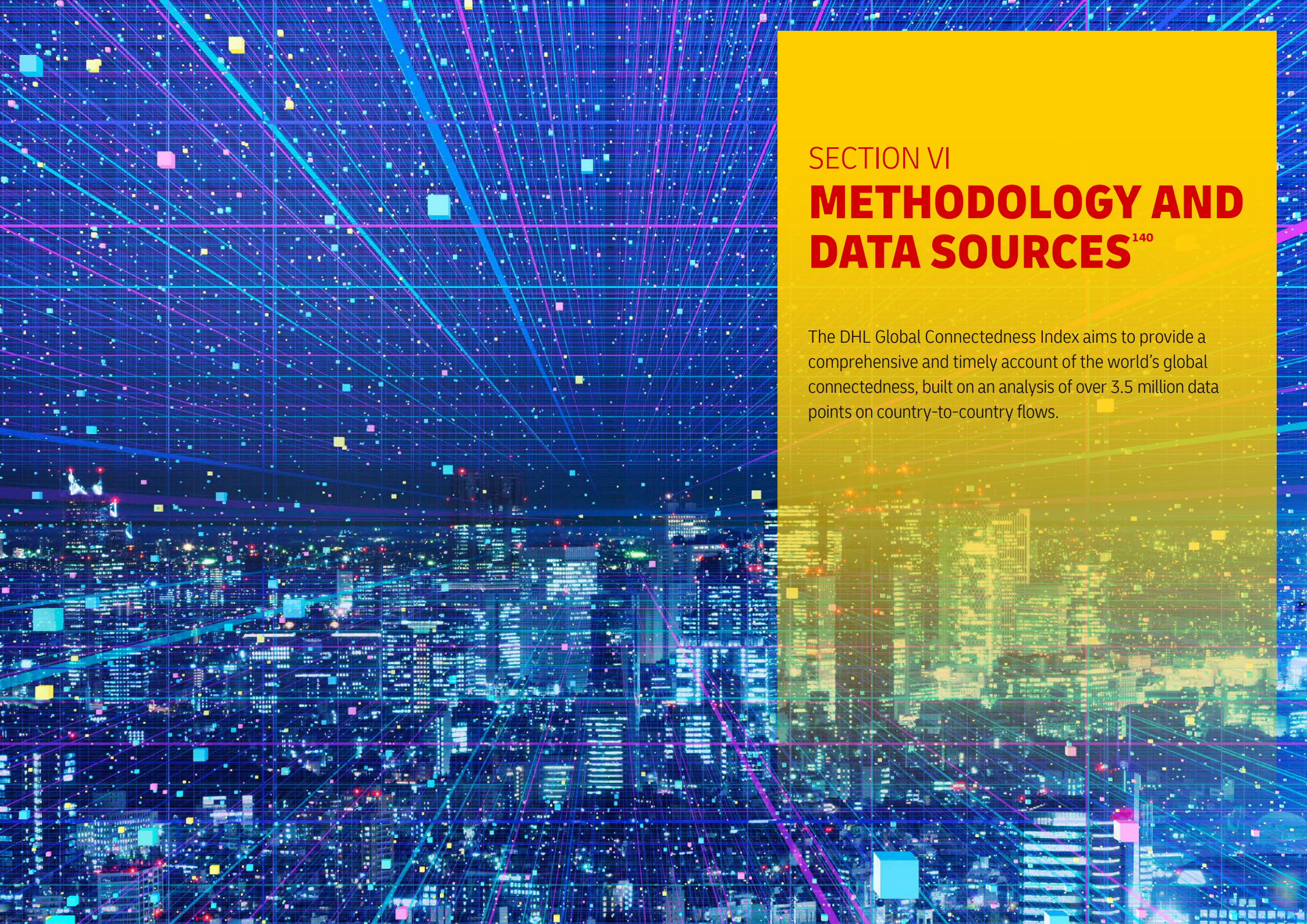
It is time to stop predicting the "end of globalization" every time it faces a setback. Globalization can indeed go into reverse—as it did between World War I and World War II—but it has held up surprisingly well through recent shocks. The turbulence of the past decade has stalled some aspects of globalization and slowed others, but there has been no collapse in the world's level of connectedness.

The swift recovery of trade and other global flows during the Covid-19 crisis highlights how much international connections strengthen our capacity to address challenges. When crises strike, we often feel a strong impulse to hunker down behind borders and retreat from the world. But the more extreme the challenge, the more urgent it becomes to draw upon the best ideas and resources from at home and abroad.

The four priorities discussed in this section can help address vulnerabilities and expand the benefits of global connectedness. Trade has been essential to relieving pandemic-driven shortages, and we should strengthen international supply chains via capacity-building, diversification, and better visibility. Trade agreements proved to be a bulwark in a chaotic environment, and they can be deepened and expanded. The challenges confronting low-income countries have been exacerbated by their weak connections to the rest of the world, and we know what kinds of policies can help to narrow this globalization gap. Finally, digital flows have proven their value, even as threats to their growth continued to mount.

There are historical precedents for a profound crisis leading to stronger connections between countries. Harold James, an economic historian from Princeton University, penned an essay for the May/June 2021 issue of *Foreign Affairs* titled, "Globalization's Coming Golden Age: Why Crisis Ends in Connection." He observes that social and financial crises launched new waves of globalization in the 1840s and 1970s. The fundamental driver was that severe challenges unleash creative energy and more willingness to bring in solutions from abroad. James's historical analysis also highlights how shortages and inflation can increase pressure to boost economic openness.[139]

Could the Covid-19 crisis bring about a new "Golden Age" for globalization? The choices of policymakers and business leaders around the world will play major roles in shaping the next phases of the world's recovery from Covid-19. The fastest way back to health and prosperity is through global cooperation, bringing together all the strengths of a connected world.



SECTION VI

METHODOLOGY AND DATA SOURCES[140]

The DHL Global Connectedness Index aims to provide a comprehensive and timely account of the world's global connectedness, built on an analysis of over 3.5 million data points on country-to-country flows.

1 CONCEPTS

Global Connectedness refers to the *depth* and *breadth* of a country's integration with the rest of the world, as manifested by its participation in international flows of *products and services, capital, information, and people*.

The definition of global connectedness used here identifies four specific categories of flows as the four pillars of the index. These are: trade flows (products and services), investment flows (capital), information flows, and people flows. Within these four pillars, individual types of flows are the components from which the index is built. Each is quantified with selected metrics (see **Table 1**).

THE DHL GLOBAL CONNECTEDNESS INDEX CAPTURES BOTH THE DEPTH AND THE BREADTH OF INTERNATIONAL FLOWS

Depth refers to the size of international flows as compared to a relevant measure of the size of all interactions of that type, both international and domestic. It reflects how important or pervasive interactions across international borders are in the context of business or life.

Breadth measures how closely each country's distribution of international flows across its partner countries matches the global distribution of the same flows in the opposite direction. The breadth of a country's merchandise exports, for example, is measured based on the difference between the distribution of its exports across destination countries versus the rest of the world's distribution of merchandise imports. These country-level results are aggregated using the overall flows as weights to determine the worldwide level of breadth.

TABLE 1: PILLARS AND COMPONENTS

Pillar	Component	Domestic Comparison for Depth
1. Trade	1.1. Merchandise Trade	GDP
	1.2. Services Trade	GDP
2. Capital	2.1. Foreign Direct Investment (FDI) Stocks	GDP
	2.2. Foreign Direct Investment (FDI) Flows	Gross Fixed Capital Formation (GFCF)
	2.3. Portfolio Equity Stocks	Stock Market Capitalization
	2.4. Portfolio Equity Flows	Stock Market Capitalization
3. Information	3.1. International Telephone Call Minutes	Telephone Call Minutes
	3.2. Scientific Research Collaboration	Published Scientific Articles
	3.3. Trade in Printed Publications	Population
4. People	4.1. Tourists (departures and arrivals of overnight tourists)	Population
	4.2. International University Students	Tertiary Education Enrollment
	4.3. Migrants (foreign-born population)	Population

“Depth refers to the size of international flows as compared to a relevant measure of the size of all interactions of that type, both international and domestic. Breadth measures how closely each country's distribution of international flows matches the global distribution of the same flows in the opposite direction.”

2 DATA COLLECTION AND SOURCES

The DHL Global Connectedness Index is built primarily from internationally comparable data from multi-country sources, with additional data drawn from national statistics (see **Table 2**). Where possible, worldwide depth ratios are calculated using published estimates for the world, rather than being aggregated from individual countries' reported data. The main exceptions to this are portfolio equity stocks and printed publications trade. Worldwide breadth estimates are calculated using reporting country data on interactions with all partners. In cases where adequate data are not available from a reporting country but sufficient coverage[141] can be achieved by using flows in the opposite direction as reported by partners, this method is used to calculate breadth.

> *"The DHL Global Connectedness Index is built primarily from internationally comparable data from multi-country sources, with additional data drawn from national statistics."*

TABLE 2: DATA SOURCES

Indicator	Depth (Size)	Depth (Scaling)	Breadth
1.1. Merchandise Trade	World Bank World Development Indicators	World Bank World Development Indicators	IMF Direction of Trade Statistics, UN Comtrade database
1.2. Services Trade	World Bank World Development Indicators	World Bank World Development Indicators	–
2.1. FDI Stocks	UNCTAD World Investment Report	World Bank World Development Indicators	IMF CDIS, OECD, Eurostat, UNCTAD, and national statistical agencies and central banks
2.2. FDI Flows	UNCTAD World Investment Report	World Bank World Development Indicators, UNCTAD	OECD, Eurostat, UNCTAD, and national statistical agencies and central banks
2.3. Portfolio Equity Stocks	IMF Coordinated Portfolio Investment Survey	World Federation of Exchanges, Bloomberg, World Bank World Development Indicators, Euromonitor Passport database	IMF Coordinated Portfolio Investment Survey
2.4. Portfolio Equity Flows	World Bank World Development Indicators	World Federation of Exchanges, Bloomberg, World Bank World Development Indicators, Euromonitor Passport database	–
3.1. Telephone Calls	TeleGeography database, Ovum OTT VoIP Forecast	TeleGeography, Ovum, ITU, Analysys Mason, World Bank World Development Indicators	TeleGeography Report and Database
3.2. Scientific Research Collaboration	Clarivate Web of Science	Clarivate Web of Science	Clarivate Web of Science
3.3. Printed Publications Trade	UN Comtrade database	UN DESA World Population Prospects	UN Comtrade database
4.1. Tourists	UN World Tourism Organization	UN DESA World Population Prospects	UN World Tourism Organization
4.2. University Students	UNESCO Institute for Statistics	UNESCO Institute for Statistics	UNESCO Institute for Statistics
4.3. Migrants	UN DESA International Migration database, UN DESA International Migration 2020 Highlights	UN DESA World Population Prospects	UN DESA International Migration database, OECD Migration Database, Eurostat

3 AGGREGATION AND WEIGHTS

FIGURE 30: AGGREGATION OF THE DHL GLOBAL CONNECTEDNESS INDEX

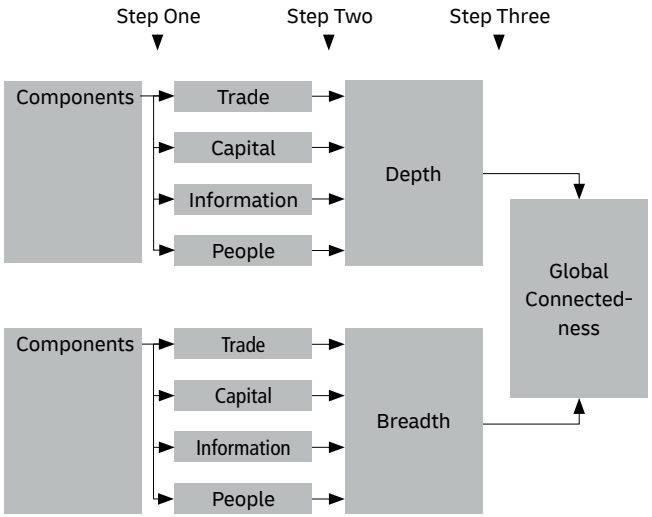


TABLE 3: WEIGHTS

Pillar (Weight % of Total)	Depth Component (Weight % of Pillar)	Breadth Component (Weight % of Pillar)
1. Trade (35%)	1.1 Merchandise Trade (75%)	1.1 Merchandise Trade (100%)
	1.2 Services Trade (25%)	–
2. Capital (35%)	2.1. FDI Stocks (25%)	2.1. FDI Stocks (25%)
	2.2. FDI Flows (25%)	2.2. FDI Flows (25%)
	2.3. Portfolio Equity Stocks (25%)	2.3. Portfolio Equity Stocks (50%)
	2.4. Portfolio Equity Flows (25%)	–
3. Information (15%)	3.1. Telephone Call Minutes (50%)	3.1 Telephone Call Minutes (50%)
	3.2. Scientific Research Collaboration (25%)	3.2. Scientific Research Collaboration (25%)
	3.3. Trade in Printed Publications (25%)	3.3. Trade in Printed Publications (25%)
4. People (15%)	4.1. Tourists (33%)	4.1. Tourists (33%)
	4.2. University Students (33%)	4.2. University Students (33%)
	4.3. Migrants (33%)	4.3. Migrants (33%)

The overall index is built up from its constituent components via three steps, as illustrated in **Figure 30**. First, the individual components are aggregated into pillars, resulting in the computation of distinct pillars of the same type for depth and breadth. Then, overall depth and breadth scores are computed using the weighting scheme listed in **Table 3**. In step 3, these two dimensions of the analysis are averaged to produce the DHL Global Connectedness Index, applying equal weights to both.

To ensure that the different levels of connectedness in individual flows do not interfere with equal weighting at this step, and to make the results more intuitively understandable for readers, both depth and breadth scores are compared to their 2001 levels, which are set to 100.

NOTES

1 CPB Netherlands Bureau for Economic Policy Analysis, "CPB World Trade Monitor August," October 25, 2021.

2 WTO Press Release, "World trade primed for strong but uneven recovery after COVID-19 pandemic shock," March 31, 2021.

3 IMF World Economic Outlook, October 2021.

4 UNCTAD World Investment Report 2021; UNCTAD Investment Trends Monitor, October 2021.

5 Paul Brodsky, "Internet Traffic and Capacity in Covid-Adjusted Terms," Telegeography Blog, August 27, 2020

6 UNWTO, "World Tourism Barometer," Volume 19, Issue 5, September 2021.

7 The early stages of the pandemic saw a wave of publications on this theme. See, for example, Philippe Legrain, "The Coronavirus Is Killing Globalization as We Know It," *Foreign Policy*, March 12, 2020; Henry Farrell and Abraham Newman, "Will the Coronavirus End Globalization as We Know It?," *Foreign Affairs*, March 16, 2020; Adam Tooze, "The death of globalisation has been announced many times. But this is a perfect storm," *The Guardian*, June 2, 2020.

8 See "How Global Connectedness is Measured in This Report" on Page 13.

9 The 2020 results, in particular, should be treated as preliminary since data gaps and restatements of previously reported metrics are common in the most recent year. The methods employed for handling data gaps are explained in detail in Section VI of the *DHL Global Connectedness Index 2020* report.

10 Chad P. Bown and Thomas J. Bollyky, "How COVID-19 vaccine supply chains emerged in the midst of a pandemic," PIIE Working Paper 21-12, August 2021.

11 UNWTO, "Covid-19 Related Travel Restrictions: A Global Review for Tourism," Tenth Report as of 5 July 2021.

12 Figure 4 data sources: Exports 1820–1938: Federico-Tena World Trade Historical Database: Openness; exports 1939–1949: Mariko J. Klasing and Petros Milionis, "Quantifying the Evolution of World Trade, 1870–1949," *Journal of International Economics* 92.1, 2014; exports 1950–1959: Penn World Tables 9.0; exports 1960–2020: World Bank World Development Indicators; Foreign Direct Investment (FDI) 1913–1985: UNCTAD World Investment Report 1994; FDI 1990–2020: UNCTAD World Investment Report; Migrants 1870–1938: Laurence Chandy and Brina Seidel, "Is globalization's second wave about to break?" Brookings, October 4, 2016; migrants 1960–2020 UN DESA International Migration database; Travel: Max Roser, "Tourism," Our World in Data, 2017 and UN World Tourism Organization (UNWTO).

13 Richard Baldwin, "The great trade collapse: What caused it and what does it mean?" in Richard Baldwin (ed.), *The great trade collapse: Causes, consequences and prospects*, Centre for Economic Policy Research, 2009.

14 *The Economist*, "Globalisation: Turning Their Backs on the World," February 19, 2009; Roger C. Altman, "Globalization in Retreat: Further Geopolitical Effects of the Financial Crisis," *Foreign Affairs*, July/August 2009.

15 *The Economist*, "Globalisation has faltered: It is now being reshaped," January 24, 2019.

16 Based on material from WTO, Global Trade Alert, and UNCTAD. For additional discussion and specific source references, refer to Section IV of the *DHL Global Connectedness Index 2019 Update* report.

17 Pankaj Ghemawat, *The New Global Road Map: Enduring Strategies for Turbulent Times*, Harvard Business Review Press, 2018.

18 Thomas L. Friedman, *The World Is Flat: A Brief History of the Twenty-First Century*, Farrar Straus and Giroux, 2005; Frances Cairncross, *The Death of Distance: How the Communications Revolution will Change Our Lives*, Harvard Business School Press, 1997.

19 See the articles listed in Endnote 7, as well as earlier publications such as Steven D. King, *Grave New World: The End of Globalization, the Return of History*, Yale University Press, 2017.

20 See, for example, Peter Enderwick and Peter Buckley, "Rising regionalization: will the post-COVID-19 world see a retreat from globalization?," *Transnational Corporations*, 27.2, 2020; Willy Shih, "Global Supply Chains in a Post-Pandemic World," *Harvard Business Review*, September-October 2020; Susan Lund, James Manyika, Jonathan Woetzel, Jacques Bughin, Mekala Krishnan, Jeongmin Seong, and Mac Muir, "Globalization in transition: The future of trade and value chains," McKinsey Global Institute, January 2019; Joergen Oerstroem Moeller, "From globalization to regionalization," *YaleGlobal*, October 30, 2018.

21 Surveys focused on Europe. See Julie Linn Teigland, Hanne Jesca Bax, and Marc Lhermitte, "Foreign investors back Europe, but is Europe back?" EY Attractiveness Survey Europe, June, 2021; Julie Linn Teigland, Hanne Jesca Bax, and Marc Lhermitte, " How can Europe reset the investment agenda now to rebuild its future?," EY Attractiveness Survey Europe, May 2020.

22 Susan Lund, James Manyika, Jonathan Woetzel, Jacques Bughin, Mekala Krishnan, Jeongmin Seong, and Mac Muir, "Globalization in transition: The future of trade and value chains," McKinsey Global Institute, January 2019; *The Economist*, "Globalisation has faltered: It is now being reshaped," January 24, 2019. On a 2017 survey conducted by the Economist Intelligence Unit, 49% of respondents said their companies expected their supply chains to "shorten and become more simple" over the next five years, whereas only 33% expected they would "lengthen and become more complex." See Economist Intelligence Unit, "Rebooting Supply Chains: Shorter, Smarter, and More Sustainable," May 2017.

23 Figure data sources and notes: Data extracted from the IMF Direction of Trade Statistics and UN Comtrade databases. The "triad regions" are based on the region classification described in endnote 25 on page 92 of the *DHL Global Connectedness Index 2020* report, with East Asia & the Pacific and South & Central Asia classified as Asia; North America and South & Central America & the Caribbean classified as the Americas; and Europe, the Middle East & North Africa, and Sub-Saharan Africa classified as EMEA. Continents follow the standard customary definitions, with Turkey classified as part of Asia and Russia classified as part of Europe due to the difficulties in disaggregating those countries' trade. The WTO regions follow the categories described in "WTO Statistical data sets—Metadata" available at http://webservices.wto.org/resources/meta/def_method_e.pdf. The UN regions are based on the United Nations Statistics Division's publication "Standard Country or Area Codes for Statistical Use" originally published as Series M, No. 49; the current version is available at https://unstats.un.org/unsd/methodology/m49/.

24 Some other region classifications, including the one detailed in endnote 25 on page 92 of the *DHL Global Connectedness Index 2020* report, also showed an increase in trade regionalization from 2012–2016, but the WTO regions showed a much larger increase, reinforcing the sense that region classification choices have a strong influence on the results.

25 The average distance measure employed here is the average distance over which countries trade goods, weighted based on the value of the goods traded. Distances are measured "as the crow flies" (great circle distances), using the population-weighted distances between major cities in each country as reported by CEPII (See Thierry Mayer and Soledad Zignago, "Notes on CEPII's distances measures: The GeoDist database," CEPII Working Paper No. 2011 – 25, December 2011).

26 Furthermore, the pattern of world imports taking place over longer distances in 2020 is robust to the exclusion of China as a source country. See Christine Arriola, Przemyslaw Kowalski and Frank van Tongeren, "The Impact of COVID-19 on Directions and Structure of International Trade," OECD Trade Policy Paper No. 252, September 2021.

27 For details on this assessment, refer to pages 30 – 31 of Steven A. Altman and Caroline R. Bastian, "Connecting to the World: Lessons from 10 Years of the DHL Global Connectedness Index," Deutsche Post DHL Group, 2021. The regional nature of international activity has been a longstanding theme in international business research. See Alan M. Rugman and Alain Verbeke, "A Perspective on Regional and Global Strategies of Multinational Enterprises," *Journal of International Business Studies*, January 2004.

28 Niall Ferguson and Moritz Schularick, "'Chimerica' and the global asset market boom," *International Finance* 10.3, 2007.

29 The 2020 results should be treated as preliminary because data on several types of flows (mainly in the capital and information pillars) are not available yet. These results reflect shifts in the currently available measures.

30 The only larger relationships are between immediate neighbors: the U.S. with Canada and Mexico and between Mainland China and its Special Administrative Region of Hong Kong.

31 U.S. Trade Representative Katherine Tai stated on October 4, 2021, "I know there's a lot of talk about decoupling. I think at the end of the day I still don't have, necessarily, good understanding of what everybody means, if we've got a common definition of decoupling. I think that the concern, maybe the question is whether or not the United States and China need to stop trading with each other. I don't think that's a realistic outcome in terms of our global economy. I think that the issue perhaps is, what are the goals we're looking for in a kind of re-coupling?" China's ambassador to the U.S. responded positively, commenting that "The two sides can sit down and sort out the areas of 'decoupling' and how to get them 'recoupled.'" See "A Conversation with Ambassador Katherine Tai, U.S. Trade Representative," CSIS event transcript, October 4, 2021 and Zhao Huanxin, "Ambassador sees more positive outlook for China, US economic ties," *China Daily*, October 10, 2021.

32 To provide a consistent comparison with global output (GDP, which is measured in value-added terms), trade here is also measured in value-added terms (i.e., without double-counting goods that cross borders more than once in multi-country value chains). Gross exports of goods and services sum to 27% of GDP, but roughly 28% of the value in "gross" exports is value that crosses more than one border before it reaches its final destination (as reported in UNCTAD World Investment Report 2020).

33 This theme (in both business and public policy) has been developed extensively in several publications by DHL Global Connectedness Index co-creator Pankaj Ghemawat. See, for example, Pankaj Ghemawat, *The Laws of Globalization and Business Applications,* Cambridge University Press, 2017.

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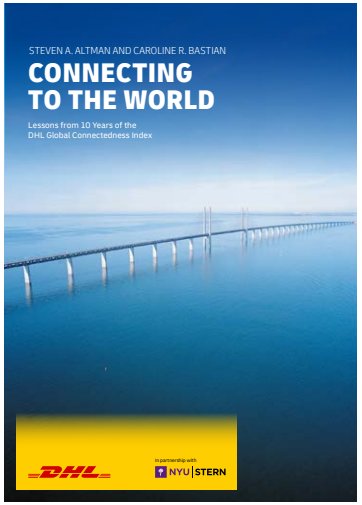
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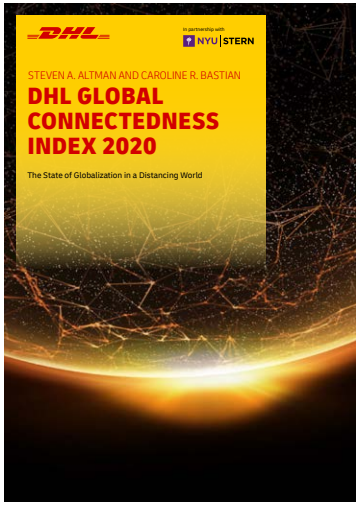
141 Coverage is deemed to be sufficiently complete when data on flows between a given reporter and all partner countries sum to between 80% and 110% of the reported total for the world.

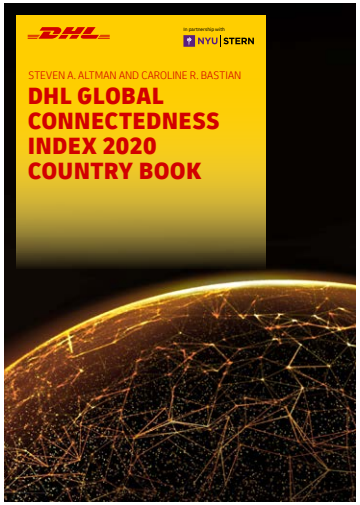
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