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STEVEN A. ALTMAN AND CAROLINE R. BASTIAN

DHL GLOBAL CONNECTEDNESS INDEX 2020

The State of Globalization in a Distancing World



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DEAR READER,

2020 has been an extraordinary year. Everything changed. A virus caused one of the greatest global challenges of our lifetime. Countries almost everywhere went into lockdown. Uncertainty pervades societies. And many people and companies are facing a tough time.

In fact, though, not everything changed. Despite the severe public health crisis, many societies have been able to maintain a remarkable degree of continuity. Worldwide supply chains continue to ensure that products are made and delivered to the doorsteps of consumers, with state-of-the-art logistics networks working fast and as reliably as ever. And digital tools and media have enabled many of us to keep on learning, working or staying in touch with our loved ones.

More than anything else, we owe this significant level of continuity to the power of global connectedness. In a time of distancing, the dense web of digital and physical linkages across the globe has kept us together and allowed us to preserve a sense of normalcy during a state of emergency and uncertainty. These technological connections and trade ties make it possible for us to maintain much more continuity than ever would have been possible in the past.



The DHL Global Connectedness Index 2020 endorses this reassuring observation, refuting initial speculation that this pandemic could mark the "end of globalization." It shows a world where people, companies and countries continue to connect and do business with each other. The virus has capped global mobility by enforcing physical distance among people. But trade flows have rebounded strongly, capital flows are recovering, and digital information flows have spiked.

The virus-induced decline in international connectedness is unlikely to drop below levels seen during the global financial crisis. And, in spite of ever-present geopolitical tensions, our report detects no strong evidence of the world economy fracturing along regional lines. All that is encouraging news because more globally interconnected economies tend to enjoy higher rates of growth and should therefore recover more quickly from this pandemic.

This report amounts to a comprehensive health check for globalization. It offers a cautiously hopeful view, putting many developments into perspective, based on facts. My own conviction is that, as we work through this crisis, we will be able to retain the benefits of our connected world. Clearly, most people, businesses and societies are still willing to work together and keep their doors open.

We, at Deutsche Post DHL Group, are proud to be an important part of this development. As the world's leading logistics provider, we are a key driver of world trade and play a critical role in saving lives, preserving prosperity, continuing business operations and sustaining vital services. That is what inspires our commitment to a world that trades more, shares new ideas, and solves problems together. We ultimately believe that connecting people improves lives.

I hope that you will find this report useful and a valuable resource to inform your decision-making as we continue to work toward a more connected and prosperous future.

Yours sincerely,



Frank Appel
CEO, Deutsche Post DHL Group

DEAR READER,

The Coronavirus pandemic that swept the world in 2020 has put greater distance between nations, firms, and individuals. Social distancing has been essential for public health. But we have also witnessed how a pandemic can exacerbate geopolitical and societal fault lines, compounding the challenges of controlling the virus and keeping economies functioning.

The passage of time creates another kind of distance, enabling us to start putting this tumultuous year into perspective. As this report shows, globalization did not collapse in 2020, but the pandemic did transform—at least temporarily—how countries connect. Travel plummeted, but digital flows surged. International trade and investment took strong hits at the beginning of the pandemic and then started to recover.

My hope is that the Covid-19 jolt to globalization will, with due reflection, focus minds on how to strengthen our connections to foster a healthier, more prosperous, and more resilient future. The pandemic has demonstrated both the danger of a world where critical linkages break down and the urgent need for more effective cooperation in the face of global challenges. The DHL Global Connectedness Index can help ground thinking about the future of globalization in a solid set of facts about how globalized the world, regions, and individual countries are today.

This report builds on prior editions of the DHL Global Connectedness Index, developed under the leadership of Pankaj Ghemawat. Caroline Bastian has co-authored each edition since 2018, significantly strengthening this body of work. I am delighted that this year's report also features a guest essay by Ian Goldin.

I would like to thank Klaudia Kokoszka, Justin Melnick, and Ahsan Usmani for meticulous research assistance, Sinziana Dorobantu, Niccolò Pisani, Robert Salomon, and Robert Seamans for reviewing preliminary drafts, Jonathan Wyss for excellent cartography, and Dirk Hrdina for turning our text and graphics into a compelling visual product. I am also grateful for valuable feedback from participants in a panel on the index at the 2020 Academy of International Business conference. My sincere thanks also to Anita Gupta and Johannes Oppolzer at Deutsche Post DHL Group, for steadfast and insightful collaboration on the development and publication of this report.

Finally, at an institutional level, it is a great honor to present this report as the inaugural publication of the new DHL Initiative on Globalization at New York University's Stern School of Business. My deepest thanks to Deutsche Post DHL Group for supporting the creation of this new research initiative, which 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**.



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







10 KEY TAKE-AWAYS

1 After holding steady in 2019, the world's level of global connectedness is set to decline in 2020 due to the Covid-19 pandemic. However, it is unlikely to fall below levels seen during the 2008-09 global financial crisis.

2 People flows suffered an unprecedented decline in 2020 as nations closed borders to curb the spread of the virus. International travel is on track to fall all the way back to its 1990 level.

3 International trade rebounded strongly after a sharp plunge at the onset of the pandemic. The proportion of global output crossing national borders will decline modestly in 2020.

4 Capital flows were hit harder than trade by the Covid-19 recession, but these flows have also started to recover. Strong policy responses by governments and central banks have helped to stabilize markets.

5 After signs of a slowdown in the globalization of information flows before the pandemic, international data flows and telephone calls spiked as Covid-19 forced in-person interactions to go digital.





6 The Netherlands is the world's most globally connected country. Singapore ranks second overall and earned top marks in terms of the size of international flows relative to domestic activity. And no country boasts a more global distribution of flows than the United Kingdom.

7 Europe claims the top spot as the world's most globalized region, with 8 of the 10 most globally connected countries located there. Europe leads on trade and people flows, while North America is the top region for information and capital flows.

8 The list of economies that are seen to punch well above their weight in terms of international flows is led by Cambodia, Singapore, Viet Nam, Malaysia, and the Netherlands, with regional supply chains a key factor in the performance of Southeast Asian nations.

9 Geopolitical tensions pose a significant threat to globalization, but for now there is no strong evidence of the world economy fracturing along regional lines. US-China decoupling, however, has continued to advance.

10 Stronger global connectedness could accelerate the world's recovery from the Covid-19 pandemic, as countries that connect more to international flows tend to enjoy faster economic growth.

EXECUTIVE SUMMARY

The world is in crisis again, with geopolitical tensions compounding the toll of the worst pandemic in a century. Borders have been closed to curb the spread of Covid-19, hitting the pause button on global travel and disrupting global supply chains. Some have questioned whether globalization will survive the crisis. The evidence in this report shows that globalization is far from dead, with most international flows proving more resilient in 2020 than many expected.

The DHL Global Connectedness Index measures globalization based on international flows of trade, capital, information, and people. Predictably, people flows have suffered an unprecedented collapse in 2020. All other types of flows have held up surprisingly well, though. Trade and capital flows plunged at the onset of the pandemic but have already started to recover. And digital information flows have surged as people and companies have rushed to stay connected online.

All in all, the DHL Global Connectedness Index is set to decline in 2020, but it is unlikely to fall below where it stood during the 2008-09 global financial crisis, based on our analysis of preliminary data and forecasts. Covid-19 has disrupted business and life around the world, but it has not severed the fundamental links that connect us across national borders. Our report shows a world of people, companies, and countries still prepared to join up and do business with each other. That's good news because a more connected world still offers the best prospects to restore health and prosperity.

The rebound of world trade after a sharp contraction in March and April has been particularly striking. By August, trade in goods had already recovered more than three-quarters of its drop and stood just 3-4% below its pre-pandemic level.[1] As a result, the proportion of real global output crossing national borders will only decline modestly in 2020. Moreover, despite export bans implemented at the height of the pandemic, trade provided a vital lifeline for economies and healthcare systems. Global exports of personal protective equipment (PPE), for example, soared 92% during the second quarter of 2020.[2]

Capital flows have been hit harder than trade. Foreign direct investment (FDI) flows, which reflect companies buying,



building, or reinvesting in operations abroad, could fall 30 – 40% in 2020.[3] However, such a decline would not be unprecedented. FDI fell 43% in 2001 and 35% from 2007 to 2009. Moreover, as FDI flows are set to remain positive, they continue to add to rather than subtract from global business activity. And while the crisis prompted record withdrawals of portfolio equity from emerging markets, those flows stabilized after governments and central banks stepped in to support economies and financial markets.

> *"Our report shows a world of people, companies, and countries still prepared to join up and do business with each other."*

Before the pandemic, there were signs of a slowdown in the globalization of information flows. But their growth accelerated as the pandemic sent work, play, and education online. International internet traffic soared 48% from mid-2019 to mid-2020,[4] and international telephone call minutes rose 20% in March versus the same month last year.[5] However, as domestic data and calls also increased, we cannot say yet whether these types of activity have become more—or less—global. Meanwhile, global collaboration in scientific research—as measured by international co-authorship of articles in scholarly journals—continued a steady upward trend in 2020.



While trade, capital, and information flows all had positive roles to play in the pandemic response, personal mobility was restricted to curb transmission of the virus, causing this year's unprecedented decline in people flows. The number of people traveling to foreign countries is on track to fall 70% in 2020. International tourism is not likely to return to its pre-pandemic level before 2023.[6] Additionally, millions of migrant workers have returned to their origin countries, and many students have deferred or cancelled plans to study abroad.

Looking beyond the turbulence of the closing year, the measures in this report indicate that the world is less globalized in absolute terms than many presume. Surveys consistently show that people believe international flows are larger than they really are, and that such misperceptions exacerbate fears about globalization.[7] In fact, only a small share of global flows crosses borders. Roughly 21%[8] of global economic output is exported, foreign direct investment flows equal 7% of global gross fixed capital formation, about 7% of phone call minutes (including calls over the internet) are international, and only 3.5% of people live outside the countries where they were born.

Distance and cross-country differences continue to constrain international flows. Most flows take place within rather than between major world regions, and an increasingly multipolar world with fraying relations between the world's largest economies could lead to even more regionalization. For now, though, actual data do not show strong evidence of the world economy fracturing along regional lines. While US-China decoupling has accelerated over the past year, the world's two largest economies are still deeply intertwined. Similarly, the share of the UK's trade taking place with the European Union has remained fairly steady since the Brexit referendum.[9]

This edition of the DHL Global Connectedness Index has employed more than 3.5 million data points to track the globalization of 169 countries over the period from 2001 to 2019. The most recent data show that the Netherlands, Singapore, Belgium, the United Arab Emirates, Ireland, Switzerland, Luxembourg, the United Kingdom, Denmark, and Malta lead the ranking of the world's most globally connected countries. Eight of the top 10 countries are in Europe, the world's most globally connected region. Europe tops the index for trade and people flows, while North America ranks second overall and leads in terms of capital and information flows.

The DHL Global Connectedness Index measures each country's global connectedness based both on the size of its international flows relative to the size of its domestic economy (what we call 'depth') and the extent to which its international flows are distributed globally or more narrowly focused (what we call 'breadth'). The depth leaders, i.e. the economies with the highest proportions of flows crossing national borders, are Singapore, Hong Kong SAR (China), Belgium, the Netherlands, and Estonia. The breadth



champions, i.e. the countries with the most global flow patterns, are the United Kingdom, the United States, the Netherlands, Israel, and the Republic of Korea.

Three country characteristics—GDP per capita, population, and distance from foreign markets—explain 73% of the variation across countries' levels of global connectedness. Since policymakers cannot directly control these factors, we also rank countries according to how much they "punch above their weight" in terms of their global linkages. In other words, we analyze the extent to which countries' connectedness exceeds or falls short of expectations based on their economic strength, size and location. The top scorers in this respect are Cambodia, Singapore, Viet Nam, Malaysia, and the Netherlands. Regional supply chains help explain why four of the top five outperformers are in Southeast Asia.

In these uncertain times, policymakers and business leaders can use the measures in this report to navigate a very turbulent global environment. Depth measures help identify which countries are most exposed to threats to specific types of flows, and breadth data can help determine whether that exposure is global or more narrowly focused.

This year, with the world economy in its deepest recession in decades, research on the relationship between globalization and growth is especially salient. Most studies indicate that economies that are more open to international flows tend to grow faster.[10] Populist backlashes against globalization in many countries, however, mean that calls for deeper global connectedness to accelerate the world's recovery from Covid-19 are bound to encounter opposition. Nonetheless, recent public opinion polls suggest that the pandemic has not, at least thus far, prompted a new wave of opposition to globalization. Instead, there are signs of a yearning in various countries for more effective international cooperation.[11] Moreover, major new trade agreements, including the Regional Comprehensive Economic Partnership (RCEP) in Asia-Pacific, signal continued government support for market integration in much of the world.

The Covid-19 pandemic has not ended globalization. But rising geopolitical tensions pose a real threat to a connected world. All four categories of flows covered in our report face strong resistance. Trade conflicts continue to fester, barriers to foreign corporate takeovers are rising, data localization laws have proliferated, and immigration is still a divisive issue in many countries.

As debates about the merits of international openness continue, sound business and public policy decisions depend on accurate measures of globalization. The DHL Global Connectedness Index aims to be a go-to resource for this purpose. This report tracks global trends and ranks countries and regions on their levels of global connectedness. The **DHL Global Connectedness Index 2020 Country Book** that accompanies this volume provides detailed measures of each country's trade, capital, information, and people flows. While we are all entitled to our own views on the benefits of more or less globalization, the data provided here can enable better informed discussions by providing a clearer picture of how globalized countries and the world already are today.



SECTION II

HOW GLOBALIZED IS THE WORLD?

This section places the Covid-19 shock to globalization into perspective. How powerfully is Covid-19 affecting international trade, capital, information, and people flows? How was globalization trending in the run-up to the pandemic? And how globalized is the world in absolute terms?

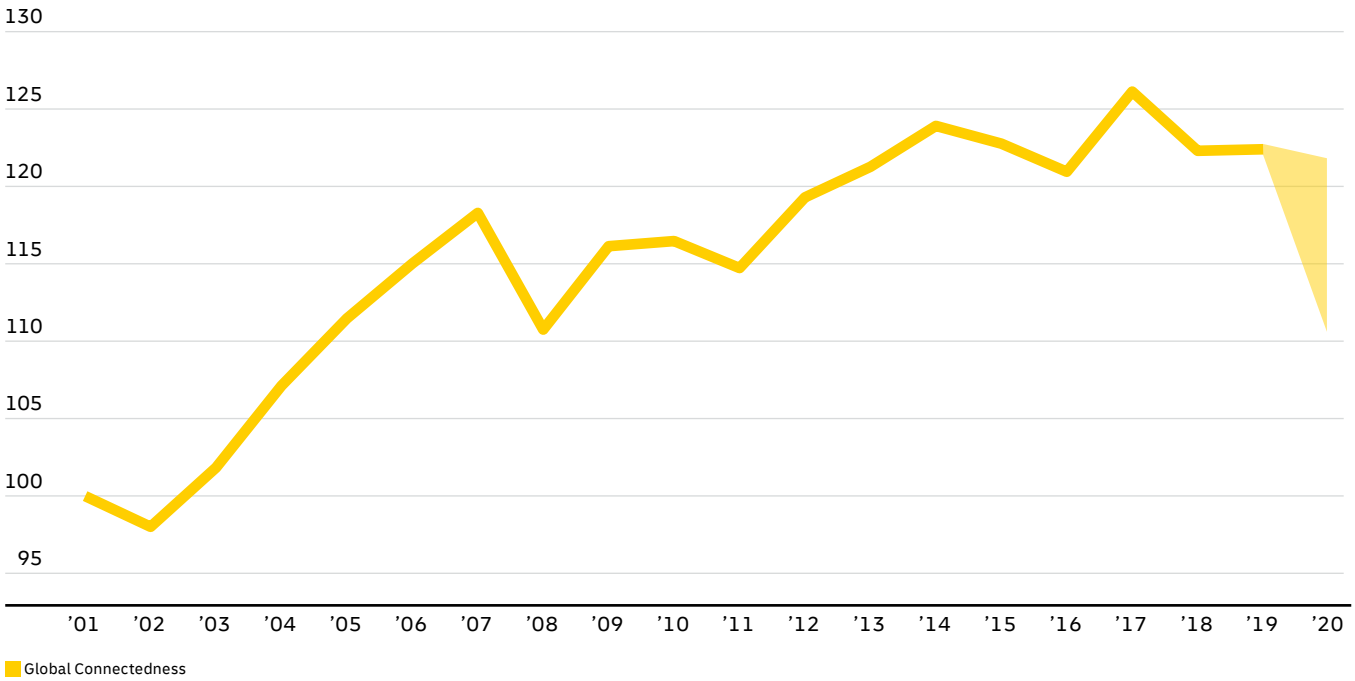
1 THE COVID-19 STRESS TEST FOR GLOBALIZATION

The Covid-19 pandemic has prompted the steepest declines on record for many types of international flows. After a decade of sluggish growth of trade and capital flows, some have predicted that the Covid-19 crisis could sound the death knell for globalization,[1] and many others have argued that it will be an important turning point.[2] The latest data show that globalization is more durable than some pessimists believed, and there remains cause for optimism looking forward. The DHL Global Connectedness Index is on track to decline in 2020, but the only part of the index showing a truly unprecedented collapse is people flows. International data flows surged during the pandemic, and trade and capital flows have already started to recover.

The DHL Global Connectedness Index measures globalization based on trade, capital, information, and people flows.[3] As shown in **Figure 1**, the index held steady in 2019.[4] In fact, the index recorded its smallest change on record last year. Such stability, however, was short-lived. Current forecasts imply that the index will fall sharply in 2020, before starting to recover in 2021.[5] Nonetheless, Covid-19 has not led to a collapse of globalization. The pandemic is unlikely to send the world's overall level of connectedness below where it stood during the 2008 – 09 global financial crisis.

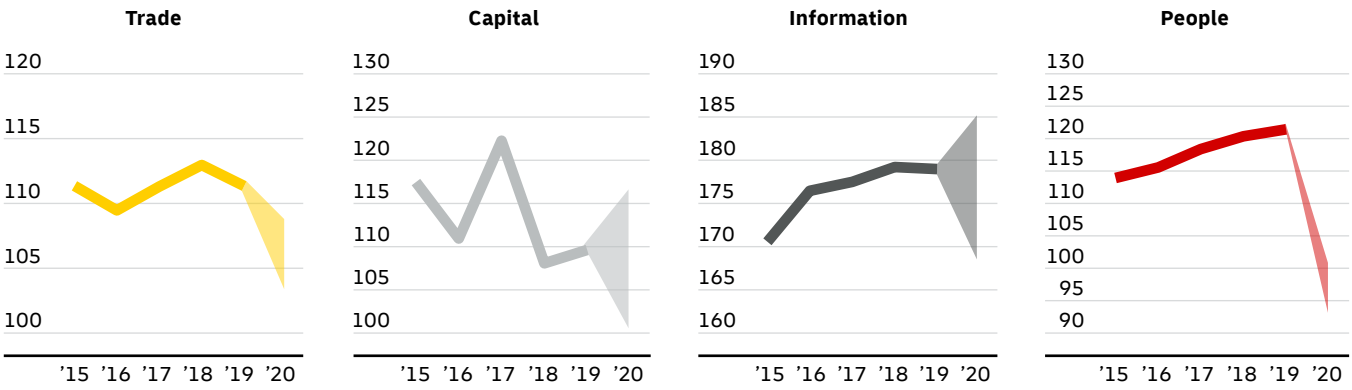
To explain the overall global connectedness trend, **Figure 2** separates the index into four pillars: trade, capital, information, and people. These pillars summarize connectedness trends across the individual types of flows[6] that comprise the index.

FIGURE 1: DHL GLOBAL CONNECTEDNESS INDEX, 2001 – 2020*



The DHL Global Connectedness Index held steady in 2019 but is set to decline in 2020 due to the Covid-19 pandemic. *2020 projected

FIGURE 2: FOUR PILLARS OF GLOBAL CONNECTEDNESS: TRADE, CAPITAL, INFORMATION, AND PEOPLE, 2015 – 2020*



The Covid-19 pandemic has prompted an unprecedented decline in people flows during 2020, while other types of international flows have proven to be much more resilient over the past year.

*2020 projected

The stable level of global connectedness in 2019 resulted from a mix of small increases and decreases across types of flows. The trade pillar reversed part of its prior-year gain, amid festering trade conflicts and slowing global growth. The capital pillar ticked upward, as flows of foreign direct investment and portfolio equity investment both eked out small increases. The information pillar held steady, with the growth of international information flows just about keeping pace with domestic information flows rather than growing significantly faster, as they had typically done over the past two decades. The people pillar continued a long-run growth trend, albeit at a slower pace of expansion.

The Covid-19 pandemic has impacted all four flows covered in the index, but it has most severely affected international people flows. Current forecasts imply that the people pillar will decline to its lowest level on record (i.e. since the 2001 start year of our analysis). As discussed in **Section III**, the United Nations World Tourism Organization (UNWTO) predicts that the total number of people traveling to foreign countries will fall about 70% in 2020, temporarily setting international travel back to its 1990 level.[7] Migrant stocks and international students have also declined, as the crisis has caused many expatriates to return to their origin countries. While many of these flows are expected to rebound—at least partially—once the crisis is over, international air travel is not expected to recover to pre-pandemic levels until 2024.[8]

The pandemic has also significantly crimped trade and capital flows, although these aspects of globalization have turned out to be much more resilient than many feared when the virus began to spread around the world. Despite supply chain disruptions and demand shifts, the bulk of trade continued to flow, and there were clear signs of a rebound by mid-year. Similarly, after a steep market decline and flight to safety, capital flows also responded swiftly to efforts by governments and central banks to support economies and financial markets. As a result, the 2020 full-year trade and capital pillars of the index are unlikely to fall as much as they did during the 2008 – 09 global financial crisis.

In stark contrast to pandemic-era declines in people, capital, and trade flows, the growth of international information flows accelerated in 2020, as Covid-19 lockdowns and social distancing requirements forced work, play, and education to go online. International voice call minutes spiked 20% in March 2020 versus the same month in 2019, and international internet traffic grew 48% from mid-2019 to mid-2020.[9] However, domestic calls and data traffic also soared





> *"Global flow data and forecasts reaffirm DHL Global Connectedness Index co-creator Pankaj Ghemawat's assessment that the world is—and will remain—only partially globalized."*

during the pandemic, and it remains unclear whether the international proportion of information flows has risen or fallen in 2020. Our forecast range for the information pillar tilts downward mainly because of the likelihood that the pandemic has boosted calls more within than between countries.

In sum, globalization appears to have weathered the Covid-19 stress test surprisingly well. While online interactions are still a very imperfect substitute for travel and in-person contact, the digital links between countries helped to mitigate what otherwise could have been a much worse crisis. And despite jolts of protectionism, trade has also helped to sustain economies and healthcare systems through the pandemic. China's exports of medical products, for example, roughly tripled year-on-year in May 2020.[10] Moreover, international capital flows have also played a constructive role, with the International Monetary Fund (IMF) providing emergency financing to a record number of countries.[11]

There is even some evidence that early predictions of a renewed backlash against globalization in the wake of Covid-19 have not come to fruition.[12] In a Summer 2020 survey conducted by the Pew Research Center, there was majority support for the view that more international cooperation could have reduced the number of Covid-19 cases in most respondents' countries.[13] Also, recent Gallup surveys in the United States show record high levels of support for both trade and immigration.[14]

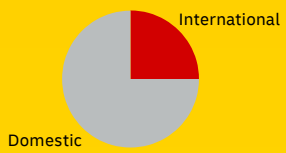
While debate continues about the future of globalization (see **The Globalization Debate in 2020** on page 16), global flow data and forecasts reaffirm DHL Global Connectedness Index co-creator Pankaj Ghemawat's assessment that the world is—and will remain—only partially globalized.[15] Globalization can rise or fall significantly without getting anywhere close to either a state where national borders become irrelevant or one where they loom so large that it is best to think of a world of disconnected national economies. All signs point to a future where international flows will remain so large that decision-makers ignore them at their peril, even as borders and cross-country differences continue to make domestic activity the default in most areas. We turn next to how globalization was trending before the pandemic, to put these recent developments into historical perspective.

HOW GLOBAL CONNECTEDNESS IS MEASURED IN THIS REPORT

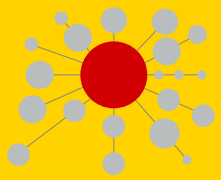
Very often in the public debate, globalization is equated with international trade. In this publication, we take a broader view that observes cross-border flows of trade, capital, information, and people around the globe.

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



Breadth
Geographic Distribution of International Flows



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 how significant the respective international flow is. In other words, depth measures indicate how international the world really is with respect to each type of activity.

2. We measure the *breadth* of international flows: This means we evaluate to what extent 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 2019. Altogether, this analysis draws on more than 3.5 million data points across the 13 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
- International Internet Bandwidth*
- Telephone Call Minutes
- Scientific Research Collaboration
- Trade in Printed Publications

PEOPLE
- Tourists (Departures and Arrivals)
- International University Students
- Migrants (Foreign-Born Population)

* Country Level Only

→ **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.**



THE GLOBALIZATION DEBATE IN 2020[16]

The COVID-19 pandemic will not fundamentally alter global economic directions. It will only accelerate a change that had already begun: a move away from US-centric globalization to a more China-centric globalization.
Kishore Mahbubani, Distinguished Fellow, National University of Singapore

This probably is a setback for globalization. The only question is the magnitude. Are we talking 5% or are we talking 50%, and nobody really knows. **Paul Krugman, Nobel Laureate in Economics**

What undermined the last great age of globalization was not economic or technological backlash but politics—of the oldest kind, realpolitik … In short, globalization isn't dead. But we could kill it.
Fareed Zakaria, Journalist, Author, and Political Commentator

In short, COVID-19 will create a world that is less open, less prosperous, and less free. It did not have to be this way, but the combination of a deadly virus, inadequate planning, and incompetent leadership has placed humanity on a new and worrisome path.
Stephen M. Walt, Professor of International Relations, Harvard University

To have more resilient supply chains, we need to have more spread-out production. So, not so much deglobalize but globalize in a more even way.
Esther Duflo, Nobel Laureate in Economics

There will be less globalization. In fact, I think we have entered an era of deglobalization. **Mohamed El-Erian, Chief Economic Advisor, Allianz**

I hope that the Coronavirus is not the end of globalization, as some people are saying. The global economy is not a zero-sum game.
Robert Reich, former U.S. Secretary of Labor

The coronavirus pandemic could be the straw that breaks the camel's back of economic globalization.
Robin Niblett, Director and Chief Executive of Chatham House

Just as COVID-19 is a virus with global qualities, globalization is itself viral. But all viruses evolve, and globalization is no different … Since globalization is here to stay, it is the system of nation-states that might well be forced to change …
Arjun Appadurai, Professor of Media, Culture, and Communication, New York University

2 GLOBALIZATION TRENDS IN HISTORICAL PERSPECTIVE

To maintain a balanced perspective on the state of globalization, it is essential to consider recent setbacks in historical context. The DHL Global Connectedness Index provides coverage back to 2001. We first examine trends over this period, and then we look back over more than a century at a narrower set of trade, investment, and migration measures.

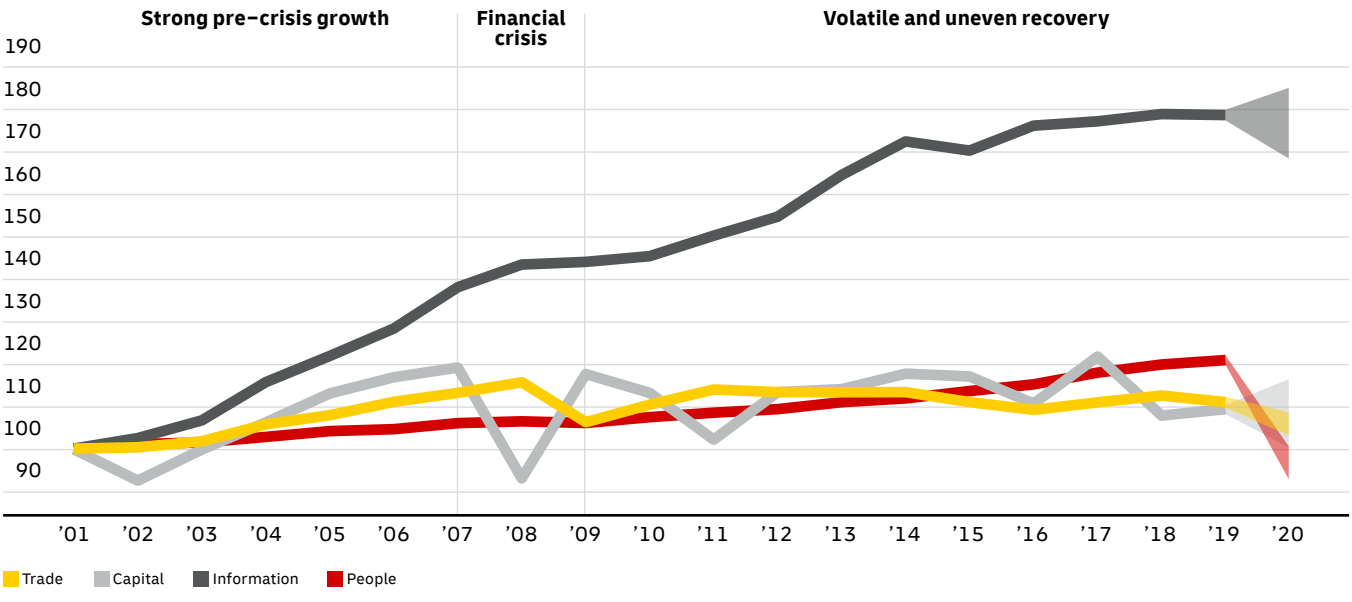
When we reflect on the past nearly two decades of DHL Global Connectedness Index results, three distinct phases stand out (see **Figure 3**):

- 2001–07: Strong pre-crisis growth
- 2007–09: Global financial crisis
- 2009–19: Volatile and uneven recovery

The dramatic changes over recent years are mostly driven by changes in the intensity of globalization (the *depth dimension*). This is the dimension that varies the most over time. After all, flow volumes can expand or contract sharply due to macroeconomic or other shifts. Therefore, they typically drive developments of overall connectedness.

The geographic distribution of international flows (the *breadth dimension*) changes much more modestly. This is because the patterns of which countries connect with each other tend to change more slowly due, in part, to the persistent effects of countries' locations.

FIGURE 3: FOUR PILLARS OF GLOBAL CONNECTEDNESS, 2001 – 2020*



Trade and capital flows globalized steadily before the 2008-09 global financial crisis but have since fluctuated below their pre-crisis peaks. Information and people flows, on the other hand, continued setting new records until the Covid-19 pandemic caused people flows to collapse. *2020 projected

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. Globalization seemed, to many, an unstoppable force.

2007 – 2009: GLOBAL FINANCIAL CRISIS

The global financial crisis that began to unfold in 2007 was widely viewed at the time as the worst since the Great Depression. It also 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. 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."[17] In January 2019, *The Economist* adopted Adjiedj Bakas's term "slowbalization" to describe the period since 2008.[18]

2009 – 2019: VOLATILE AND UNEVEN RECOVERY

After the global financial crisis, the DHL Global Connectedness Index began to increase again, but its rise was slower and more volatile than during the pre-crisis period. In many



parts of the world, the 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.[19]

In 2016, the twin shocks of Brexit and the election of US president Donald Trump on a platform promising to put "America First" started a new wave of turbulence for globalization (see **US-China Decoupling, Brexit, and Rising Regionalization?** on page 20). By 2018, a trade war was underway between the US 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 have seen heightened scrutiny of foreign investments on national security grounds, new restrictions on international data flows, and continued tensions about immigration in many countries.

Against this policy backdrop, the past decade has been marked by uneven growth across types of international flows. The intensity of global trade and capital flows remains 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 did continue to advance, albeit with a notable slowdown on the information pillar since 2014. We discuss the development and future prospects for each of the four types of flows in **Section III**.

> *Even under worst-case assumptions about how much Covid-19 might reduce trade in 2020, trade will still connect national economies much more intensively than it did just a couple of decades ago.*

LONG-RUN HISTORICAL PERSPECTIVE

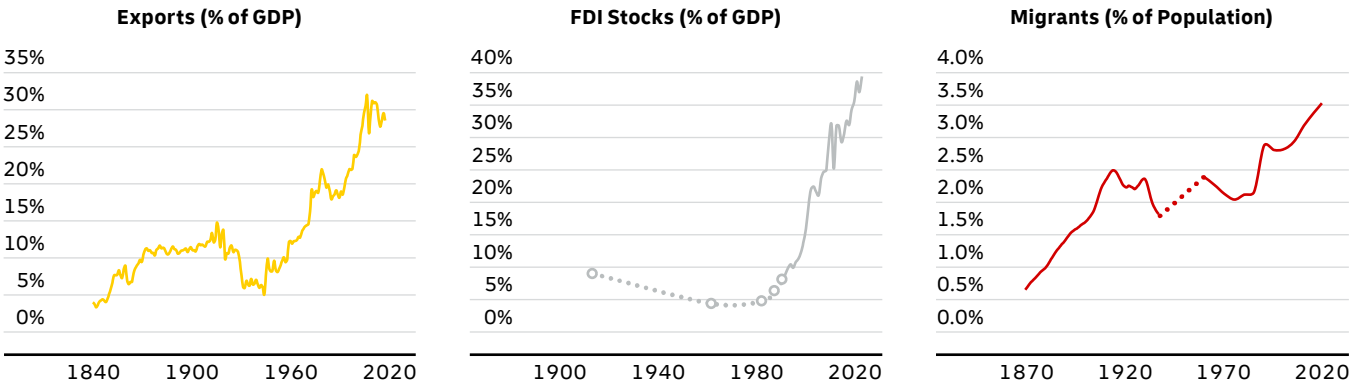
While the DHL Global Connectedness Index extends back only to 2001, we can gain additional perspective on the growth of globalization by looking at trade, FDI, and migration patterns spanning more than a century. As shown in **Figure 4**, these indicators highlight the tremendous increases in levels of globalization that have taken place over the last few decades.

Despite recent trade turbulence, the ratio of gross exports to world GDP is still remarkably close to its all-time high. Even after falling from a peak of 32% in 2008 to 29% in 2019, this measure of global trade integration is still 20% higher than it was in 2000, twice as high as it was in 1970, and almost six times higher than in 1945. Even under worst-case assumptions about how much Covid-19 might reduce trade in 2020, trade will still connect national economies much more intensively than it did just a couple of decades ago.

Figure 4 also shows FDI stocks as a percentage of world GDP having nearly quadrupled since 1990, hitting a new all-time high in 2019. While new FDI flows have shrunk, FDI stocks and other measures discussed in **Section III** show that multinational firms have continued to expand their foreign operations. Additionally, first-generation migrants as a percentage of the world's population also rose to a new record in 2019. The proportion of the world's population living outside their birth countries was 23% above its 1990 level (although still just 3.5%).

While globalization has not advanced as swiftly or as steadily since the 2008-09 global financial crisis as it had before that crisis, a long-run historical perspective affirms that the world entered the Covid-19 pandemic very close to an all-time record high level of connectedness and far more connected than it was just a few decades earlier. Globalization can go into reverse—as demonstrated by the trendlines between the 1920s and 1950s—but recent data do not depict a similar reversal.

FIGURE 4: LONG RUN TRADE, FDI, AND MIGRATION TRENDS[20]



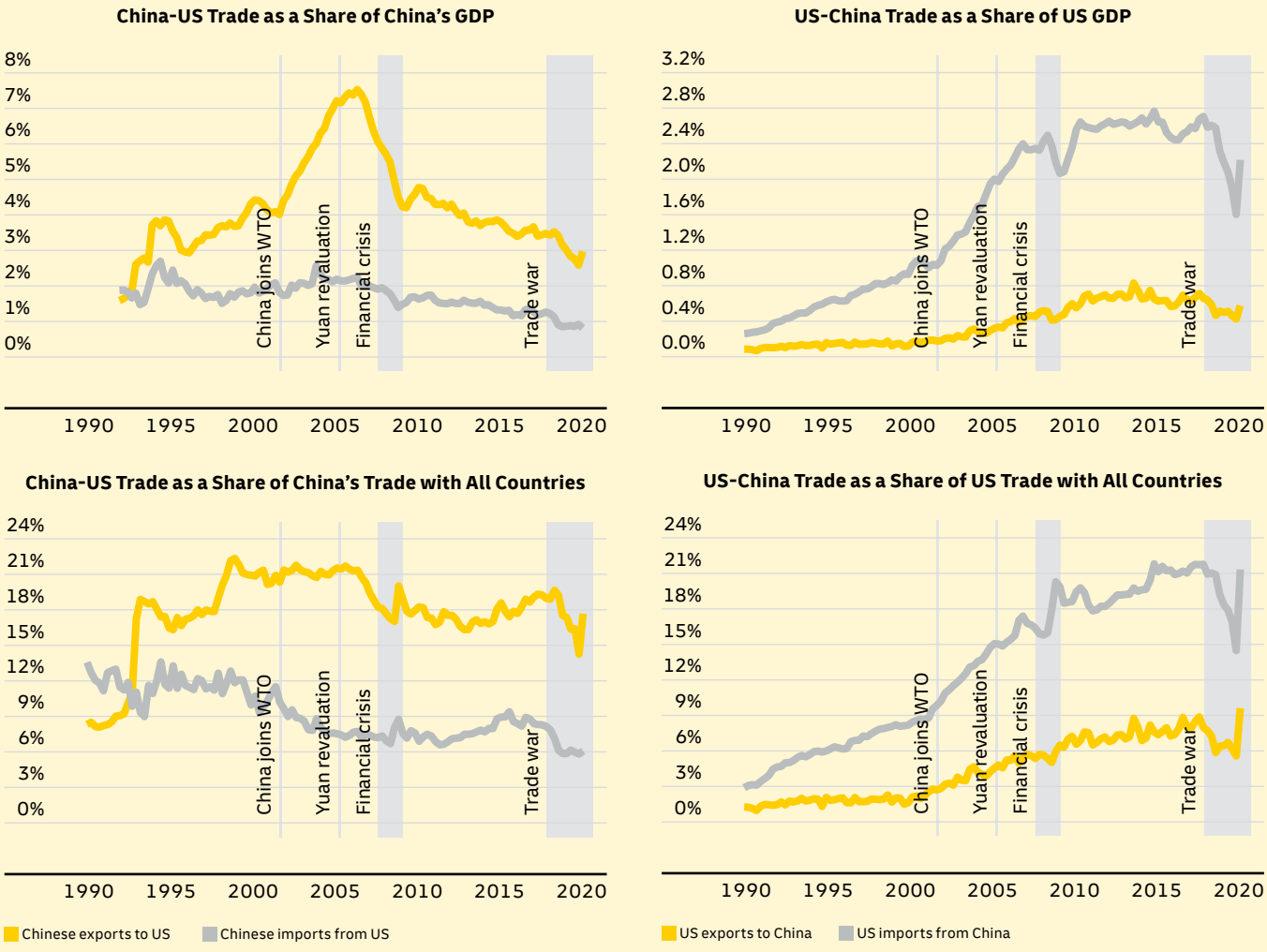
The world is still close to a record high level of globalization, based on long-run trade, investment, and migration trends. Data sources: See Endnote 20

US-CHINA DECOUPLING, BREXIT, AND RISING REGIONALIZATION?

Relations between the US and China have become globalization's most sensitive fault line, as tensions have risen between the world's two largest economies. International observers have worried that US-China "decoupling" could split the world economy into rival spheres.[21] While such a rupture remains possible, as we discuss in **Section V**, the evidence still looks more like a transition in an ongoing relationship than a fundamental breakdown.

China and the US have been trading significantly less with each other since the onset of their trade war in early 2018. **Figure 5** puts these shifts into context. China had already become dramatically less reliant on the US market before the trade war, and recent frictions have accelerated that long-term trend. For the US, in contrast, the last two years represent the reversal of a trend toward rising trade integration with China. The recent shifts, however, are still modest relative to both countries' overall economic activity. Additionally, US-China trade—especially US imports from China—rebounded strongly during the second quarter of 2020. It remains unclear whether this spike will be sustained, as it reflects unique pandemic-era conditions, such as China's manufacturing capacity coming back online while other countries struggled to contain the virus and pandemic-induced surges in demand for products where China is a leading producer, such as medical supplies and electronics (spurred by the transition to remote work).[22]

FIGURE 5: US-CHINA MERCHANDISE TRADE TRENDS IN PERSPECTIVE, 1990 – 2020



The US-China trade war has accelerated China's long-run reduction in its reliance on the US market, while reversing the US's pattern of rising then fairly stable trade integration with China. It remains unclear whether the spike in US-China trade during the Covid-19 pandemic (especially in US imports from China) will be sustained. Note: Seasonally adjusted. Data sources: IMF, OECD

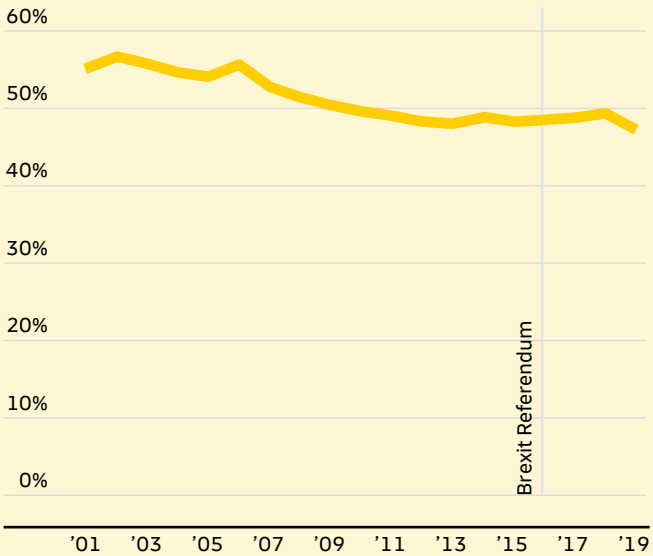


Beyond trade, trends are mixed across other flows between the US and China. FDI flows in both directions rose from 2018 to 2019, although Chinese FDI into the US remained far below its 2016 peak. According to a recent analysis from the Peterson Institute for International Economics, "despite the rhetoric, US-China financial decoupling is not happening."[23] On the other hand, Chinese tourism to the US began declining in 2018, after 15 consecutive years of increases.[24] And while it does not (yet) show up in broad patterns of international flows, US-China tensions over key technologies continue to boil, most notably with respect to 5G networking equipment (centered on Huawei) and social media (TikTok, WeChat).

The 2016 Brexit referendum represented another major jolt to the geopolitical order underpinning globalization, especially in Europe. While the UK did exit the European Union in January 2020, policy changes pertaining to trade and other international flows have been deferred through year-end under a transition arrangement. The share of the UK's trade flows taking place to and from the EU had previously been on a declining trend, but it has been fairly stable since 2013, albeit with a notable dip in 2019 (See **Figure 6**).[25]

Looking beyond trade, other flows show greater evidence of shifting UK-EU ties. FDI flows are volatile, and short-run trends can be misleading, but the EU share of UK FDI inflows and outflows has been lower since 2016 than it was in the preceding decade. In 2018, EU-based firms withdrew more FDI from the UK than they put in.[26] Fewer EU citizens have

FIGURE 6: UK PERCENTAGE OF TRADE WITH EUROPEAN UNION, 2001 – 2019



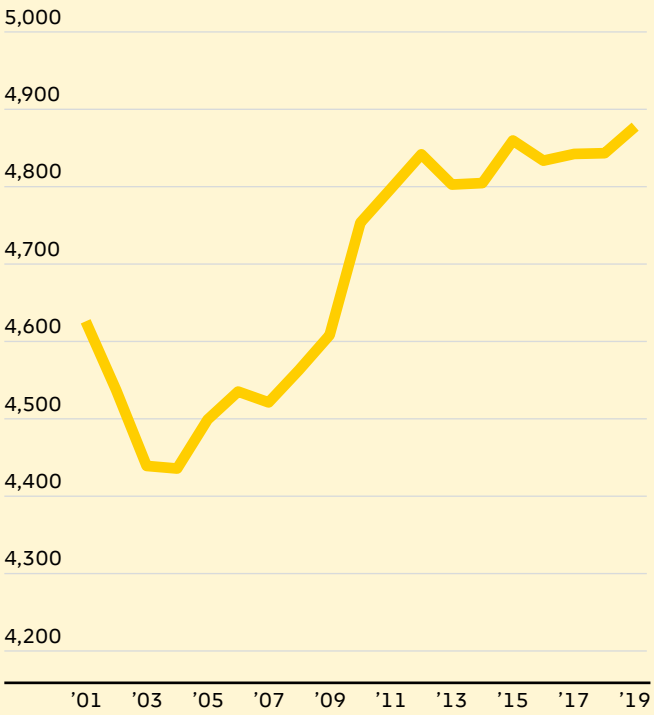
Approximately half of UK trade in goods and services is with EU partners. Shifts since the Brexit referendum have thus far been small in historical context. Data source: UK Office of National Statistics

"US-China relations have become globalization's most sensitive fault line, as tensions have risen between the world's two largest economies."



“Trends on the intra-regional proportion of trade vary depending on where one draws the boundaries between regions, but the average distance traversed by merchandise trade flows has been fairly stable in recent years.”

FIGURE 7: AVERAGE DISTANCE TRAVERSED BY MERCHANDISE TRADE (KILOMETERS), 2001 – 2019



The average distance traversed by merchandise trade has been fairly stable in recent years. A major shift toward more regionalized trade patterns would pull this measure downward. Data sources: IMF Direction of Trade Statistics (DOTS), UN Comtrade, CEPII GeoDist Database

migrated to the UK since the Brexit referendum, and new enrollments of students from the EU in UK universities have also declined. However, migration from the UK to the EU has increased.[27]

What about the broader possibility that the world economy could be fracturing along regional lines? We examined regionalization trends last year in the DHL Global Connectedness Index 2019 Update and did not find robust evidence of rising regionalization. Trends on the intra-regional proportion of trade vary depending on where one draws the boundaries between regions, but the average distance traversed by merchandise trade flows has been fairly stable in recent years (See **Figure 7**). If there was really a strong trend toward more trade happening within rather than between regions, this measure would have declined.

3 THE LIMITED EXTENT OF GLOBALIZATION

Before the Covid-19 pandemic hit, many presumed that we were living in an age of "hyper-globalization," in which borders and distance were becoming relics of the past. Actual data on trade, capital, information, and people flows debunk the myth of a "flat" world. Most activity that could happen either within or across national borders is still domestic, and the flows that do cross borders tend to diminish significantly as distance and cross-country differences increase.

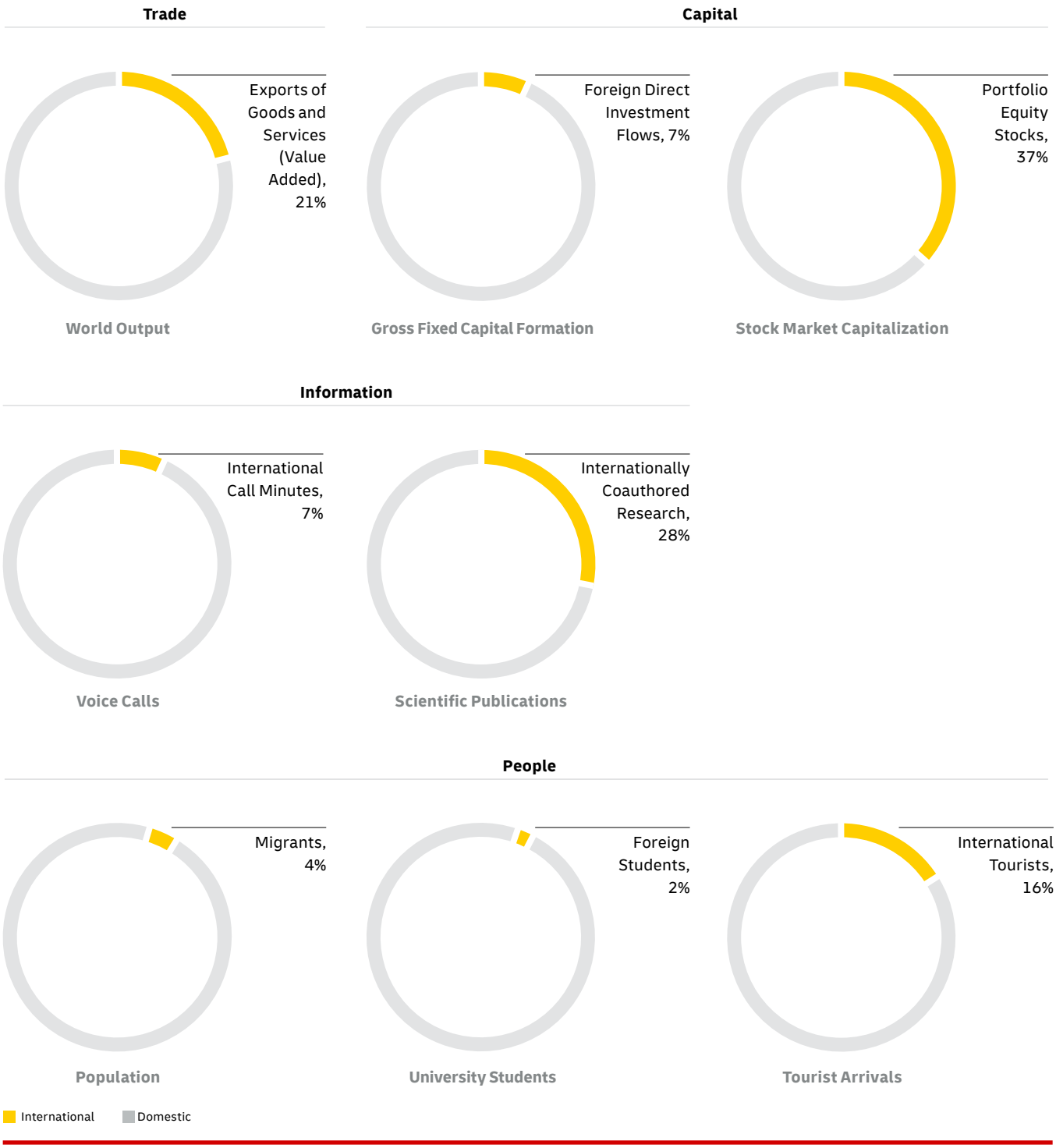
Figure 8 shows that most business and personal activity is still domestic rather than international. Roughly 21% of all goods and services end up in a different country from where they were produced. Companies buying, building, or reinvesting in foreign operations via FDI accounted for only 7% of gross fixed capital formation last year. Just 7% of voice call minutes, including calls over the internet, were international. And a mere 3.5% of people lived outside of the countries where they were born. In **Section III**, we provide additional details about these measures and discuss how they are trending.

If many of these global "depth" measures are lower than you expected, you are in good company. Surveys of managers, students, and the general public have consistently shown that most people think international flows are larger than they really are.[28] This pattern shows up across countries, as well as respondent characteristics such as level of education, age, gender, and political leanings.

Moreover, such exaggerated perceptions have real consequences, because they are often left unchallenged in decision making processes. In business, people who overestimate globalization levels more than others do tend to underestimate the challenges involved with doing business



FIGURE 8: MOST FLOWS ARE PRIMARILY DOMESTIC RATHER THAN INTERNATIONAL, 2019 (OR MOST RECENT)



Most flows that could take place either within or between countries are still domestic rather than international.



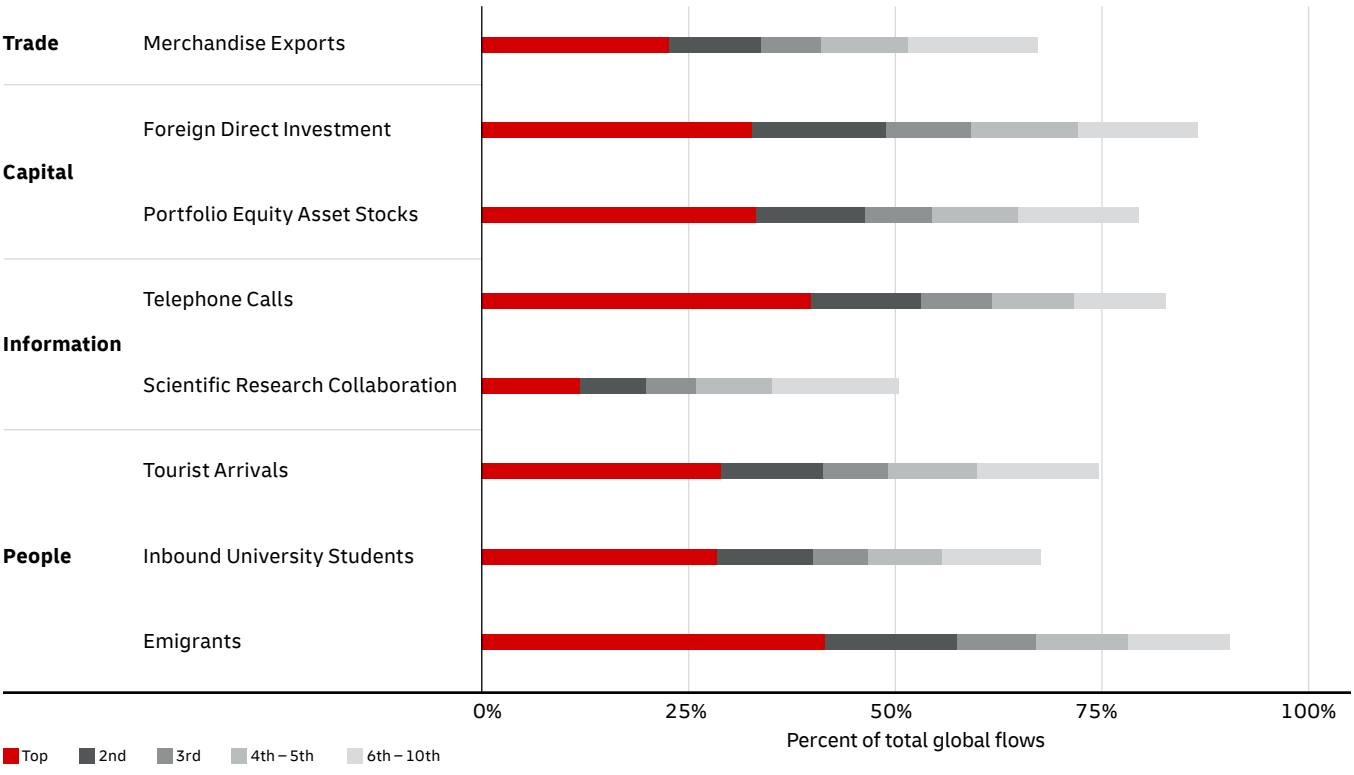


abroad. In public policy, people who overestimate these types of measures tend to presume that globalization is a much bigger factor in joblessness, wage stagnation, and climate change than evidence suggests.

The breadth of globalization is also limited, highlighting the persistent dampening effects that distance and cross-country differences continue to exert on international flows. One simple way of looking at the limited breadth of globalization is to consider how most countries connect strongly to just a few rather than a wide variety of other countries, as shown in **Figure 9**.

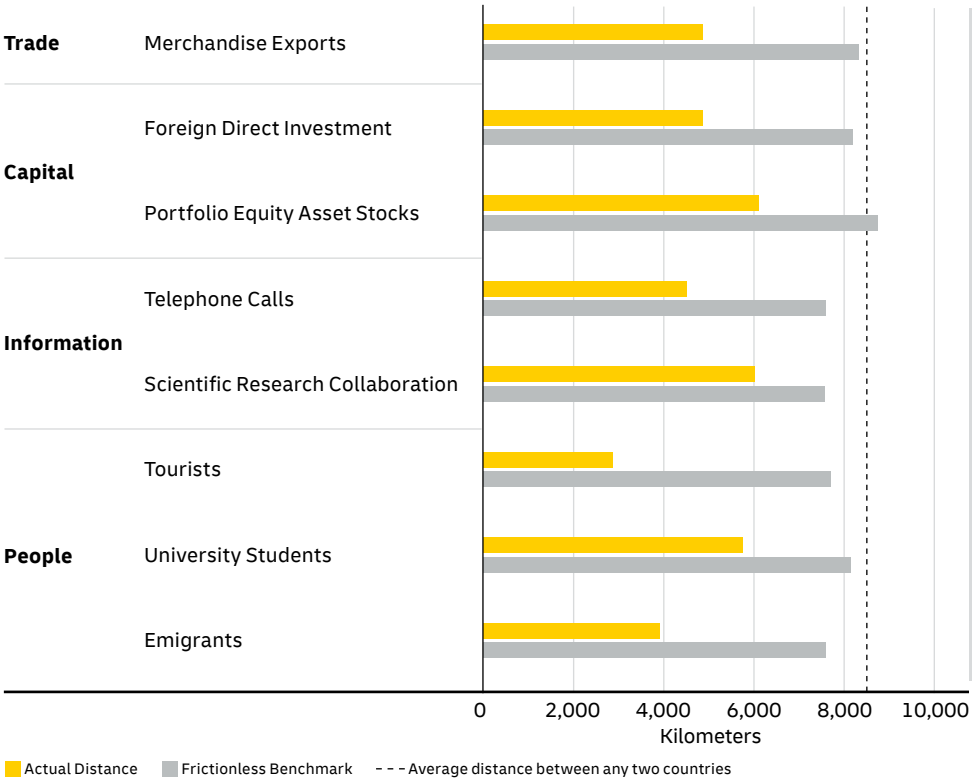
Flows between countries and their single largest partners (e.g. export destinations for trade) make up more than one-fifth of merchandise trade and more than one-quarter of all of the other flows except scientific research collaboration. Migration is the most concentrated on this basis, with 42% of all migrants having moved to where their birth country has its largest diaspora population.[29] 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.

FIGURE 9: 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.

FIGURE 10: 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 60% as far as they would if distance and cross-country differences had ceased to matter.

Expanding the same analysis beyond only countries and their single largest partners, more than half of every international flow covered in this analysis happened between countries and just their top 10 partners. For all flows except scientific research collaboration, the same could be said of the top five. Roughly speaking, even if each country engaged in trade, capital, information, and people flows with just five foreign countries rather than the nearly 200 there are around the world, more than half of international flows would still remain.

Geographic distance, along with cultural, administrative/political, and economic differences go a long way toward explaining this phenomenon.[30] For example, if one pair of countries is half as distant as an 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. And to highlight a cultural commonality, sharing a common language roughly doubles both trade and FDI.[31]

Thus, despite all the advances in transportation and telecommunications that have taken place, international flows are still far larger between geographically proximate countries. The average distance between all pairs of countries around the world is about 8,500 km, but the flows covered on the breadth dimension of the DHL Global Connectedness Index averaged only 5,102 km in 2019.[32]

Figure 10 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.[33] On average, this sample of flows went only about 60% as far as they would in a "flat" world.

Despite globalization's tremendous advance over the past few decades, the depth and breadth of globalization are both still limited, with substantial headroom for growth. Most flows that could happen either within or across national borders are still domestic rather than international. And the flows that do cross national borders tend to diminish sharply with distance and other types of cross-country differences.



SECTION III

FOUR FLOWS THAT CONNECT THE WORLD

This section provides an overview of the four types of flows that comprise the DHL Global Connectedness Index: trade, capital, information and people.[1] It covers trends at the global level and takes a particularly close look at the effects of the Covid-19 pandemic. Where possible, we discuss forecasts that provide a window into likely outcomes for the full year of 2020 and how flows may develop over the next few years.

1 TRADE

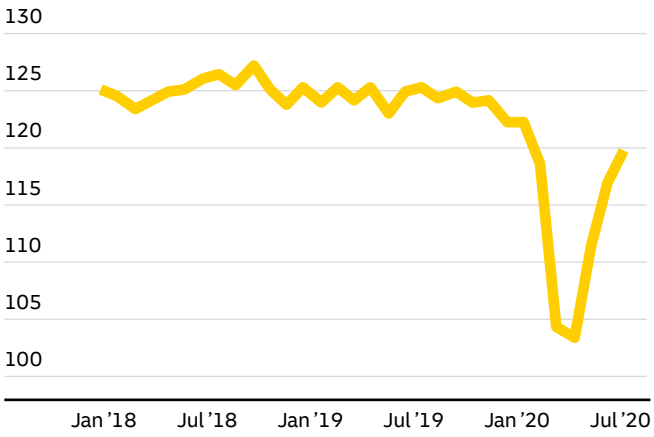
Sluggish trade growth in 2019 gave way to a sharp contraction in 2020 as Covid-19 disrupted supply chains and reduced demand across economies and industries. Trade, however, proved to be more resilient than many feared at the onset of the pandemic. The latest forecasts imply that the real proportion of global economic output traded across national borders will not fall further in 2020 than it fell during the 2008-09 global financial crisis.

World trade volume grew 1.0% in 2019, but the IMF forecasts a 10.4% drop in 2020. In US dollar terms, the value of world trade slipped 1.8% in 2019 and is forecasted to fall 13.2% in 2020.[2] The larger decline in trade value than trade volume reflects drops in the prices of many heavily traded commodities due to depressed demand amid the Covid-19 pandemic. Oil prices, for example, fell sharply at the onset of the pandemic, contributing to a projected 32% full-year decline.[3]

Trade in goods weakened in late 2019 amid slowing global economic growth and ongoing trade tensions, before plunging in early 2020 as the Covid-19 pandemic spread across the globe, as seen in **Figure 11**. But a swift rebound started in June, and merchandise trade volume was back within 3 – 4% of its pre-pandemic level by August.[4] The latest WTO forecast for the full year, thus, calls for global goods trade to fall only 9%, far less than its April prediction of a 13 – 32% drop. The WTO also forecasts 7% merchandise trade growth in 2021.[5]

Figure 12 tracks the evolution of merchandise and services trade depth since 2001. Merchandise trade as a percentage of world GDP declined modestly in 2019 to 22%, while services trade depth grew to 6.9%. This continues the pattern of services trade outpacing merchandise trade growth in recent years. Several factors have contributed to this divergence, including faster service sector growth overall and the changes in manufacturing value chains discussed later in this section.

FIGURE 11: GLOBAL MERCHANDISE TRADE VOLUME



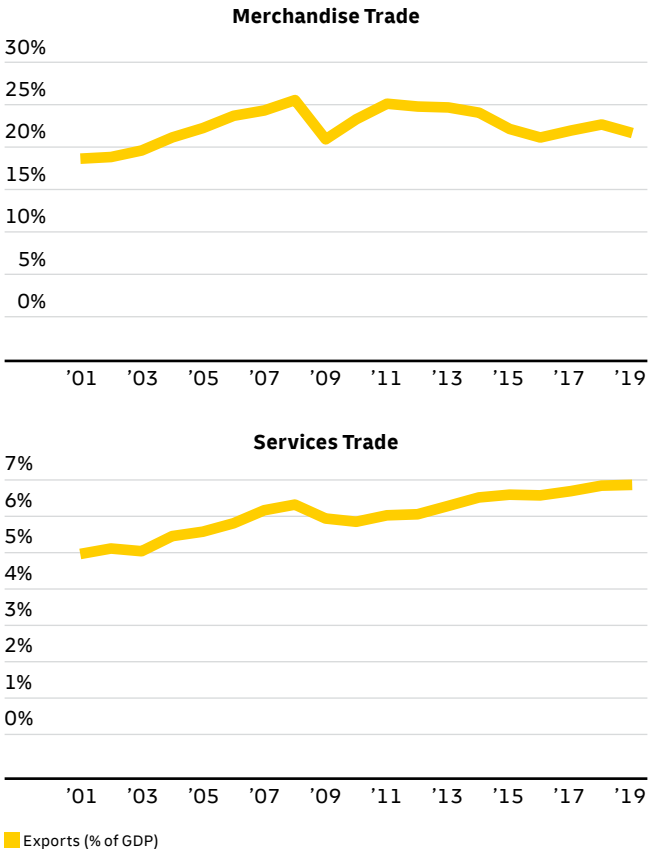
Global merchandise trade volume rebounded to within 3–4% of its pre-pandemic level by August. Note: Indexed trend (2010=100) Data source: CPB World Trade Monitor

Combining trade in both goods and services (**Figure 13**), the ratio of world exports to GDP declined from 29.5% in 2018 to 28.5% in 2019. Forecasts in the October 2020 IMF World Economic Outlook call for this ratio to drop to 25.9% in 2020 before starting to grow again in 2021.

Covid-19 is on track to cause a much smaller decline in trade intensity than the 2008-09 global financial crisis. This reflects both how quickly trade recovered during 2020 and the fact that many of the industries that were hit hardest by the pandemic (e.g. restaurants) provide local services rather than heavily traded goods.[6] It is also notable that a significant part of the forecasted decline in trade intensity in 2020 is due to lower commodity prices. Figure 13 shows a 9% decline in the US dollar value of exports as a percentage of GDP in 2020, placing this ratio slightly below its 2009 level.[7] However, removing the effects of price changes shrinks this decline to just 6%. On this basis, the share of real global output that is exported is expected to remain above its 2009 level in 2020.

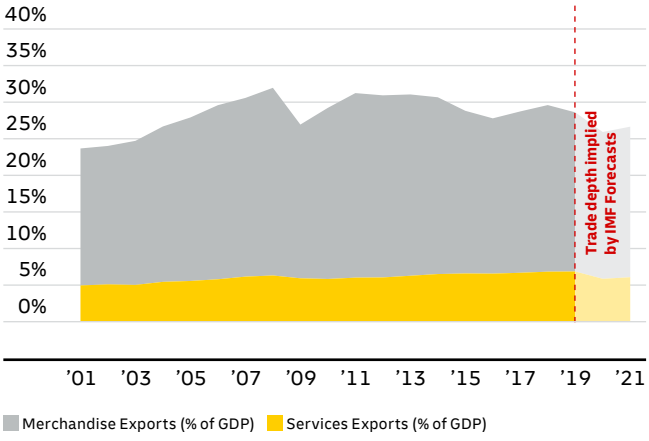


FIGURE 12: TRADE TRENDS, 2001 – 2019



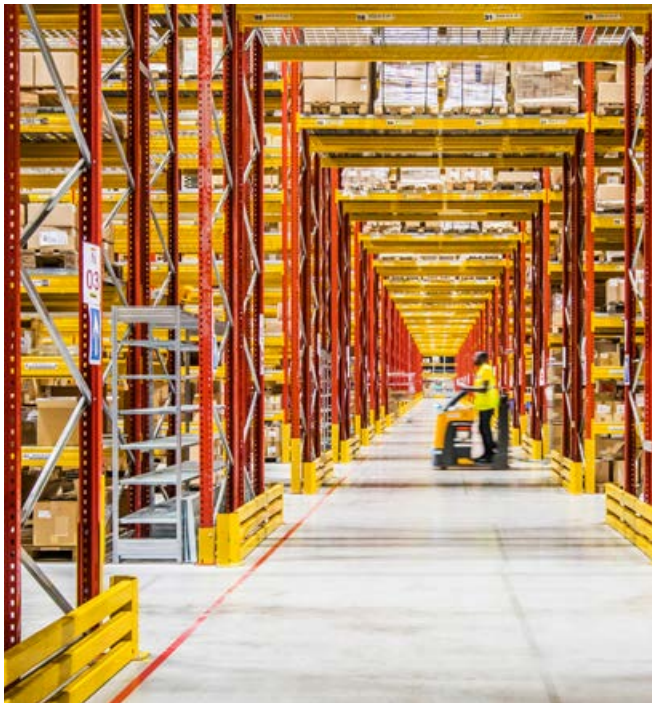
Depth of merchandise trade declined in 2019 amid trade tensions and faltering global economic growth. Services trade depth continued growing but at a slower pace.
Data source: World Bank World Development Indicators

FIGURE 13: TRADE DEPTH, 2001 – 2019 AND IMF FORECASTS FOR 2020 – 2021



IMF forecasts call for exports as a percentage of global economic output to fall in 2020 by a smaller amount than during the 2008–09 global financial crisis, and then to begin recovering in 2021. Data sources: World Bank World Development Indicators and IMF World Economic Outlook

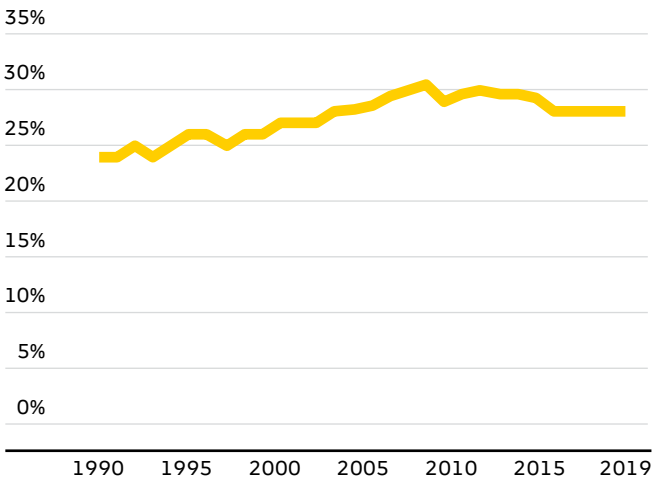
The effects of Covid-19 on trade vary widely across categories of both goods and services. Trade in medical supplies used to fight Covid-19 has soared, despite export restraints imposed by many countries early in the pandemic.[8] On the other hand, trade in transport equipment and fuels has shrunk much more than overall merchandise trade. Among services, trade in IT and communications services that enable remote work has expanded while services trade that depends on tourism and business travel has collapsed.[9]



Covid-19 has also accelerated the growth of international e-commerce. According to one study, cross-border discretionary e-commerce sales soared 53% year-on-year during the second quarter of 2020.[10] Cross-border sales, nonetheless, accounted for only 10% of all consumer e-commerce transactions in 2018, suggesting ample headroom for additional growth. The share of online shoppers who made purchases from foreign suppliers rose from 17% in 2016 to 23% in 2018.[11] An analysis by the McKinsey Global Institute forecasts that international business and consumer e-commerce could expand trade in manufactured goods by 6 – 10% by 2030.[12]

Looking beyond Covid-19 effects on trade, one of the key longer-run drivers of trade growth is the evolution of manufacturing value chains. A simple measure of the extent to which companies "fine-slice" production across countries is the share of foreign value-added in world exports, i.e. the percent of all of the value of goods exported each year that comes from outside of the exporting country. According to data from the UN Conference on Trade and Development (UNCTAD), this measure rose from 24% in 1990 to 31% in 2008, giving a boost to global trade growth. But it has subsequently dipped back down to 28%, as shown in **Figure 14**. A major contributor to this trend is the growth of domestic supply bases in emerging economies, especially in China. China's merchandise imports fell from a peak of 29% of GDP in 2005 to 15% in 2019, and China's merchandise export intensity fell a similar amount.

FIGURE 14: FOREIGN VALUE ADDED PERCENT OF WORLD EXPORTS, 1990 – 2019



The extension of global value chains is no longer accelerating trade growth. The share of foreign value in world exports fell from 31% in 2008 to 28% in 2019. Data source: UNCTAD World Investment Report 2020

Shifting focus from trade trends to policy developments affecting trade, the turbulence of the last few years has continued and intensified through the past 12 months. In December 2019, the WTO's Appellate Body ceased to function because the terms of two of its three remaining members expired.[13] The Appellate Body is no longer able to adjudicate trade disputes between member states, as US officials have blocked all new appointments, citing unfair interpretation of the dispute settlement mechanism and unfavorable treatment toward the United States.[14] In the meantime, the EU and 15 other members of the WTO—including China—developed the Multiparty Interim Appeal Arbitration Agreement, which mirrors the pre-established WTO rules and seeks to preserve impartial dispute settlement. By August, the EU and 22 other members were participating in this arrangement.[15]

> *"After eight years of negotiations, 15 Asia-Pacific countries signed the Regional Comprehensive Economic Partnership (RCEP) on November 15, 2020."*



On another prong of the US effort to reorient global trade relations, the trade conflict between the United States and China, which has escalated several times since its beginnings in 2018, remains unresolved. A Phase One deal was signed in January 2020 that commits Beijing to purchasing an additional $200 billion of US products over 2017 levels in four critical sectors – manufacturing, services, agriculture, and energy – and requires Washington to lower tariffs from 15% to 7.5% on $120 billion worth of US imports from China.[16] The retention of these tariffs signaled the Trump Administration's desire to maintain leverage for potential Phase Two negotiations. There is still large uncertainty over the success of Phase One implementation, as purchases through August appear to be falling short of targeted levels according to monitoring by the Peterson Institute for International Economics.[17]

On the other side of the Atlantic, negotiations continue about the UK's post-Brexit trade relations, particularly with the EU. While the UK's transition out of the EU lasts until the end of 2020, prospects for an EU-UK trade agreement remain uncertain as of this writing. Options remain on the table, but the two parties remain unaligned over competition rules, fishing rights, and deal enforcement.[18]

The Covid-19 pandemic has also sent shockwaves through the world of trade policy, particularly with respect to trade in medical supplies. Many countries restricted exports to retain their own scarce supplies, while simultaneously removing restraints on imports to boost their access to supplies from abroad. Data compiled under a joint project of the European University Institute, Global Trade Alert, and the World Bank show that 91 jurisdictions have imposed 202 policy measures restricting exports of medical products during the pandemic, of which 86 measures had been removed by late October. Over the same period, 105 jurisdictions enacted 235 measures to facilitate imports, of which 70 had been subsequently removed.[19]

More broadly, WTO research shows that between October 2019 and May 2020, member states enacted 363 new trade measures, 198 of which were trade-facilitating and 165 of which were trade-restricting. Approximately 70% of these were linked to effects of the pandemic. Measures that were not related to the pandemic generally included tariff increases, import bans, export duties, and stricter exports customs procedures.[20]

Nonetheless, in spite of the pandemic and ongoing trade tensions, positive developments in international trade policy also continue. After eight years of negotiations, 15 Asia-Pacific countries signed the Regional Comprehensive Economic Partnership (RCEP) on November 15, 2020. This deal links the 10 member countries of the Association of Southeast Asian Nations (ASEAN) with China, Japan, South Korea, Australia, and New Zealand. Upon ratification, RCEP would become the world's largest trade bloc, encompassing almost one-third of the world economy. The deal promises both to reduce trade barriers and to simplify trade across the region.[21]

The EU has also signed several new trade deals, including agreements with Singapore, Mexico, and Viet Nam. In North America, the United States-Canada-Mexico Agreement (USMCA) went into effect on July 1, 2020, replacing the North American Free Trade Agreement (NAFTA) that previously connected the continent. An agreement between the Eurasian Economic Union (EAEU) and Iran, which creates a free trade zone between Iran and several European and Central Asian countries including Russia, Kazakhstan, and Belarus, went into force in late 2019.[22] And the EU-Mercosur trade agreement reached in June 2019 remains under consideration.[23]

2 CAPITAL

International capital flows have declined more sharply than trade flows due to Covid-19, but there are also some signs of recovery for this aspect of globalization. This is consistent with the pattern of capital flows being the most volatile pillar of the Index. Foreign Direct Investment (FDI) flows are likely to remain subdued through 2021, but FDI investor sentiment has already reversed part of its pandemic-era plunge. Emerging markets saw record portfolio equity outflows at the onset of the pandemic, but those capital flows quickly stabilized after governments and central banks took swift action to support economies and financial markets.

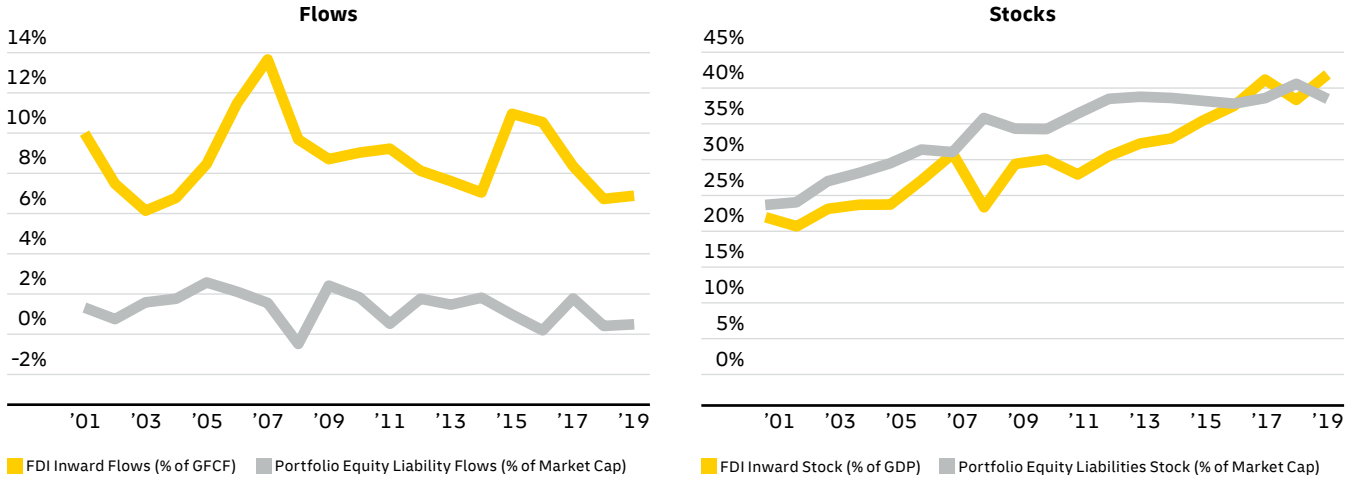
The capital pillar of the DHL Global Connectedness Index measures stocks and flows of foreign direct investment (FDI) and portfolio equity investment. The distinction between the two is that FDI gives the investor (typically a multinational corporation) a voice in the management of a foreign enterprise, 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.[24]

FOREIGN DIRECT INVESTMENT

FDI flows and stocks depth measures both increased in 2019 (**Figure 15**), but Covid-19 has caused FDI flows to plummet in 2020. The UN Conference on Trade and Development (UNCTAD) forecasts that FDI flows will decline 30 – 40% in 2020, and that they are likely to slip another 5 – 10% in 2021, before starting to recover in 2022.[25] The pandemic has crimped FDI flows through various channels: reductions in earnings available to invest, worsening business prospects, restrictions on business travel, uncertainty both in general and specifically about global supply chains, and so on.

Nonetheless, double-digit drops in FDI flows are not uncommon, and certainly not as alarming as a similar drop in trade

FIGURE 15: CAPITAL TRENDS, 2001 – 2019



The capital pillar of the index rose modestly in 2019, due to small increases in the depth of both FDI and portfolio equity flows alongside offsetting changes across stock measures. Data sources: UNCTAD World Investment Report, IMF Balance of Payments and International Investment Position Statistics Database, World Bank World Development Indicators



"International capital flows have declined more sharply than trade flows due to Covid-19, but there are also already some signs of recovery for this aspect of globalization."

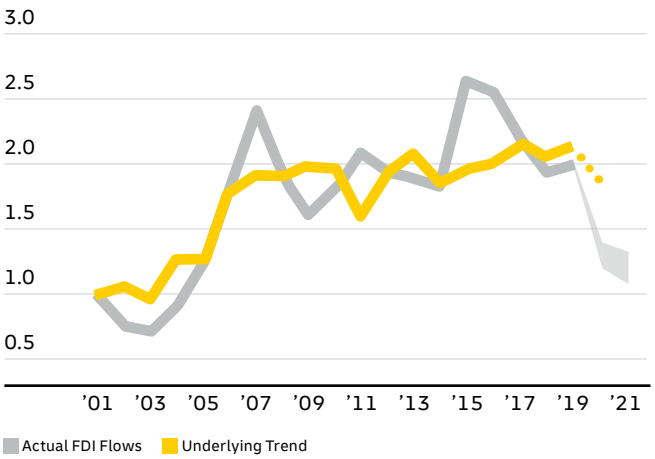
would be. For example, FDI flows shrank 43% in 2001 and 35% over a two-year period during the global financial crisis, and they have swung widely both up and down over the last five years due to changes in US tax policy.[26]

Over the first half of 2020, FDI inflows fell much more sharply in advanced economies than in emerging economies. There was also wide variation across industries, with extractive industries and manufacturing hit especially hard. In contrast, cross-border mergers and acquisitions grew in digital industries (digital services and manufacturing of computer-related equipment).[27]

To provide a more meaningful depiction of longer-run FDI patterns, UNCTAD has developed an "underlying" FDI trend that removes "fluctuations driven by one-off transactions and volatile financial flows." On this basis, FDI flows are expected to decline only 12% in 2020 and to begin recovering in 2021 (**Figure 16**).[28] Brightening prospects for FDI also gain some support from fDi Intelligence's fDi Index, which tracks foreign investor sentiment (**Figure 17**).[29] This measure had already reversed most of its pandemic-driven decline by June, but it dipped again in August as investors again sought safety close to home.[30]

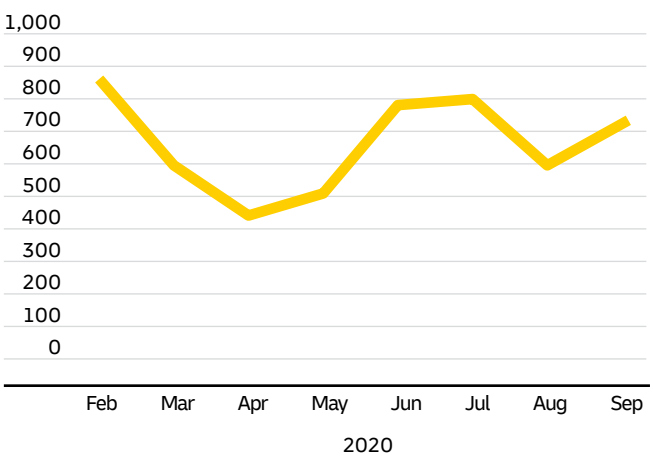
UNCTAD's underlying FDI trend, however, does show only marginal growth since the 2008 global financial crisis, and weak FDI growth has prompted questions about the future of corporate globalization.[31] The link between FDI and corporate globalization reflects how the bulk of FDI flows involve companies building, buying, or reinvesting in their foreign operations. It is important to keep in mind, however, that firms can also grow their international operations without increasing FDI, e.g. by raising capital locally in foreign markets or by expanding via non-equity alliances or contractual arrangements that do not require direct ownership of foreign assets.

FIGURE 16: ACTUAL FDI FLOWS VS. UNDERLYING TREND*



UNCTAD's underlying FDI flows trend is forecasted to fall 12% in 2020, as compared to a 30-40% drop in actual FDI flows. Note: Indexed trend (2001=1.0) Data source: UNCTAD World Investment Report 2020
*2020 and 2021 Forecasts

FIGURE 17: FDI INDEX (FOREIGN INVESTOR SENTIMENT)



The fDi Index reported by fDi Intelligence shows a large rebound in foreign investor sentiment in May and June, but its decline in August underscores the difficult environment that persists for FDI this year.
Data source: fDi Intelligence fDi Index





Thus, while FDI flows have remained weak over the past decade, the real activity of multinational firms has continued to grow, albeit at a slower pace. As shown in **Figure 18**, the share of global economic output generated by multinational firms outside of their home countries rose from 9.0% before the global financial crisis to 9.7% in 2019. And the share of the world's working age population employed in the foreign operations of multinational firms rose from 1.4% to 1.6% (an increase of 24 million employees).

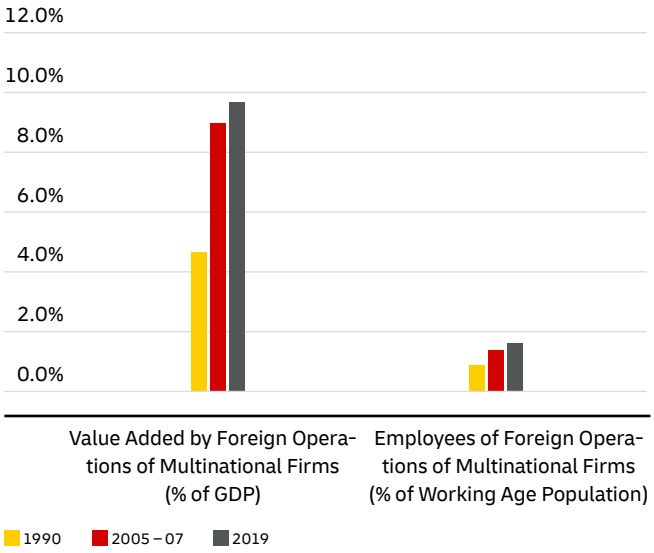
There are, nonetheless, important longer-run trends that have weighed on FDI flows and the growth of multinational business activity over the past few years and may endure for some time. Technology and policy trends merit particular attention.

In the technology sphere, digitization and the growth of technology-sector multinationals has fostered the growth of international production that does not rely as intensively as traditional manufacturing does on firms investing in physical assets in foreign countries. One manifestation of this trend is the rapid growth of international payments for the use of intellectual property (**Figure 19**), a capital flow that starts to pick up information flows. Such payments have quintupled relative to world GDP since 1990. However, no sustained growth has been recorded on this measure since 2015, a pattern that coincides with slower recent growth of several other information flow measures, as we discuss in the next subsection.

In parallel, other technological trends influencing trade growth also affect FDI, by shaping where firms invest in new capacity. Greater use of automation, smaller labor-cost arbitrage opportunities, and shorter value chains can all weigh against investment in foreign manufacturing.

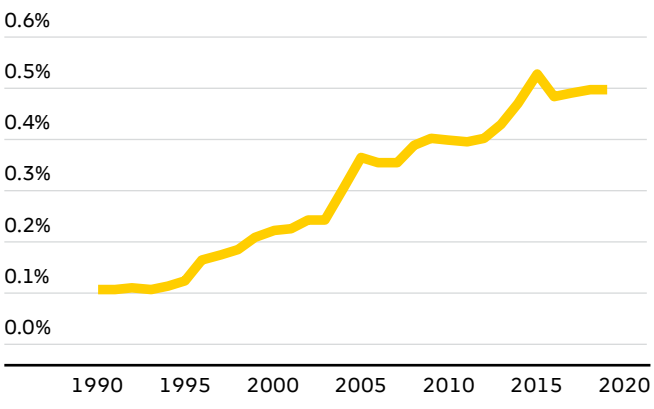
From a policy perspective, the most important recent development is the heightened scrutiny of foreign investments on national security grounds. This trend has gathered momentum since 2018, mainly across the world's advanced

FIGURE 18: FOREIGN VALUE ADDED AND EMPLOYMENT OF MULTINATIONAL FIRMS



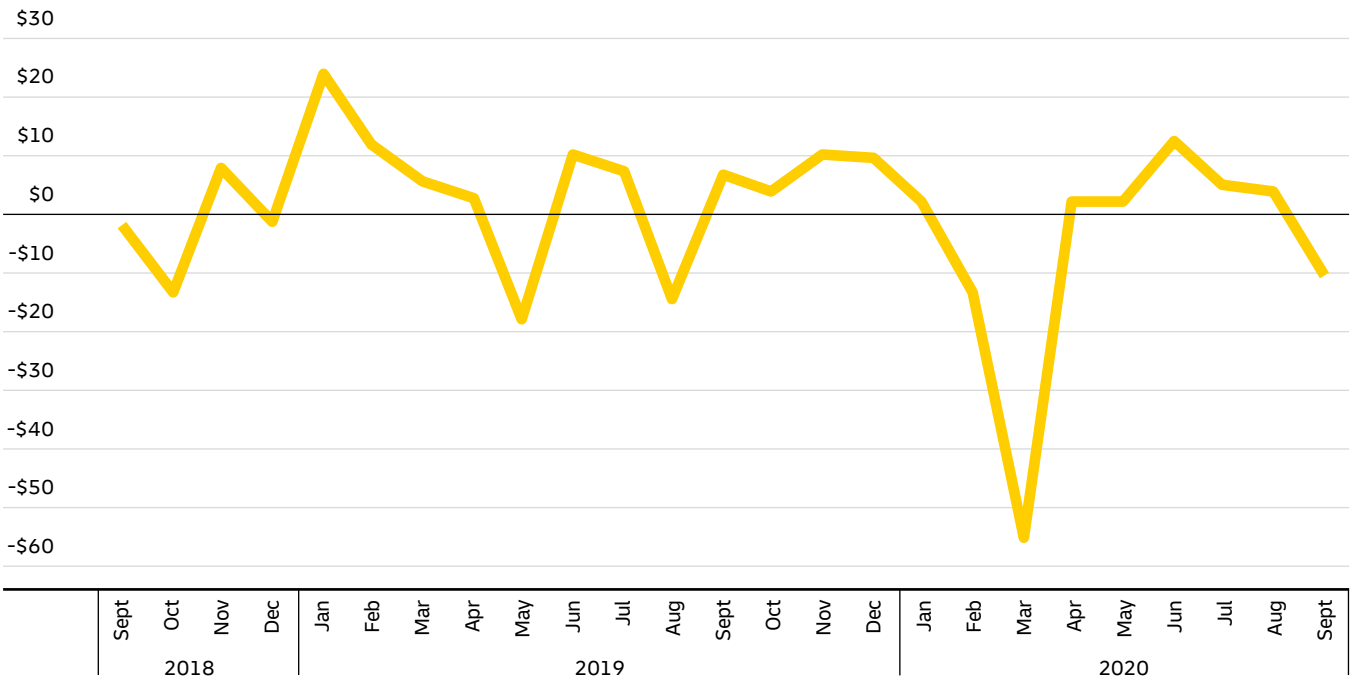
The globalization of multinational firms has continued at a slower pace in recent years, according to data tracking their foreign value added and employment. Data sources: UNCTAD World Investment Report 2020; World Bank World Development Indicators

FIGURE 19: INTERNATIONAL PAYMENTS FOR USE OF INTELLECTUAL PROPERTY, PERCENT OF WORLD GDP



The globalization of business increasingly involves the international deployment of intangible assets. International payments for the use of intellectual property quintupled as a share of world GDP between 1990 and 2015. Data source: World Bank World Development Indicators

FIGURE 20: NON-RESIDENT PORTFOLIO EQUITY FLOWS TO EMERGING MARKETS (BILLIONS OF US DOLLARS)



The onset of the pandemic prompted record withdrawals of portfolio equity investment from emerging markets, but these flows quickly stabilized in response to swift policy action by governments and central banks. Data source: Jonathan Fortun, IIF Capital Flows Tracker © 2020 Institute of International Finance, Inc. All rights reserved

economies. Regulations implementing the EU's 2019 framework for screening FDI and the US's 2018 Foreign Investment Risk Review Modernization Act became effective in 2020.[32] Amid the Covid-19 pandemic, many countries combined additional screening of foreign investments in healthcare-related industries with measures to attract investments that would boost capacity.[33]

More generally, the majority (76%) of new foreign investment policy measures announced in 2019 promoted or facilitated investment, however there was a stark divide between advanced and emerging economies. More than half of the new policies announced by developed countries further restricted or regulated FDI, a trend that looked set to continue into 2020. Meanwhile, the number of new international investment agreements (IIAs) signed in 2019 (22) stood at its lowest level in more than three decades and was lower than the number of existing agreements that were terminated (34).

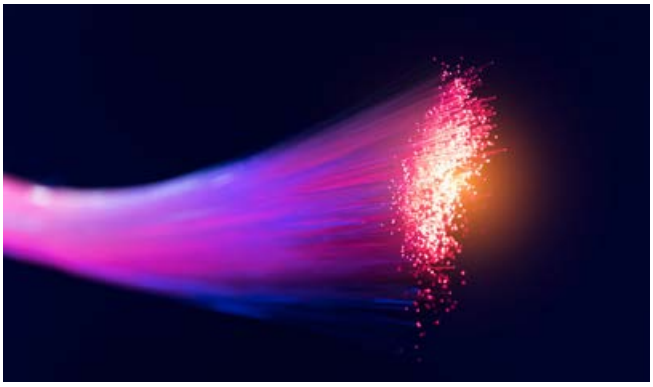
PORTFOLIO INVESTMENT

Shifting focus from FDI to portfolio equity, 2019 was a relatively placid year, following sharp swings in 2017 and 2018. Portfolio equity flows depth remained fairly steady, while portfolio equity stocks depth registered a small decline. Portfolio equity stocks closed out 2019 at 37% of world stock market capitalization, just shy of the record level reported in 2018.

Longer-run trends have seen equity investors, particularly in major advanced economies, become less "home biased" over time, opting for greater international diversification.[34] Given the proliferation of electronic trading, it is hardly a surprise that portfolio equity stocks have the second-highest breadth of any of the flows covered in the DHL Global Connectedness Index (after scientific research collaboration). Portfolio equity depth, nonetheless, remains well below the roughly 80% that would be expected if investors allocated their equity portfolios across countries in proportion to the value of countries' stock markets.

When Covid-19 hit, the crisis prompted record withdrawals of portfolio equity investment from emerging markets, far outstripping the outflows that took place over similar periods during other recent crises.[35] The Institute of International Finance has estimated that investors withdrew more than $50 billion of portfolio equity from emerging economies in March 2020. However, as shown in **Figure 20**, portfolio equity flows to emerging economies rebounded swiftly after governments and central banks stepped in to support financial markets and economies. By June, these flows were solidly back into positive territory. However, high-frequency data indicate that they went negative again in September.[36]

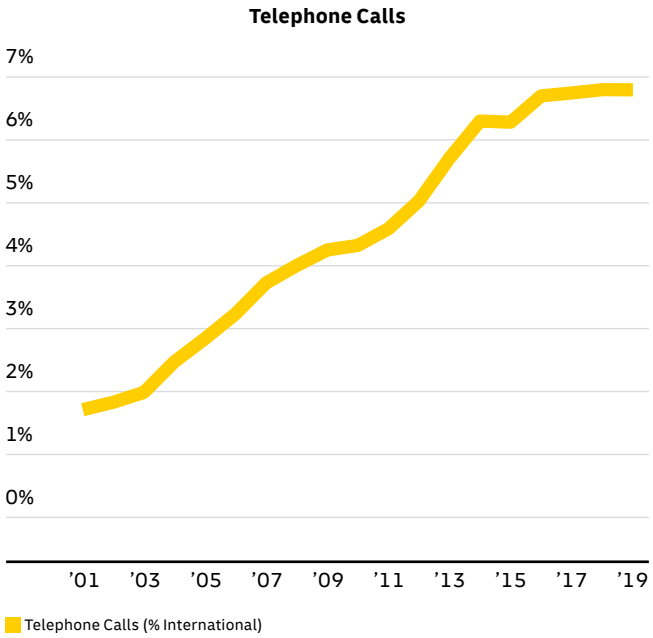
3 INFORMATION



The information pillar's growth slowed after 2014 and flattened in 2019, leaving this part of the index basically unchanged last year, as shown in Figure 3 in Section II. The Internet continues to power large increases in information flows within and across borders, but international information flows are no longer consistently growing faster than domestic information flows. Covid-19 has caused data traffic to boom in 2020, but it remains unclear whether the pandemic has made the nature of information flows more—or less—global (see The Covid-19 Data Flows Boom on page 38).

Global trends on the information pillar are calculated based on data covering telephone calls (including calls over the internet), international co-authorship of scientific research, and trade in printed publications (see **Figure 21**). For the cross-country comparisons presented in **Section IV**, this pillar also incorporates international internet bandwidth per internet user, but we exclude that metric here because its growth over time is driven more by technological change than by changes in the geography of information flows.[37]

FIGURE 21: INFORMATION TRENDS, 2001 – 2019



The growth of information flows depth has leveled off somewhat in recent years.
Data sources: TeleGeography, Clarivate Web of Science, UN Comtrade Database, ITC Trade Map, UN DESA World Population Prospects 2020

TELEPHONE CALLS

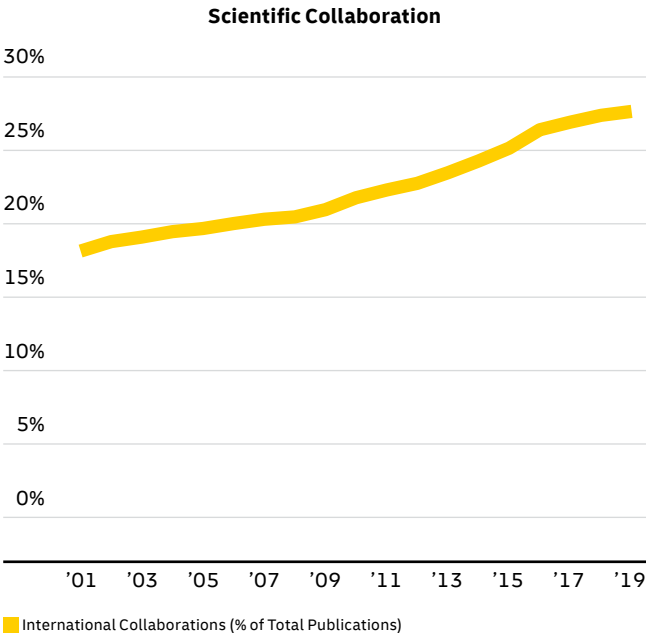
The international proportion of all voice call minutes (including calls over the internet) has soared from roughly 2% in 2001 to nearly 7% in 2015, but further increases since then have been minimal.[38] The rise of calls over internet-based services was a major contributor to the growth of international calling. 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.[39]

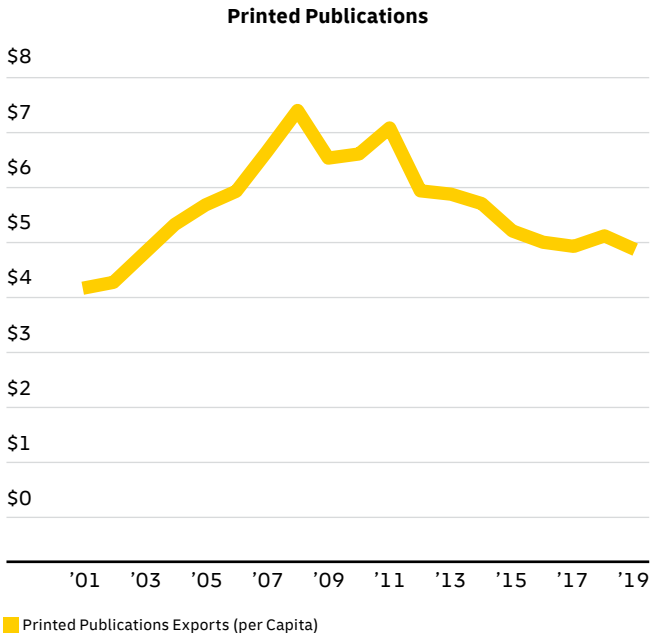
Free calls over the internet, however, are no longer a novelty, and the maturation of such services has contributed to the recent slowdown on telephone calls depth.[40] Slower growth of international calls also fits with a slowdown in the growth of the internet itself. International internet bandwidth grew at the slowest pace in 15 years in 2019,[41] and the number of people using the internet increased just 5%, the lowest growth rate of internet users on record.[42]

Additionally, even after the international proportion of telephone call minutes more than tripled since 2001, most people still have very little direct phone contact with others outside of their own countries. In 2019, the average person around the world spent roughly eight hours talking to people in foreign countries (as compared to more than 100 hours spent on domestic calls). The same pattern of limited globalization also shows up on social media and other online activity (see **How Global Is the Internet Really?** on page 40).









In 2020, phone calls spiked as countries locked down due to Covid-19. Globally, international call minutes were up 20% in March versus the same month in 2019.[43] However, domestic calls also increased and comparable full-year data are not yet available. Patterns also vary across countries. In the US, for example, mobile voice minutes on the AT&T network were up 40% over the first six months of the pandemic.[44] In contrast, voice minutes on the Bharti Airtel network in India fell 0.2% during the April-June quarter. In India, prepaid plans are more common, and some customers were unable to recharge their accounts during the lockdown.[45]

"The Internet continues to power large increases in information flows within and across borders, but international information flows are no longer consistently growing faster than domestic information flows."

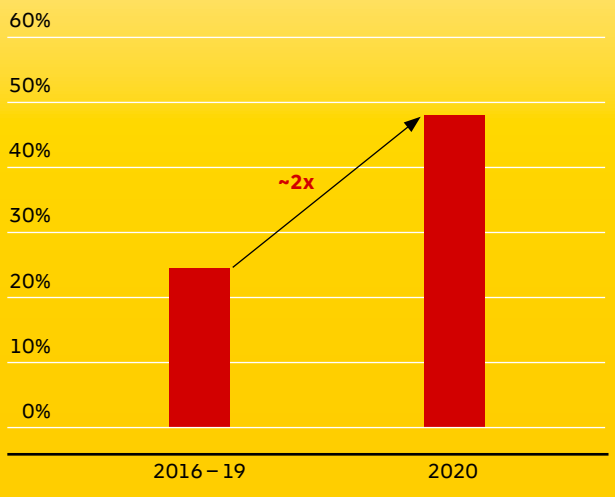


THE COVID-19 DATA FLOWS BOOM

Global internet traffic spiked in the first quarter of 2020, as Covid-19 lockdowns and social distancing prompted a surge in demand for online entertainment, education, meetings, and myriad other alternatives to in-person interactions. Sandvine, a US-based networking firm, reported a 40% increase in traffic across the networks it monitors around the world from the start of February to mid-April.[46] Other sources also report large double-digit increases in internet traffic.[47]

There is some evidence that international traffic may have grown even faster than total internet traffic during the pandemic. According to Telegeography Research, international internet traffic soared 48% from mid-2019 to mid-2020.[48] Nonetheless, Telegeography cautions that this is a "one-off phenomenon." Moving forward, they report that network operators expect a reversion to the pattern of slowing—but still significant—growth moving forward.[49]

FIGURE 22: ANNUAL GROWTH OF INTERNATIONAL INTERNET TRAFFIC



Data source: Average international internet traffic growth, based on data reported in Paul Brodsky, "Internet Traffic and Capacity in Covid-Adjusted Terms," Telegeography Blog, August 27, 2020.



"The 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."

SCIENTIFIC RESEARCH COLLABORATION

Scientific research collaboration contributes to the creation and diffusion of knowledge.[50] With increased focus on technological globalization in recent years, we have added international co-authorship of scientific research as a new information pillar measure in this edition of the DHL Global Connectedness Index.

International research collaboration has increased strongly over the past four decades.[51] The proportion of scholarly articles with co-authors located in more than one country rose from 18% in 2001 to 28% in 2019, across the large sample of journals indexed in the Web of Science database.[52] From 2016 to 2019, however, this measure grew less than half as fast as it did over the preceding three-year period. The sense that a large wave of scientific or technological globalization has slowed down recently gains further support from trends in patent applications. 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 43% in 2015, but it has not grown appreciably since 2015.[53]

Along with internet-driven improvements in collaboration tools, the 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."[54] There is also compelling evidence that international collaboration boosts the quality and the impact of scientific research. For example, the participation of more countries in a research publication boosts its impact more than the participation of additional authors does.[55] Similarly, incentives like the Nobel Prize have motivated scholars to produce higher quality research, which has in some cases led to greater researcher mobility. According to one study, 23% of Nobel laureates moved across countries within their careers, contributing to more globalized research output.[56]

The globalization of research, however, poses policy challenges for national governments. Countries face greater complexity fostering their own competitiveness via national science policies. Moreover, as noted earlier, geopolitical tensions increasingly come into play. Chinese researchers in the US, in particular, have come under heightened scrutiny in 2018 and 2019.[57] Much like the US-China trade trends presented in Figure 5 from the previous section, co-authored articles with Chinese researchers have continued to rise as a share of US output, while the proportion of Chinese works co-authored with US-based researchers peaked in 2014 and has since been on the decline. China, however, still co-authors more intensively with the US than vice versa. In 2019, 27% of China's internationally coauthored articles were with US-based researchers, as compared to 16% US co-authorship with China-based researchers.

PRINTED PUBLICATIONS

In contrast to the internet-fueled growth of telephone calls and scientific collaboration, trade in printed publications has shrunk in favor of digital alternatives.[58] There was just under $5 (USD) of printed material exported per person in 2019, and this measure has been on a declining trend since 2007.



HOW GLOBAL IS THE INTERNET REALLY?

The internet is a global network, and US-based internet giants such as Google and Facebook lead their categories in most countries (with China and Russia the most notable exceptions).[59] But how much of the activity that takes place over the major internet platforms actually crosses national borders? In 2018, more than 35% of clicks on Google's advertisements for US businesses came from outside the US, helping those companies to boost cross-borders sales.[60] But the majority of clicks still came from domestic users.

Friendships on Facebook are even less global. In early 2020, just about 12% of friends on Facebook were located in different countries.[61] Moreover, friendships on Facebook are constrained by many of the same factors that shape international trade patterns, such as geographic distance and differences in languages spoken across countries. Conversely, though, recent research indicates that stronger "social connectedness" between countries (measured based on Facebook friendships) can increase trade flows. Social network connections help to address informational and trust-based impediments to international trade.[62]

Levels of globalization are also limited on other internet platforms. Earlier research indicates that just 20% of trending videos on YouTube ranked among the top 10 videos in more than one country,[63] and about 25% of Twitter followers are located in different countries from the people they follow.[64] Additionally, as noted earlier in this section, just about 10% of consumer e-commerce transactions in 2018 were international.

When people go online to read the news, they almost always go to news websites based in their own countries.[65] While page views on news websites spiked as the Covid-19 pandemic swept the world, there was no clear trend toward either more or less reliance on foreign news sources.[66]

Looking forward, the prospect of a "tech cold war" threatens to further fragment the internet, along with other parts of the technology landscape. A recent Deutsche Bank analysis estimates that this could come at a cost as high as $3.5 trillion, due to reduced demand, costs of operating across rival platforms, and costs of relocating supply chains.[67] The proliferation of "data localization" policies in many countries is also likely to dampen the growth of international data flows.[68]

4 PEOPLE

As discussed earlier, the Covid-19 pandemic has hit people flows much harder than other aspects of globalization. The people pillar of the DHL Global Connectedness Index comprises flows of tourists, university students, and migrants. All three of these flows extended long-term rising trends in 2019, but early data suggest that they have all turned downward in 2020 as many nations have closed their borders and expatriates have returned to their home countries.

TOURISM

International tourism has soared over the past four decades, with the number of people traveling to foreign countries—for both leisure and business purposes—rising more than five times since 1980 (and more than doubling since 2000).[69] The growth of international tourism continued at a slower pace in 2019, with total international arrivals expanding 3.7%, as compared to 5.7% in 2018.[70] The UN World Tourism Organization (UNWTO) attributes this to bubbling geopolitical and social tensions, as well as the global economic slowdown that preceded the coronavirus pandemic.[71]

This longstanding international travel boom was spurred by the fast-growing middle class in emerging economies starting to venture abroad, the expansion of low-cost airline flights, and relaxed tourist visa requirements. In 2008, about 77% of the world's population would have been required to obtain a traditional visa before traveling to a foreign country. By 2015, that proportion had fallen to 61%.[72] And countries continued to adjust their visa policies to welcome more tourists in 2019. The number of visa waivers offered by countries around the world increased by 5.7% last year.[73]

Most tourism, nonetheless, continues to take place within rather than between countries. In 2018, rough estimates show that about 16% of overnight tourists travelled outside of their home countries.[74] The precision of this figure should not be overstated, because many countries do not report the number of domestic trips, along with other data limitations. Therefore, the DHL Global Connectedness index measures the depth of international tourism using an alternative measure, international tourist arrivals per capita.

International tourist arrivals per capita have grown significantly over the period studied: from 0.11 international trips per person in 2001 to 0.19 in 2019 (see **Figure 23**). Pre-pandemic, this metric was expected to continue rising, as international tourist arrivals were projected to outpace population growth. Actual 2020 data, however, show a steep decline. During the first half of 2020, UNWTO estimates international tourist arrivals fell by 65% versus prior-year figures. The same source also forecasts a decline of about 70% over the full year of 2020. International travel has been

TRAVEL BUBBLES AND THE BREADTH OF INTERNATIONAL TOURISM

Pandemic-related travel restrictions will not only affect tourism depth, but breadth as well. The concept of government permitted "travel bubbles" has gained favor in recent months as a way of fostering economic recovery. The concept calls for countries that have effectively managed their domestic health crises to permit travel without quarantine requirements to and from other countries that have similar levels of control over the pandemic. In mid-May, Estonia, Latvia and Lithuania established their own cross-border bubble, although some restrictions were reimposed in September.[75] In October, Hong Kong and Singapore reached an agreement on a travel bubble.[76] This approach, if widely emulated, could cause a steep decline in the breadth of tourism, as a larger proportion of international travel takes place between countries which have enacted such special travel arrangements.



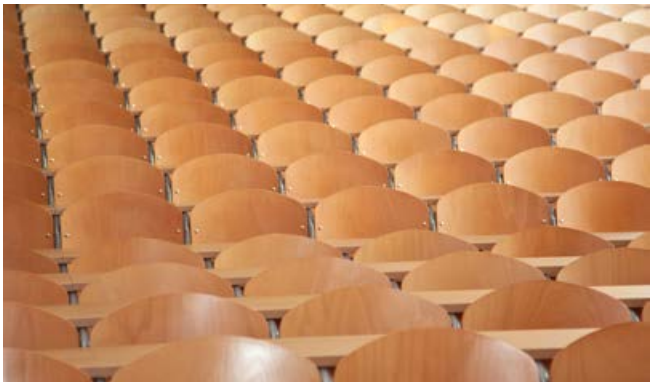
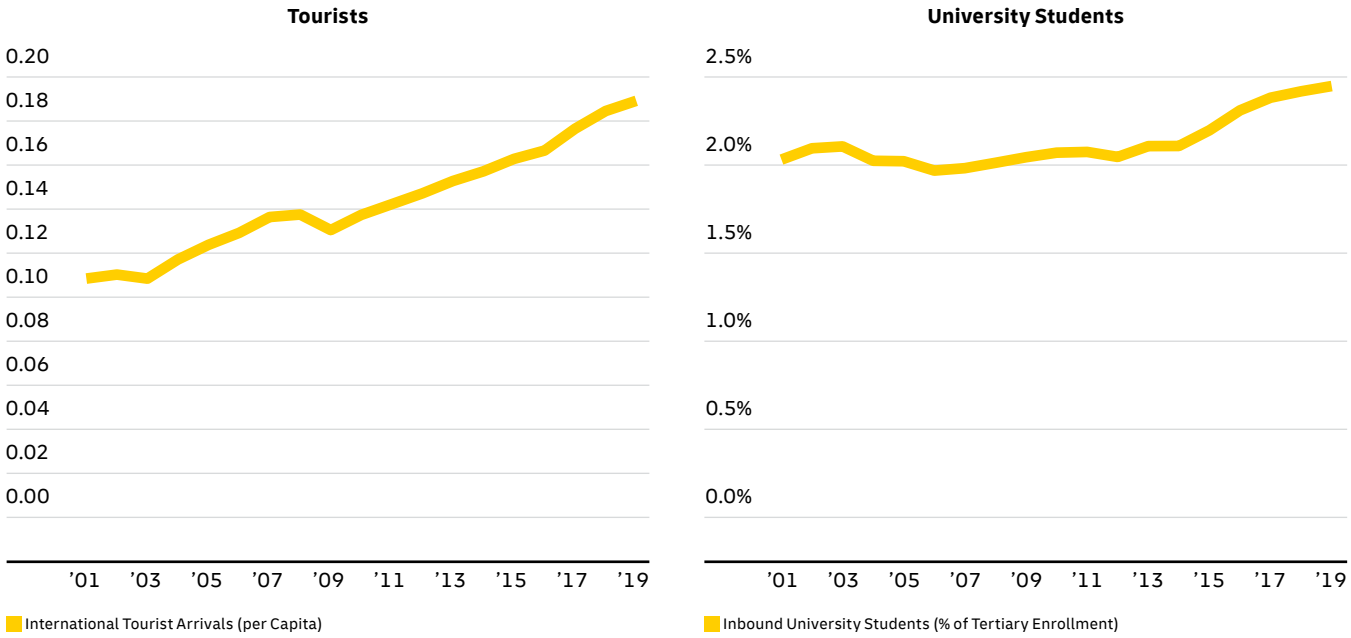


FIGURE 23: PEOPLE TRENDS



International people flows have seen a long-term rising trend through 2019, but in 2020, all of these flows have declined sharply.
Data sources: UN World Trade Organization, UNESCO Institute for Statistics, UN DESA Population Division

hit much harder than domestic travel, as reflected in airline capacity trends shown in **Figure 24**.

The pandemic also caused a stark reversal of the earlier visa policy trend toward greater openness to international tourism. To help control the spread of Covid-19, by April 2020, every travel destination worldwide had implemented some form of pandemic-related travel restrictions. As of September, 115 travel destinations had eased restrictions, with two lifting all travel restrictions. Forty-three percent of all global destinations, however, maintained complete border closures for tourism.[77] The UNWTO does not foresee widespread lifting of travel restrictions until mid-2021 and forecasts that it will take 2.5 to 4 years for international tourist arrivals to rebound to their 2019 levels.[78]

The consequences of a multi-year interruption to international travel extend beyond countries and industries that depend heavily on tourism. Though business travel makes up just a fraction of international travel, it is an important enabler of international trade, investment, and economic development.[79] New research highlights how business travel facilitates knowledge transfer from countries with strengths in certain industries to other economies. According to this study, a permanent shutdown of international business travel would shrink global economic activity by an order of magnitude more than the amount that was spent on business travel before the pandemic.[80]





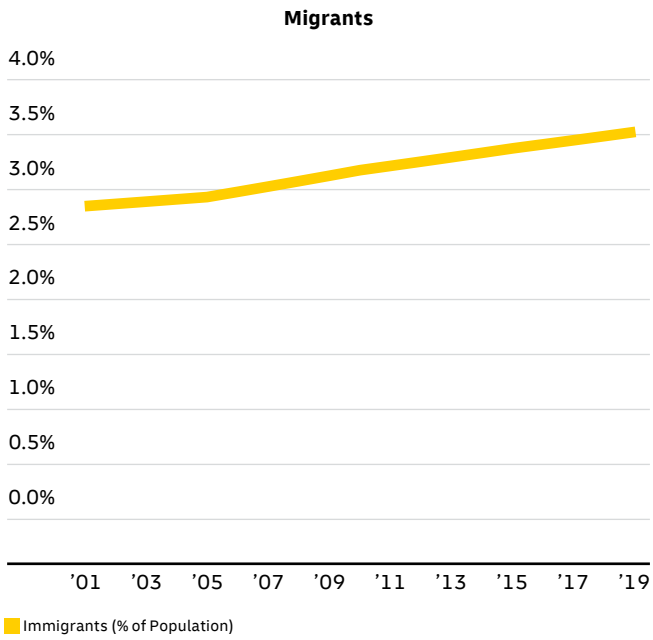
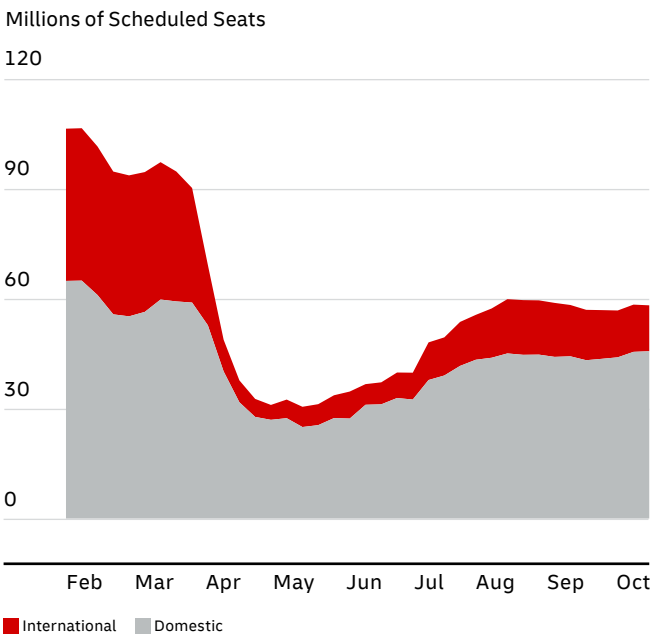


FIGURE 24: GLOBAL SCHEDULED AIRLINE CAPACITY



Both international and domestic airline capacity fell sharply in March and April as the Covid-19 crisis spread around the world, but international flights were hit harder and have been slower to recover. Data source: OAG

STUDENTS

Enrollments of foreign university students provide a medium-term measure of people flows. The data we track here include only students enrolled in degree programs abroad—not semester or year exchange programs—so it represents a commitment of generally 1–5 years living in a foreign country. As shown in **Figure 21**, the proportion of university students enrolled outside of their home countries grew in 2019, but at a markedly slower rate than had been recorded just a few years ago.

These data reinforce projections of a long-term decline in the internationalization of tertiary education. In 2018, the British Council predicted the growth of international students worldwide to be 1.7% annually from 2016 to 2027, compared to 5.7% between 2000 and 2015. This deceleration could be exacerbated by the Covid-19 pandemic, both via short-term restrictions on students' mobility and potential long-term effects via accelerated adoption of online learning.[81]

Early data show large declines in international student enrollment in the United States, the top destination for foreign students. According to National Student Clearinghouse Research Center's tracking of student enrollment during the Covid-19 pandemic, international student enrollment is down 14% at the undergraduate level and 8% at the graduate level in fall 2020.[82] The American Council on Education estimates that international student enrollment could fall by as much as 25%.[83] New students deciding not to begin their studies in the US during the pandemic are the primary driver of falling enrollments. The National Foundation for American Policy



"The proportion of the world's population living outside of their birth countries has been on a rising trend over the past few decades. From 2001 to 2019, it rose from 2.8% to 3.5%, its highest level on record."

predicts new international student enrollments will fall as much as 63% to 98% in 2020, compared to 2018-19 levels.[84] Additionally, many international students remain enrolled in degree programs in the US but are studying remotely from their home countries. According to one estimate, the drop in international students travelling to the US could be even larger than the decline in total international student enrollment, up to a 30-40% decline.[85]

Most other major destinations for international education also show signs of pandemic-induced drops in foreign student enrollments. Canada has experienced a 25% reduction in the issuance and extension of student permits for foreign nationals,[86] while Germany has seen a 20% decline in the number of new international student applications.[87] On the other hand, the second largest destination for international students, the UK, has reported a 9% increase in new undergraduate enrollments by non-EU international students. UK universities redoubled recruiting efforts, and they benefitted from negative sentiment toward the US and entry restrictions imposed by other rivals such as Australia and New Zealand. The number of new undergraduate students from the EU enrolling in UK universities, however, fell 2%, with Brexit cited as a major factor.[88] Sweden also reported a 13% increase in international student enrollment, with a particularly large rise in students coming from China.[89]

Longer-run shifts in international study destinations are also likely beyond the pandemic. A survey of several thousand students, conducted in February 2020, recorded interest falling year-over-year for universities in the US, UK and Canada, while academic destinations such as Australia, Spain and Singapore saw gains in interest between 50 and 200%.[90] China is also a rising force, having surpassed the United Kingdom and United States as the top destination country for students from Africa. Likewise, the caliber of Chinese universities is rising, leading many native students to stay local.[91]

MIGRATION

The final component of the people pillar is migration. Since migration is a long-term people flow, we measure the number of people living abroad rather than how many people move in a given year. The proportion of the world's population living outside of their birth countries has been on a rising trend over the past few decades. From 2001 to 2019, it rose from 2.8% to 3.5%, its highest level on record.[92]

This fairly modest increase in the share of migrants in the world population masks significant increases that have taken place in some countries. More than half of the total growth of the world's foreign-born population over this period took place in just nine countries: the United States, Saudi Arabia, the United Arab Emirates, Germany, Turkey, Spain, the United Kingdom, Italy, and South Africa. This list highlights how immigration has increased in both advanced and emerging economies. Nonetheless, the proportion of immigrants as a share of total population has risen more sharply in advanced economies, from 9% to 14%, as compared to from 1.6% to 2.0% in emerging economies.

In 2020, the global migrant population is likely to decline, as labor market conditions and lockdowns combine to cut the number of people living and working abroad. The number of new immigration visas and permits issued by OECD countries plummeted 72% in the second quarter of 2020, as compared to the same period a year earlier.[93] And the International Labor Organization has estimated that tens of millions of migrant workers have been forced to return to their origin countries due to the Covid-19 pandemic.[94]

The pandemic has also presented a countervailing phenomenon: stranded migrants. These are migrants who wish to return to their country of origin but are impeded by mobility restrictions. According to the International Organization for Migration, an estimated 2.8 million migrants have been stranded abroad because of mobility restrictions due to Covid-19.[95]



SECTION IV

HOW GLOBALIZED ARE COUNTRIES AND REGIONS?

This section reports how individual countries and regions compare on their levels of connectedness and shows changes over the past two years. It also analyzes countries' connectedness relative to expectations based on their structural characteristics. For detailed data on every country's connectedness, refer to the country profiles in the DHL Global Connectedness Index 2020 Country Book that accompanies this volume.

1 THE LATEST COUNTRY RANKING

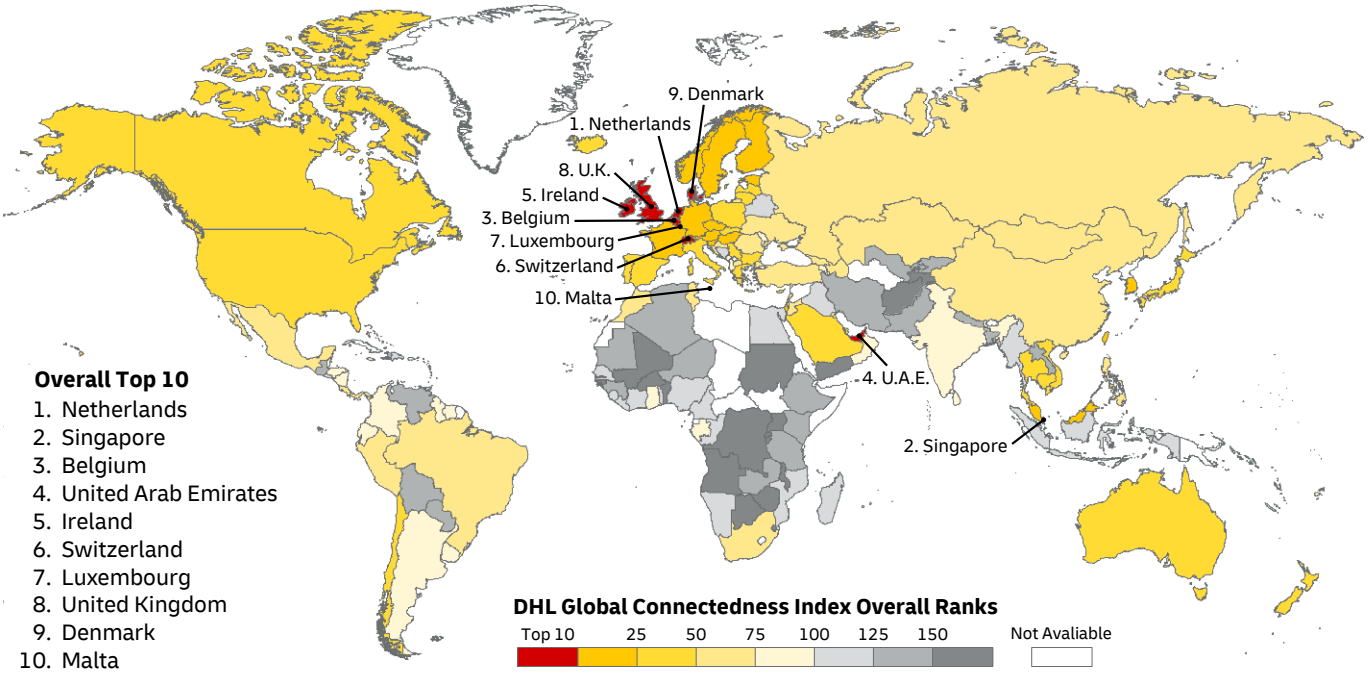
As the previous sections showed, most of the large increases in global connectedness over recent decades still stand despite ongoing challenges, but the world is far less globalized than most people imagine. International flows are dampened by geographic distance and other types of cross-country differences, and they are also influenced by a wide array of government policies. Thus, it is not surprising that countries vary widely in how globally connected they are.[1]

Table 1 summarizes countries' overall global connectedness ranks in 2019, the most recent year covered in our country-level analysis.[2] **Figure 25** displays the global connectedness ranking on a world map to highlight geographic patterns, and interactive ranking tables are available online at **www.dhl.com/gci**.

The top 10 ranks are held, in descending order, by the Netherlands, Singapore, Belgium, the United Arab Emirates, Ireland, Switzerland, Luxembourg, the United Kingdom, Denmark, and Malta. The countries that fall to the bottom of the rankings are, in ascending order, Burundi, Guinea-Bissau, Yemen, Zimbabwe, the Democratic Republic of the Congo, Kiribati, Afghanistan, Uganda, Timor-Leste, and Benin.

Comparing the countries with the highest and the lowest ranks highlights how levels of connectedness vary with countries' economic conditions and geographic locations.

FIGURE 25: DHL GLOBAL CONNECTEDNESS INDEX, OVERALL RANKS MAP



The Netherlands tops the overall global connectedness ranking, and 8 of the top 10 countries are located in Europe.

TABLE 1: DHL GLOBAL CONNECTEDNESS INDEX, OVERALL RANKING AND CHANGES FROM 2017 TO 2019

Rank	Country	Score	Change	
			Rank	Score
1	Netherlands	91	0	-2
2	Singapore	89	0	+1
3	Belgium	83	+1	-1
4	United Arab Emirates	82	+2	-1
5	Ireland	82	0	-2
6	Switzerland	81	-3	-3
7	Luxembourg	80	0	-2
8	United Kingdom	79	0	+1
9	Denmark	77	0	-1
10	Malta	77	+4	+3
11	Norway	77	0	+1
12	Sweden	76	0	+1
13	Germany	76	-3	0
14	Czechia	76	-1	+1
15	Hungary	76	+4	+4
16	Malaysia	73	+1	0
17	Finland	73	-1	0
18	Austria	72	+3	+1
19	Taiwan (China)	72	+5	+2
20	Estonia	72	0	+1
21	France	72	-6	-1
22	Korea (Republic of)	72	+1	+1
23	Slovenia	71	-5	-1
24	Israel	71	-2	0
25	Hong Kong SAR (China)	71	+1	+1
26	Italy	70	+1	0
27	Spain	70	-2	0
28	Iceland	69	+5	+2
29	Cyprus	69	-1	0
30	Thailand	68	-1	-1
31	Qatar	68	0	0
32	Canada	68	-2	0
33	Bulgaria	68	-1	+1
34	Australia	67	+4	0
35	Slovakia	67	+2	0
36	Portugal	67	0	0
37	United States	66	-2	-1
38	Viet Nam	66	+1	0
39	Bahrain	66	-5	-1
40	New Zealand	65	+1	+1
41	Poland	64	-1	-1
42	Saudi Arabia	63	0	-1
43	Latvia	63	0	0
44	Japan	62	+3	0
45	Lithuania	61	0	-1
46	Cambodia	60	0	-2
47	Chile	60	+2	0
48	Mauritius	60	+3	+1
49	Greece	60	+1	0
50	Serbia	59	+5	+2
51	Ukraine	59	+3	+1
52	Seychelles	58	-8	-4
53	Russian Federation	58	+6	+2
54	Lebanon	58	-2	-1
55	Turkey	58	+10	+4
56	Kuwait	57	-3	-1
57	South Africa	57	-1	0
58	Georgia	56	+8	+3
59	Brunei Darussalam	56	+12	+4
60	Brazil	56	+1	+1
61	Jordan	55	-1	0
62	Morocco	55	+5	+2
63	Kazakhstan	55	-5	-1
64	Philippines	55	-7	-1
65	Mexico	54	-1	0
66	Azerbaijan	54	+4	+1
67	Peru	54	-4	0
68	Mongolia	54	+16	+6
69	North Macedonia	53	+5	+2
70	China	53	-1	0
71	Romania	53	-3	0
72	Tunisia	53	0	+2
73	Panama	52	-25	-8
74	Costa Rica	52	+6	+3
75	Croatia	52	-2	+1
76	Barbados	51	-1	0
77	Sri Lanka	50	-1	0
78	Belize	50	+5	+2
79	Oman	50	-17	-4
80	Ghana	49	+2	+1
81	India	48	0	0
82	Armenia	48	-5	-1
83	Argentina	48	+9	+3
84	Trinidad and Tobago	48	+25	+8
85	Montenegro	48	+10	+4
86	Fiji	48	-7	-1
87	Colombia	47	+2	0
88	Moldova	47	-1	0
89	Jamaica	47	-3	0
90	Uruguay	46	+6	+2
91	Gabon	46	-1	0
92	Ecuador	46	+9	+3
93	Grenada	46	-8	-2
94	Suriname	46	+3	+2
95	Guyana	45	-17	-4
96	Honduras	45	-5	0
97	Nicaragua	45	-9	-2
98	Albania	45	+4	+2
99	St. Lucia	44	-6	-1
100	Macau SAR (China)	44	0	+1
101	Congo	43	+2	+1
102	Bosnia and Herzegovina	43	-3	0
103	Egypt	43	-9	-2
104	Antigua and Barbuda	42	+2	+1
105	Côte d'Ivoire	41	+3	+1
106	Indonesia	41	+5	+1
107	Dominican Republic	41	+9	+2
108	Namibia	41	+16	+3
109	Belarus	40	+5	+1
110	Mozambique	40	+3	+1
111	Togo	40	-4	0
112	Nigeria	40	-7	-1
113	Tonga	40	+4	+1
114	Bahamas	40	-2	+1
115	Madagascar	39	-17	-5
116	Iraq	39	-6	-1
117	Sierra Leone	39	-13	-3
118	Solomon Islands	39	-3	0
119	El Salvador	39	+10	+3
120	Cameroon	39	+11	+3
121	St. Kitts and Nevis	38	0	0
122	Liberia	38	0	0
123	Senegal	38	+3	+1
124	St. Vincent and the Grenadines	38	-4	0
125	Myanmar	37	+7	+2
126	Pakistan	36	+2	0
127	Guatemala	36	+10	+2
128	Zambia	35	+17	+3
129	Ethiopia	35	+1	-1
130	Algeria	35	-7	-3
131	Venezuela (Bolivarian Republic of)	34	+19	+5
132	Mauritania	34	+1	-1
133	Kenya	34	+5	0
134	Bolivia (Plurinational State of)	34	-16	-4
135	Bangladesh	34	+4	+1
136	Haiti	33	+6	0
137	Dominica	33	+4	0
138	Kyrgyzstan	33	-2	-1
139	Samoa	33	+9	+3
140	Uzbekistan	33	+20	+10
141	Cabo Verde	33	-7	-2
142	Paraguay	32	+4	+1
143	Guinea	32	-18	-5
144	Iran (Islamic Republic of)	32	-25	-6
145	Nepal	32	-10	-3
146	Lao People's Democratic Republic	31	-3	-1
147	Gambia	31	+8	+5
148	Vanuatu	30	+8	+4
149	Niger	29	+12	+7
150	Tanzania (United Republic of)	28	+9	+5
151	Eswatini	28	0	-1
152	Burkina Faso	28	-8	-4
153	Angola	27	-26	-10
154	Botswana	27	-5	-3
155	Malawi	27	-15	-6
156	Mali	27	-3	-1
157	Tajikistan	26	-3	-1
158	Rwanda	26	-6	-3
159	Sudan	26	+8	+10
160	Benin	26	-3	0
161	Timor-Leste	25	-14	-5
162	Uganda	25	-4	0
163	Afghanistan	20	+2	+2
164	Kiribati	18	-1	-1
165	Democratic Republic of the Congo	18	-3	-2
166	Zimbabwe	18	+2	+3
167	Yemen	18	-3	0
168	Guinea-Bissau	18	-2	+1
169	Burundi	16	0	+1

East Asia & Pacific | Middle East & North Africa | South & Central America & Caribbean | Sub-Saharan Africa | Europe | North America | South & Central Asia



The top 10 are all among the world's most prosperous countries, and the International Monetary Fund (IMF) classifies all but one (the United Arab Emirates) as advanced economies.[3] Eight of the top 10 are located in Europe. In contrast, the IMF classifies all of the bottom 10 countries as emerging and developing economies.

Focusing on the top 10 most globally connected countries should not, however, foster the misconception that global connectedness is restricted to the richest countries in the most privileged locations. Malaysia (ranked 16th) is classified by the World Bank as an upper-middle-income country, and Viet Nam (ranked 38th) is a lower-middle-income country.[4]

The top 55 countries include representatives from all geographic regions.[5] Countries in Europe, East Asia and the Pacific, and Middle East and North Africa were already featured in the top 10. North America enters the list with Canada (32nd). Chile (47th) is the top ranked country in South and Central America and the Caribbean. Mauritius (48th) is the top ranked country in the Sub-Saharan Africa region.[6] And Turkey (55th) is the most globally connected country in South and Central Asia.[7]

THE WORLD'S 10 LARGEST ECONOMIES

The world's largest economies exert a powerful influence on worldwide patterns of activity and shape other countries' globalization opportunities. But they tend not to be among the most globalized countries. Countries that rank highly on the DHL Global Connectedness Index combine both large international flows relative to domestic activity (high depth) and globally distributed flows (high breadth).[8] While large economies often have high breadth, they tend to have low depth because of their large internal markets. The highest ranked large economies are in Europe, which is a highly integrated region, but only one of the four largest European economies made the top 10—the United Kingdom—and it placed there on the strength of having the top breadth score in the world.

The world's 10 largest economies, ranked by current GDP, placed as follows on the DHL Global Connectedness Index:

				Change 2017 to 2019	
GDP	Rank	Country	Score	Rank	Score
1.	37	United States	66	-2	-1
2.	70	China	53	-1	0
3.	44	Japan	62	+3	0
4.	13	Germany	76	-3	0
5.	81	India	48	0	0
6.	8	United Kingdom	79	0	+1
7.	21	France	72	-6	-1
8.	26	Italy	70	+1	0
9.	60	Brazil	56	+1	+1
10.	32	Canada	68	-2	0



WHICH COUNTRIES ARE LEADING ON DEPTH AND BREADTH?

Country rankings on the depth and breadth dimensions of global connectedness are summarized in **Figure 26**, and complete rankings are provided at the back of this volume. Recall from **Section II** that depth measures how much of a country's trade, capital, information, and people flows are international rather than domestic, while breadth captures whether its international flows are spread out globally or more narrowly focused.

On the depth dimension, the top ranks are held by Singapore, Hong Kong SAR (China), Belgium, the Netherlands, Estonia, the United Arab Emirates, Czechia, Ireland, Luxembourg, and Cyprus. Economies with higher depth scores tend to be both wealthy and relatively small. Naturally, advanced economies with limited internal markets will have a larger share of their trade, investment, communications, and even people, outside of their own borders.

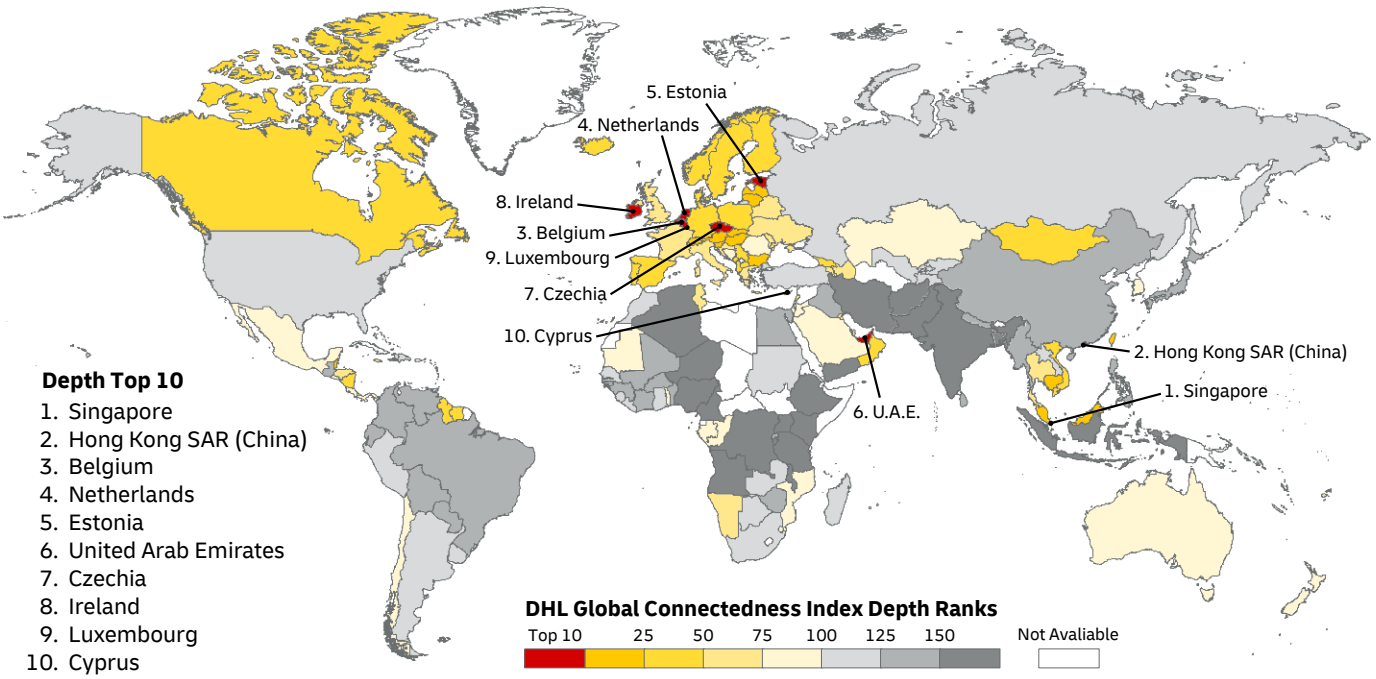
The top 10 countries on the breadth dimension of global connectedness are the United Kingdom, the United States, the Netherlands, Israel, the Republic of Korea, Japan, Norway, France, Switzerland, and Denmark. The countries with the highest breadth scores tend to be both large and wealthy. All of the top 10 countries on breadth rank among the world's 40 largest economies based on GDP in US dollars at market exchange rates. Denmark is the smallest, and the breadth of its international interactions is elevated by its location in Europe.

The top ranked country on overall global connectedness, the Netherlands, excelled on both dimensions without topping either one (ranking fourth on depth and third on breadth). The annual rankings show that it has been the top-ranked country since 2005, and it has ranked first in every edition of the index since its inception. The country's unique combination of geography, regional integration with its neighbors, and culture of openness have made it a stable presence at the top of the index. Even in the face of falling depth in 2019 (primarily on the capital pillar), the Netherlands remains above Singapore and far ahead of third place Belgium.

Singapore, by contrast, earned its second overall rank primarily based on its first place rank on depth. Its 17th place on breadth, however, remains impressive. As noted above, smaller countries tend to have high depth but low breadth. As a city state with major port operations and a thriving financial sector, Singapore is uniquely positioned to be the depth champion. Well before pursuit of "global city" status became fashionable, Singapore began enacting policies to leverage global connectedness as a cornerstone of its economic development strategy.[9]

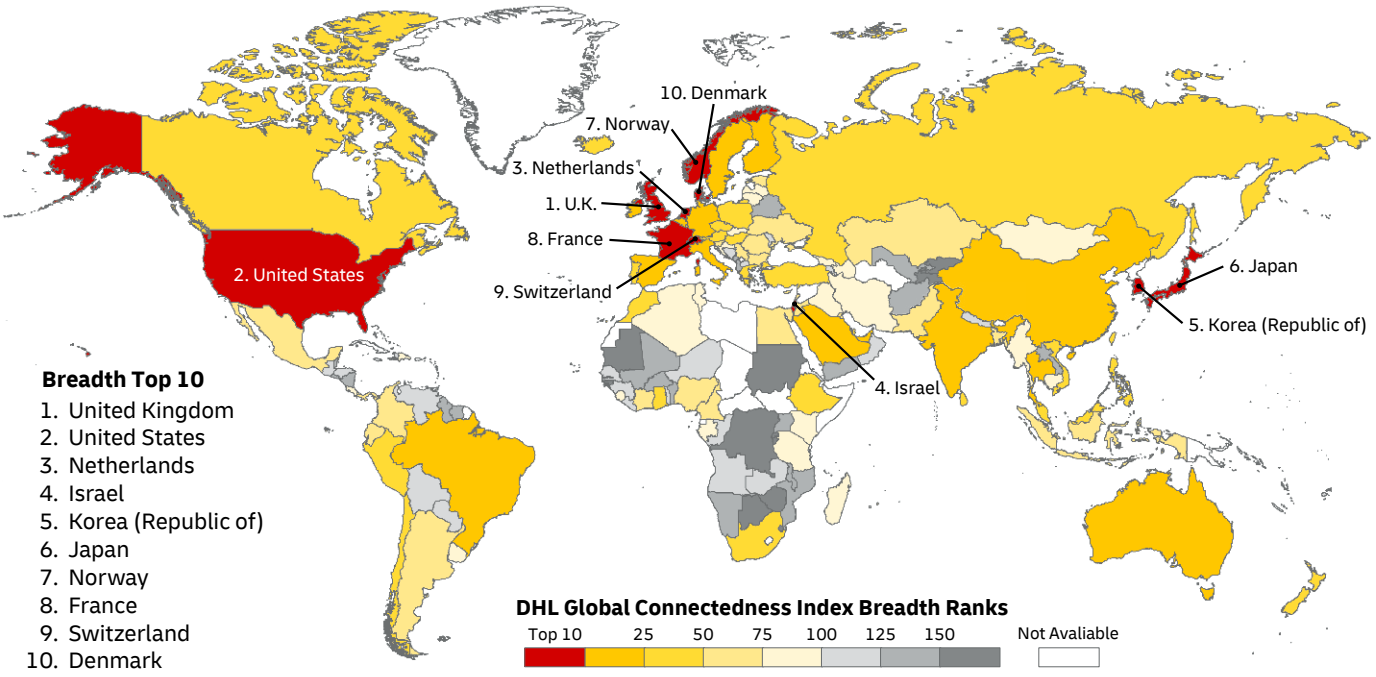
The United Kingdom earned the top rank in breadth, leading to an 8th place finish overall. That comes in spite of ranking 51st on depth. The UK has a long history of global reach,

FIGURE 26: DHL GLOBAL CONNECTEDNESS INDEX, DEPTH AND BREADTH RANKS MAPS



Depth Top 10

1. Singapore
2. Hong Kong SAR (China)
3. Belgium
4. Netherlands
5. Estonia
6. United Arab Emirates
7. Czechia
8. Ireland
9. Luxembourg
10. Cyprus



Breadth Top 10

1. United Kingdom
2. United States
3. Netherlands
4. Israel
5. Korea (Republic of)
6. Japan
7. Norway
8. France
9. Switzerland
10. Denmark

Small countries naturally tend to have a larger proportion of their flows crossing national borders, leading to higher depth rankings. Large countries, on the other hand, more often have flows that span the globe, resulting in higher breadth rankings.

having colonial ties to over 80 countries.[10] Additionally, its integration with its European neighbors, coupled with strong ties to the US, make it a natural top performer on breadth, since those countries are among the largest partners for most international flows. However, it is clearly impossible to ignore the question of whether this leadership will continue in the face of Brexit. The decisions of the next months and years will determine whether the vision of a "Global Britain" will succeed.

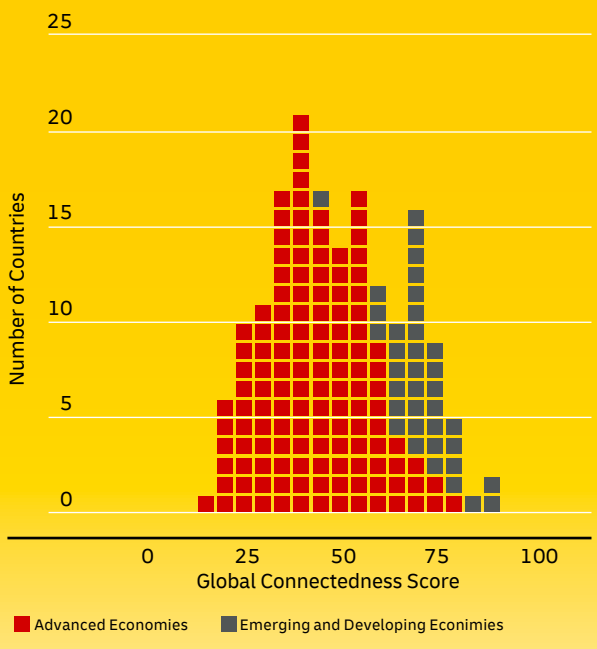


DEVELOPMENT LEVEL AND THE GLOBAL CONNECTEDNESS INDEX

The United Arab Emirates achieved an unprecedented 4th place overall on this year's DHL Global Connectedness Index, making it the country with the highest ranking among those classified as emerging and developing by the IMF.[11] In general, however, advanced economies tend to rank higher on the index than emerging and developing economies, although there is a wide range.[12] The histogram in Figure 27 shows the distribution of global connectedness scores split by development level (each block represents one country).

These patterns are less pronounced—though still present—at the level of depth and breadth, which means that not only are advanced economies likely to have higher depth and breadth scores, but they are also more likely to "make up" for relatively low depth with high breadth or vice versa.

FIGURE 27: GLOBAL CONNECTEDNESS RANKS BY COUNTRY DEVELOPMENT LEVEL



Advanced economies average higher levels of connectedness than emerging economies, but there is substantial variation across countries.

2 LARGEST GAINS AND LOSSES, 2017–2019

Turning to how specific countries' levels of connectedness changed from 2017 to 2019, 98 countries increased their absolute levels of connectedness while 71 saw their connectedness decline.[13] Table 2 lists the countries with the largest increases and decreases in their connectedness scores between 2017 and 2019.

The largest gains from 2017 to 2019 were posted, in decreasing order, by Uzbekistan, Sudan, Trinidad and Tobago, Niger, Mongolia, the Bolivarian Republic of Venezuela, the United Republic of Tanzania, the Gambia, Hungary, and Turkey.

Uzbekistan gained 10 points over its 2017 value by 2019, and almost all of that gain was on depth. The most important change was a large increase in merchandise imports depth, but Uzbekistan gained on all of the trade pillar components. Imports from China nearly doubled, in part due to Uzbekistan's centrality to China's Belt and Road Initiative. Uzbekistan has also begun to pursue an active investment policy as part of a greater policy of aggressive industrialization: Tashkent more than tripled its FDI inflows from 2018 to 2019.[14] Uzbekistan also increased its international internet bandwidth per user and participation in international scientific research.

Sudan gained 9 points between 2017 and 2019, primarily based on increased depth. In particular, its import depth (goods, but to an even greater extent, services), inward portfolio equity stock, and inward FDI depth increased. This gain is, unfortunately, not a positive story. Between 2017 and 2019, Sudan's GDP shrank by more than half—an economic collapse that came in spite of the lifting of most sanctions (with the notable exception of those imposed by the US) in 2017. Emergency austerity measures led to the ousting of President Omar al-Bashir in a coup d'etat. Major shifts in



TABLE 2: LARGEST GAINS AND LOSSES, 2017 – 2019

Gains	Score Change	Losses	Score Change
Uzbekistan	+10	Angola	-10
Sudan	+10	Panama	-8
Trinidad & Tobago	+8	Malawi	-6
Niger	+7	Iran (Islamic Republic of)	-6
Mongolia	+6	Guinea	-5
Venezuela (Bolivarian Republic of)	+5	Timor-Leste	-5
Tanzania (United Republic of)	+5	Madagascar	-5
Gambia	+5	Oman	-4
Hungary	+4	Bolivia (Plurinational State of)	-4
Turkey	+4	Seychelles	-4





Sudan's international flows are likely moving forward, in light of an October 2020 deal involving moves to lift US sanctions and normalize relations between Sudan and Israel. [15]

Trinidad and Tobago earned its third-most-improved score based solely on breadth, having actually seen a slight decline in depth. In particular, Trinidad and Tobago reported a shift in its exports toward the United States,[16] which is the world's largest importer, causing its merchandise export breadth to go up substantially. Leading exports to the United States include liquefied natural gas and other energy products like methanol, as well as chemicals and fertilizers.[17]

The countries with the largest absolute declines in global connectedness since 2017 were, starting with the largest decline, Angola, Panama, Malawi, the Islamic Republic of Iran, Guinea, Timor-Leste, Madagascar, Oman, the Plurinational State of Bolivia, and Seychelles.

Angola's decline was mostly based on lower breadth, although it declined slightly on depth as well. Once again, changes in trade patterns were the main cause. For example, Angola increased the share of its exports going to China, which were already much higher than China's share of world imports. As Angola concentrated its share of trade on China after taking on oil-backed loans for infrastructure and other investment priorities, its breadth of exchange with other global partners declined.[18]

Panama has continued a downward trend in its global connectedness that started in 2015. It lost twice as much breadth as depth, but both declines were significant. Its FDI outflows depth and merchandise imports breadth were the hardest hit individual components. Panama recorded negative FDI outflows in 2018 and 2019, indicating that divestment of existing FDI abroad exceeded new investment.[19] Malawi fell on both depth and breadth as well. Its FDI inflows and portfolio equity liabilities stock depth fell, as did its merchandise exports breadth.

3 GLOBAL CONNECTEDNESS VERSUS PREDICTIONS BASED ON COUNTRY CHARACTERISTICS

As we have discussed how global connectedness varies across countries, readers will have taken note that there are some clear differences between countries that perform well on the DHL Global Connectedness Index and those that rank lower. Some of these are based on structural factors that are very difficult to change—at least in the short run. In fact, just three structural characteristics explain 73% of the variation in countries' levels of global connectedness: GDP per capita, population, and distance from international markets ("remoteness").[20]

Here, we analyze countries' scores statistically to consider how connected different countries are when placed on a more level playing field. Instead of looking at which countries are most globalized, we look at how connected countries are relative to what we might expect. This opens the door for policymakers to examine countries that are performing above expectations and to consider how they have achieved this. [21]

Figure 28 plots countries' actual scores (on the vertical axis) versus estimated scores based on their structural characteristics (on the horizontal axis).[22] The countries that are farthest above the diagonal line are those that outperform predictions based on GDP per capita, population, and remoteness the most, and the countries farthest below the line are the countries that underperform the most. The 10 countries with the largest outperformance are Cambodia, Singapore, Viet Nam, Malaysia, the Netherlands, Malta, the United Arab Emirates, Mozambique, Hungary, and Thailand.

Half of these top 10 countries, Cambodia, Singapore, Viet Nam, Malaysia, and Thailand, are located in Southeast Asia, a region where countries tend to have unusually high trade depth. Southeast Asian countries benefit from linkages with wider Asian supply chain networks as well as ASEAN policy initiatives promoting regional economic integration.[23]

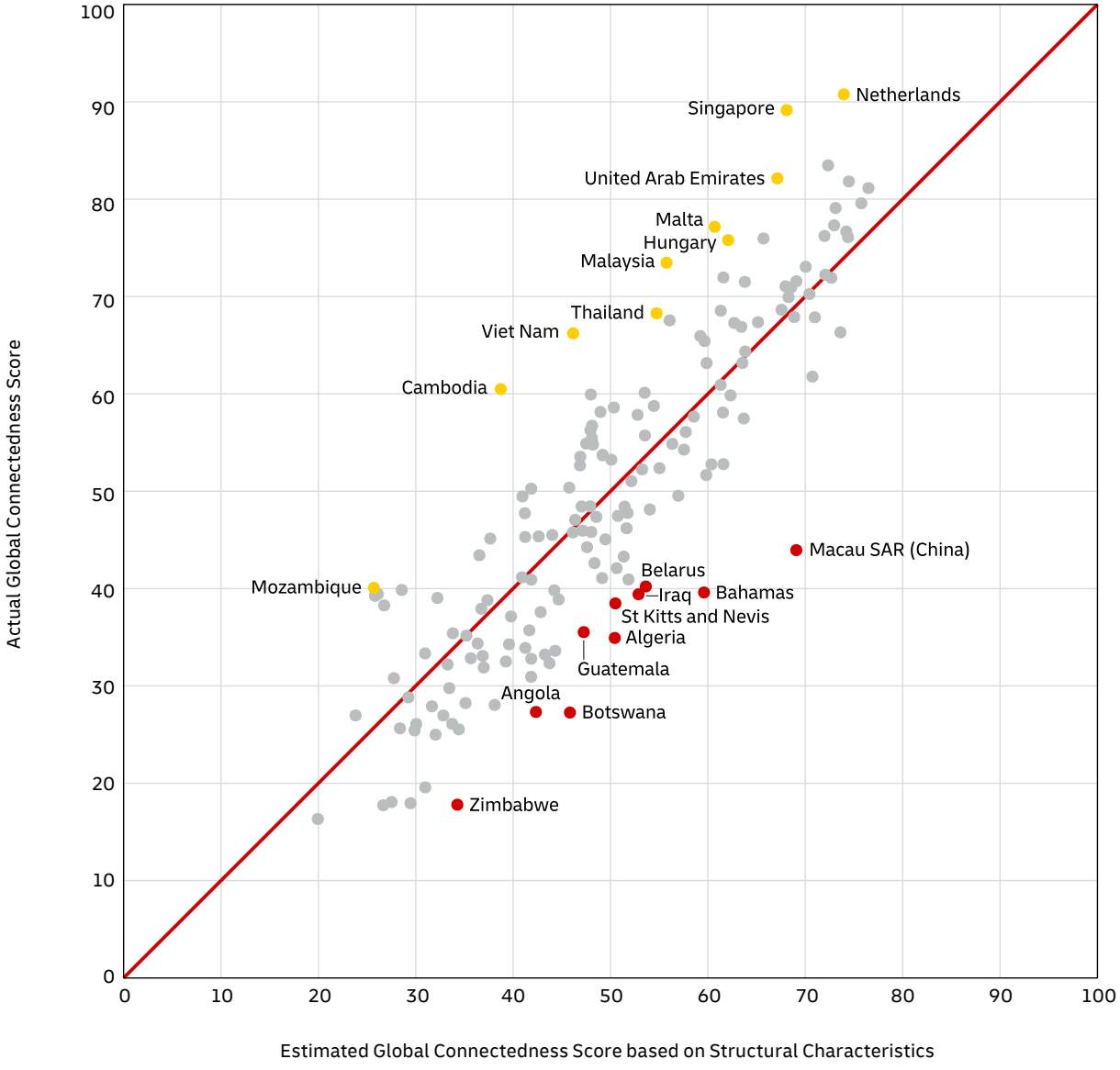
Cambodia's rank has risen sharply over the past decade, reaching 46th place in 2019. As a lower-middle-income country, Cambodia has a relatively low predicted connectedness, but it far exceeds expectations. It achieves its high score based primarily on depth, where it ranked 24th in 2019, and specifically on trade depth, where it ranked 10th. In 2019, goods exports were 52% of GDP and imports were 82%. Services exports were particularly high at 22% of GDP, and services imports were 12%. Cambodia also attracted significant inward FDI, with inward FDI stocks reaching 126% of GDP and FDI inflows 58% of gross fixed capital formation. At a rank of 81st, Cambodia is roughly in the middle of the breadth distribution, but it is also an outperformer there.

Singapore is truly a star of global connectedness, having achieved the second highest rank on outperformance versus expectations, as well as overall. This shows that Singapore's impressive level of connectedness is due to more than just its prime location on the Strait of Malacca and compact size. It is an outperformer on both depth and—to a lesser extent—breadth. In 2019, Singapore ranked first on the trade pillar and fourth on the capital pillar. Singapore also ranked first on trade depth and second on information depth.

In 2019, Viet Nam was the top ranked lower-middle-income country, at 38th. It was particularly strong in depth, where it was the top outperformer, though it also outperformed on breadth. Its best performance was on the trade pillar, where it ranked fifth overall. Viet Nam has become a serious competitor to China not only in textiles manufacturing, but also increasingly in high tech products.[24]

Malaysia has long been ahead of its peers in terms of the depth of its global connectedness. Like the other top countries, it exceeded expectations on both depth and breadth scores. In 2019, it ranked 16th overall. Additionally, Malaysia has the distinction of being the most populous country with a depth score in the top 25. Its top pillar rank was fourth on the trade pillar in 2019, through a combination of relatively high ranks on both depth and breadth.

FIGURE 28: ACTUAL GLOBAL CONNECTEDNESS SCORES VERSUS SCORES ESTIMATED BASED ON STRUCTURAL CHARACTERISTICS



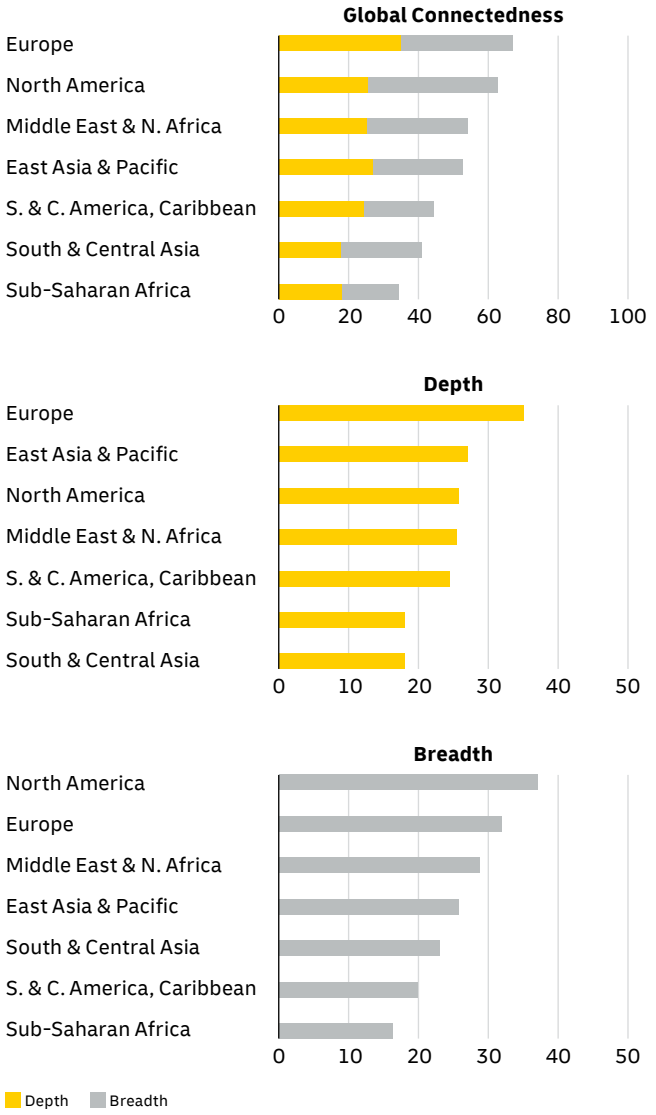
The countries that beat expectations by the widest margin are Cambodia, Singapore, Viet Nam, Malaysia, and the Netherlands. Half of the top ten outperformers are in Southeast Asia.

The 10 economies that most lagged expectations based on structural factors vary widely in terms of size, income, and geographic characteristics. They are, in ascending order, Macau SAR (China), Bahamas, Botswana, Zimbabwe, Algeria, Angola, Iraq, Belarus, St. Kitts and Nevis, and Guatemala.

This section, thus far, has highlighted only a small number of countries. Next, we attempt to achieve comprehensiveness by aggregating countries into a relatively small number (seven) of regions. For additional details on individual countries, refer to the **DHL Global Connectedness Index 2020 Country Book**.

4 REGIONAL DIFFERENCES IN GLOBAL CONNECTEDNESS

FIGURE 29: AVERAGE GLOBAL CONNECTEDNESS, DEPTH, AND BREADTH BY REGION, 2019



The majority of international activity takes place within rather than between roughly continent-sized regions, boosting the value of region-level analysis of global connectedness. Here, we introduce a set of comparisons among regions, and then delve into discussion of connectedness patterns in each of the world's regions.[25]

Figure 29 displays each region's average global connectedness, depth and breadth. **Figure 30** shows each region's average pillar scores. Note that this analysis is based on simple averages of scores across the countries in each of the regions, so these comparisons across regions reflect, more precisely, comparisons among average countries within regions.

In terms of overall global connectedness, countries in Europe average the highest levels followed by those in North America. Middle East & North Africa and East Asia & Pacific rank third and fourth, at some distance behind the leading regions. All of these regions lie above the world average. South & Central America & the Caribbean, South & Central Asia, and Sub-Saharan Africa lie below the world average. Consistent with patterns described in the first part of this section, wealthier regions show higher levels of global connectedness than poorer ones. Countries in the four most connected regions average five times the GDP per capita of countries in the three least connected regions.

Countries in East Asia & the Pacific and South & Central America & the Caribbean averaged the largest increases in connectedness from 2017 to 2019. South & Central Asia and Europe recorded somewhat smaller increases. The largest decline was for the Middle East & North Africa, followed by North America and Sub-Saharan Africa. Consistent with the relative volatility of the pillars, the dispersion of changes was greatest for capital and trade flows. All regions averaged increases on the information pillar, while most regions recorded only small changes on the people pillar.

Figure 31 traces the total intra-regional and inter-regional flows of each region to provide a high-level summary of global flow patterns.[26] It was constructed based on all of the trade, capital, information, and people flows included in the breadth dimension of the DHL Global Connectedness Index, combined using the breadth weights reported in **Table 6** in **Section VI.**[27]

Consistent with the preceding discussion about regionalization, the largest flows shown on Figure 31 are within rather than between regions. A full 28% of all international flows worldwide took place between European countries in 2019, and 13% of global flows that year were internal to East Asia & Pacific. Europe's rank as the world's most connected region also stands out in Figure 31 via its large flows to and from other regions. Europe's closest partner region in 2019 was North America, followed by East Asia and the Pacific. North America's largest partners were Europe and East Asia and the Pacific in that order as well. We conclude this section by discussing each region individually.



FIGURE 30: AVERAGE TRADE, CAPITAL, INFORMATION, AND PEOPLE PILLARS BY REGION, 2019

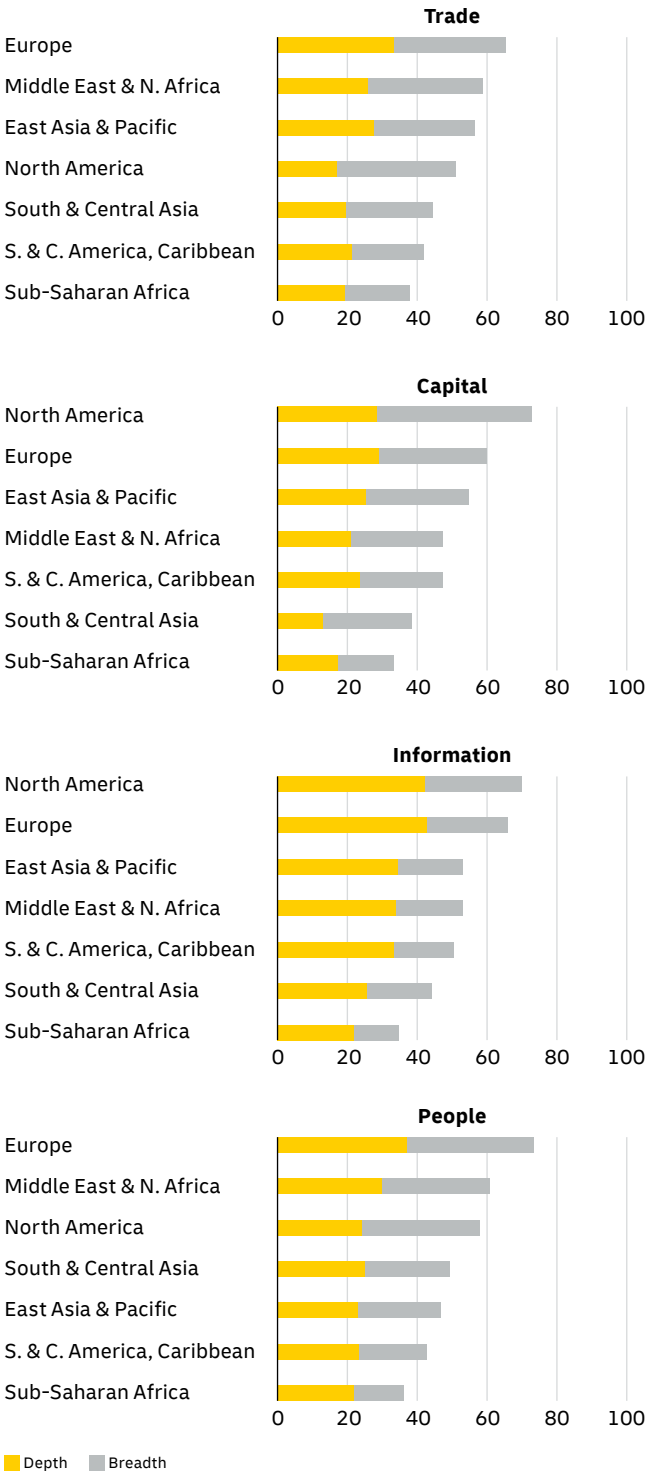
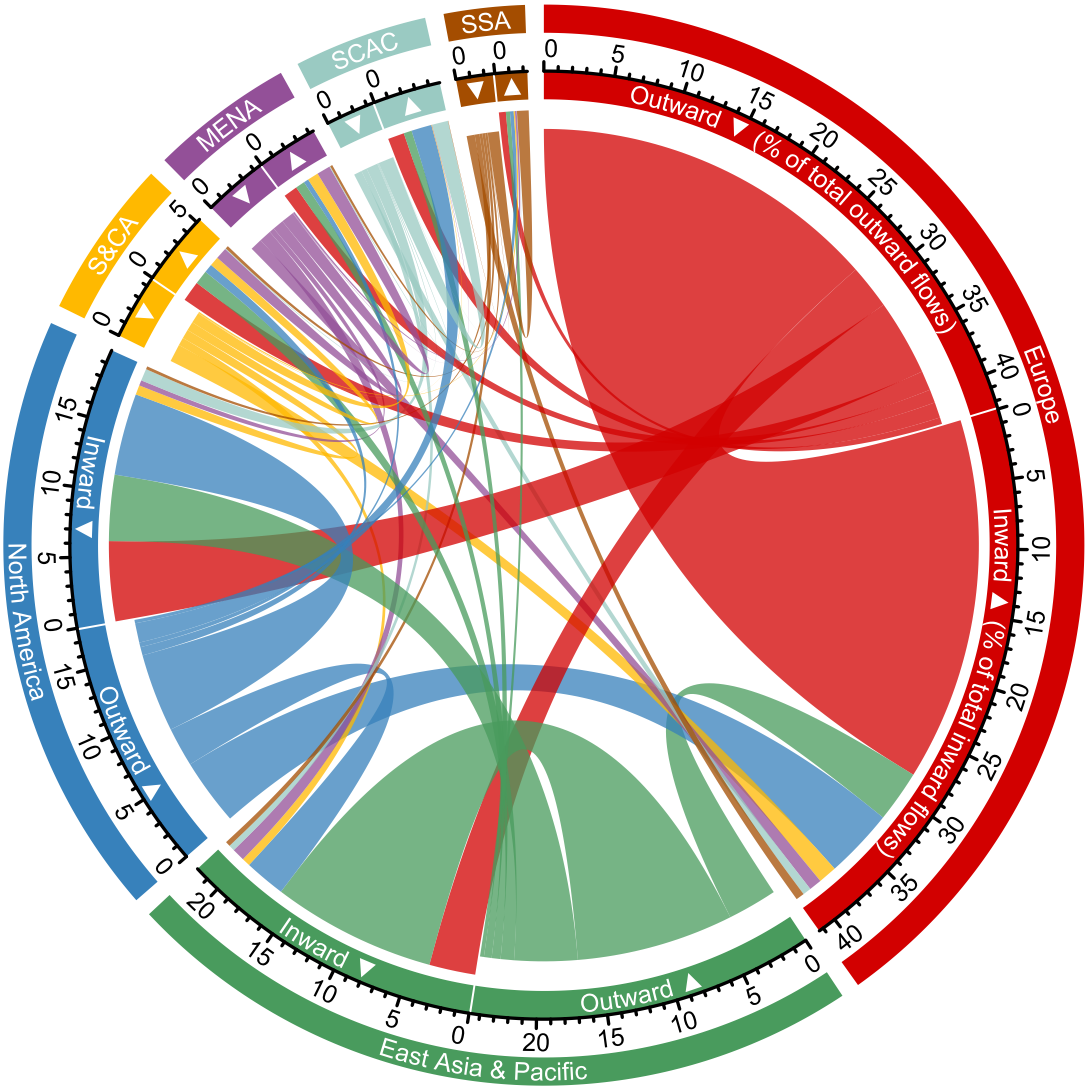


FIGURE 31: AGGREGATE GLOBAL FLOWS BY REGION, 2019



MENA = Middle East & North Africa S&CA = South & Central Asia SCAC = South & Central America & Caribbean SSA = Sub-Saharan Africa

About this visualization

- Each connection within the circle represents a flow between one region and another. The line's thickness is proportional to the magnitude of that flow.
- The indented part of a region's arc represents its outward flows, whereas the non-indented part represents its inward flows.
- The color of each flow depends on its origin region. Each region's outward flows are a single color. A region's inward flows are multicolored, representing the regions from which it receives flows.

One can trace the share of inward flows to a region by identifying the magnitude of that flow relative to all flows. For instance, inward flows from East Asia & Pacific to Europe represent about 4% of the world's outflows. This is because the green line stretching from East Asia & Pacific's outward arc to Europe's inward arc is approximately four tick marks thick. Intraregional flows are represented by a line stretching from the outward arc to the inward arc of the same region. Europe's flows to itself make up roughly 28% of the world's total outward and inward flows.



EUROPE

Europe is the world's most globally connected region, reflecting both its structural characteristics (many wealthy countries in close proximity) as well as decades of policy initiatives aimed at promoting integration via the European Union (EU) and its predecessors. Europe leads specifically on the depth dimension and on the trade and people pillars. On depth, Europe ranks first on all four pillars. On breadth, Europe leads on people flows, ranks second on capital and information, and places third on trade. Europe is also the top performing region considering its structural factors, averaging almost three points ahead of expectations.

Europe's strength across the four pillars of the DHL Global Connectedness Index is supported by the pillars' close correspondence to core principles of the EU. Three pillars (trade, capital, and people) are addressed directly by the EU's "four freedoms," specifically free movement of goods, capital, services, and people.[28] The remaining pillar, information, is included in the EU's Copenhagen Criteria for accession to the Union, based on which "the EU makes press freedom one of the criteria for accession."[29] A new regulation protecting the free flow of non-personal data within the EU, applicable since May 2019, should also boost Europe's information flows. It curbs data localization requirements imposed by governments as well as private-sector restrictions on data mobility.[30]

The average level of global connectedness across European countries increased slightly from 2017 to 2019, as did European countries' scores on both the depth and the breadth dimensions. However, the contentious negotiations between the UK and EU member states on a post-Brexit relationship and Euroscepticism more generally raise concern about the future of regional integration as a driver of global connectedness in Europe.[31] In this context, it is worth remembering that since Europe has the highest proportion of intra-regional flows (two-thirds for the average European country), this is the region with the most at risk from a potential unwinding of regional integration.

The UK's withdrawal from the EU became effective on January 31, 2020, with a transition phase lasting until the end of the year. During this phase, all EU rules and laws continue to apply; the UK and the EU are expected to prepare new agreements during the transition. Going forward, the UK and the EU must negotiate a new relationship, including how European companies will be able to do business in and with the UK after the transition, as well as arrangements for security cooperation.[32]

The Covid-19 pandemic has also posed severe challenges for European integration, while prompting greater cooperation over time. In early March, several countries responded to the pandemic by restricting exports of medical supplies, stopping shipments even to other EU member countries.[33] The European Commission soon stepped in to remove such intra-EU trade restrictions, while imposing EU-wide curbs on exports outside the bloc.[34] A landmark joint response to the pandemic's economic consequences followed, incorporating the EU's first major agreement to issue collective debt. In July, the European Council agreed to a €750 billion package to help countries' economies recover from the pandemic.[35]

> *"Countries in East Asia & the Pacific have deep connections at the regional level. Roughly 55% of the region's flows are with other countries in the region. On this metric, East Asia & the Pacific falls second only to Europe."*



Finally, the EU has continued to expand what now stands as the world's largest network of trade agreements. The EU-Singapore trade agreement entered into force in November 2019, removing all remaining tariffs on EU products.[36] The EU and Mexico concluded negotiations on an updated trade agreement at the end of April 2020.[37] In August 2020, a trade agreement between the EU and Viet Nam also went into effect, becoming the EU's most comprehensive trade agreement with a developing country.[38] However, significant uncertainty remains over the agreement reached in June 2019—but still not signed—between the EU and Mercosur.[39] And the biggest prize remains elusive: the negotiations on a free trade agreement (known as TTIP) with the United States were declared "obsolete and no longer relevant" by the European Council in 2019.[40] Outside of the region, Europe is most closely connected with the United States (the origin or destination of 12% of Europe's aggregate flows).[41]

NORTH AMERICA

North America holds the second place ranking in overall global connectedness, leading on breadth and ranking third on depth. This region (defined here as the United States, Canada, and Mexico) achieves its top breadth rank by combining large intra-regional flows with strong ties to Europe and Asia. Outside of North America itself, the region's largest partner countries are China (with 8% of the region's flows), the UK (7%), and Japan (5%). Recall that countries with larger populations tend to have higher breadth scores and lower depth scores. The United States, Mexico, and Canada rank third, 10th, and 39th globally in terms of the sizes of their populations.

At the pillar level, North America leads on capital and information, ranks third on people and fourth on trade. This region ranks last, however, on trade pillar depth. North American countries also average the largest gap between actual global connectedness and expectations based on structural factors, primarily due to lower than predicted breadth.

North America's trade depth is well below that of the next-lowest region (Sub-Saharan Africa). A revised regional trade agreement, United States-Mexico-Canada Agreement (USMCA), went into effect on July 1, 2020. According to a statement by the Office of the US Trade Representative, this deal seeks to modernize trade rules to support "more balanced, reciprocal trade, leading to freer markets, fairer trade, and robust economic growth in North America."[42] However, trade tensions in the region have not completely subsided. Even after the signing of USMCA, the United States reinstated tariffs on Canadian aluminum, claiming that Canada attempted to "flood" the US with its exports.[43] Furthermore, trade disputes between the United States and other major economies, especially China, continue to cloud the future of this region's trade flows. While Washington and Beijing have reached a "Phase One" Agreement that begins to address economic issues behind the trade war, much remains uncertain about its implementation.[44]

About one-third of North America's international flows take place within the region, placing North America in fourth place on this metric, behind Europe, East Asia & Pacific, and Sub-Saharan Africa. Beyond the region, each country has signed a variety of trade agreements. Most notably, Canada and Mexico both have trade agreements with the European Union and are part of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).





MIDDLE EAST & NORTH AFRICA

Middle East & North Africa ranks third on overall connectedness, placing fourth on depth and third on breadth. At the pillar level, this region has its strongest ties on the trade and people pillars, ranking second on both. The region's standing on both of those pillars is elevated by the rankings of the wealthy hydrocarbon exporters near the Persian Gulf, countries that employ large contingents of foreign workers. In the United Arab Emirates, Kuwait, and Qatar, the majority of the populations were born abroad, although a large number of migrant workers have been repatriated due to the COVID-19 pandemic.

Unlike the other regions discussed so far, the Middle East & North Africa has low intra-regional flows across all four pillars. While Arabic is an official (and widely spoken) language in most of this region's countries,[45] economic, geographic, and political factors have favored stronger ties to countries outside of the region. On average, its connectedness is right in line with expectations based on structural factors.

The oil-rich gulf countries naturally trade intensively with the largest markets for their commodity exports, and most of their foreign workers come from South Asia, strengthening their ties to that region. India is the region's top ranked partner, with 10% of its total flows. The countries near the Mediterranean have plentiful opportunities for exchange with Europe, which is a much larger market. France is the region's largest partner in Europe. Additionally, the diplomatic dispute between Qatar and its neighbors has dealt a setback to integration among members of the Gulf Cooperation Council.[46] However, the recognition of Israel by the United Arab Emirates[47] and Bahrain[48] signals greater diplomatic integration and cooperation among some countries within the region, particularly with the normalization of trade and financial relations.

EAST ASIA & PACIFIC

East Asia & Pacific has the fourth highest level of overall global connectedness, ranks second on depth, and fourth on breadth. This region's high depth rank is driven by the trade pillar, on which its depth is second only to Europe's. East Asia & Pacific's relatively high trade intensity reflects the export-oriented development strategies pursued by many of its countries and the associated growth of multi-country supply chains across this region. Exports from East Asia & Pacific contain a higher proportion of foreign value-added than those from any other region.[49]

Countries in East Asia & the Pacific have deep connections at the regional level. Roughly 55% of the region's flows are with other countries in the region. On this metric, East Asia & the Pacific falls second only to Europe.[50] Outside of the region itself, the United States is East Asia & Pacific's largest partner country, with 14% of its total flows.

The East Asia & Pacific region is at the center of several integration initiatives. In 2016, the Association of Southeast Asian Nations (ASEAN)[51] agreed to a Master Plan on Connectivity 2025 that puts forward a set of goals to strengthen integration between its member states.[52] Among those



goals are improving logistics, harmonizing regulations, and improving mobility of people throughout the bloc, which have been impeded by the persistence of non-tariff barriers in the region.[53] ASEAN has also prioritized the development of an integrated digital economy, which has been estimated to have the potential to boost regional GDP by $1 trillion.[54] In August 2020, the bloc approved an "ASEAN Digital Integration Index" to track progress toward this goal.[55] Meanwhile, seven of the 11 countries in the CPTPP are in East Asia and Pacific. And the Regional Comprehensive Economic Partnership (RCEP), discussed in **Section III**, includes all of the region's major economies.[56] After India opted out of the deal, negotiations continued among the 15 other parties, and the RCEP was signed on November 15, 2020, creating the world's largest trade bloc. These initiatives have paid dividends, as East Asia and the Pacific beats expectations based on structural factors and is only behind Europe on that metric.

SOUTH & CENTRAL AMERICA & THE CARIBBEAN

South & Central America & the Caribbean ranks third from last overall and on depth, and second to last on breadth. Just over one-quarter of its international flows are within the region, in spite of strong historical and linguistic ties as well as multiple regional integration initiatives. In terms of pillar scores, South & Central America & the Caribbean is second-to-last on trade and people, ahead of Sub-Saharan Africa, and third to last on capital and information.

This region's combination of low breadth scores and low intra-regional integration reflects a pattern where many countries connect primarily with specific countries outside of the region. On average, countries in this region underperformed model predictions by 3 points.

Countries in the northern part of this region, especially those in Central America and the Caribbean, tend to have a very large proportion of their international flows taking place with the United States. Almost a quarter of this region's flows are to or from the United States. Spain, which shares a common language with most of this region due to its colonial history, ranks a distant second at about 8%. China is the third largest partner country, with 7% of total flows.

SOUTH & CENTRAL ASIA

South & Central Asia ranks second from last overall, last on depth and third from last on breadth. At the pillar level, this region ranks in the middle on people, third from last on trade, and second from last on capital and information. South & Central Asia also ranks last on the proportion of its international flows that take place within the region at 14%. Intra-regional integration in this part of the world is constrained by the animosity between two of its largest economies, India and Pakistan.

This region's top partner country is the United States (with 13% of South & Central Asia's total flows). Russia ranks second with 9%. Ties across the Persian Gulf also feature prominently, with the United Arab Emirates ranking third (5%).





A bright spot in this region's results is the growth in its connectedness from 2017 to 2019. It ranked third on this basis. Even more encouraging from an economic development standpoint was that South & Central Asia averaged the largest increases on the depth dimension of the index, which is more closely associated with macroeconomic growth. However, compared to expectations based on structural factors, this region was third from last and below expectations. On average, its countries were almost 3 points below the predictions.

SUB-SAHARAN AFRICA

Finally, Sub-Saharan Africa ranks last overall, as well as on breadth. As a region, it ranked second to last on depth, ahead of South & Central Asia. It also placed last on all of the pillars. Given this standing, it is particularly concerning that Sub-Saharan Africa is one of the three regions where the average country's level of connectedness declined from 2017 to 2019. Declines in this region were particularly acute on the trade pillar. However, when structural factors are taken into account, Sub-Saharan Africa was less than one point behind its expected level of connectedness, ranking in the middle of the pack.

With that said, there are reasons for optimism. The African Continental Free Trade Agreement (AfCFTA), signed by 54 of the 55 member countries of the African Union, has the potential to boost the region's global connectedness. According to a new IMF analysis, the AfCFTA could boost intra-African trade by 80%.[57] As of this writing, 31 countries have signed and ratified the agreement, including many of the continent's largest economies. Another 23 countries have signed but not yet ratified the agreement.[58] Trading under the AfCFTA is set to begin on January 1, 2021, following a six-month delay due to Covid-19.[59]

With more than half of all of the world's population growth through 2050 projected to take place in this region, Sub-Saharan Africa will exert a large influence on the long-run future of the people pillar of the index. Sub-Saharan Africa's largest partner countries are the United States (9%) and China (8%).

"With more than half of all of the world's population growth through 2050 projected to take place in this region, Sub-Saharan Africa will exert a large influence on the long-run future of the people pillar of the index."

SECTION V

CONCLUSION

The concluding section of this report proposes five key drivers of globalization's trajectory beyond the Covid-19 pandemic and discusses implications for business and public policy.



The globalization turbulence of the past dozen years has been exacerbated by the Covid-19 pandemic. Trade and capital flows proved more resilient than many feared, but the future of globalization is still shrouded in an unusually high level of uncertainty. Decision-makers can use the data in this report to think through implications of five key drivers of the future of globalization for their companies and countries.

Globalization is not all-or-nothing, either erasing borders everywhere or disappearing to leave behind a world of disconnected nations. The world is—and will remain—partially globalized. Most flows that could happen either within or between countries are still domestic. But international flows—even with the Covid-19 pandemic ongoing—are still large enough to present important opportunities and challenges. Moreover, differences between countries in their levels of globalization are often far larger than changes over time in the global level of connectedness. So, to assess implications of globalization patterns, it is essential to look at how globalization varies both over time and across countries.

To chart a course through this complex environment, decision-makers should focus on five key drivers of the future of globalization:[1]

- Restoring health and growth
- Superpower frictions and fragility
- Supply chain strategies
- Technological transformations
- Public preferences and perceptions

The DHL Global Connectedness Index and, especially, the country-level data provided in the **DHL Global Connectedness Index 2020 Country Book** that accompanies this volume can help decision-makers customize analyses to their own specific business and policy contexts.

RESTORING HEALTH AND GROWTH

International flows tend to slow dramatically during crises. When the going gets tough, people and firms retreat to the safety of domestic markets. When better times return, they spread their wings in search of growth. So, the best marker for the near-term trajectory of globalization is the pace of macroeconomic recovery. Since a solid rebound from the Covid-19 recession depends on restoring public health, it makes sense to think in terms of a chain from health to growth to globalization.

From a policy perspective, the fastest path to recovery is to make the links between health, growth, and globalization into a virtuous cycle. Global flows can play powerful roles in strengthening public health and economic growth. The rapid production and distribution of Covid-19 vaccines, for example, can only be achieved with global supply chains.[2] And the case for tapping trade, capital, and other flows to accelerate macroeconomic growth is even stronger when nearly every major economy is in recession at the same time.

Regardless of how policy coordination develops, globalization measures from the DHL Global Connectedness Index can help decision-makers discern implications for their specific countries and companies. The depth dimension of the index helps to identify whether a country's prospects depend primarily on developments at home (low depth) or abroad (high depth). And remember that most people overestimate such globalization measures, so assumptions should be checked versus hard data.

In most countries, the breadth of globalization is very limited. To restore growth, decision-makers are therefore well advised to pay particular attention to the few foreign countries that are most important in their own contexts. The maps in the country profiles in the **DHL Global Connectedness Index 2020 Country Book** list each country's most important origins and destinations for its



combined trade, capital, information, and people flows. To provide even more specific data on each country's international connections, maps of individual types of flows (trade by product category, FDI, migration, etc.) are freely available online from the DHL Initiative on Globalization at NYU Stern at **https://globalization.stern.nyu.edu/maps**.

In business, the key point to remember is that globalization is not a monolithic phenomenon. Its opportunities and challenges depend on where you are coming from and what type of business you are in. It usually makes sense to focus on the development of international flows in your own industry and geographic region. Even among the Fortune Global 500 (the world's largest firms by revenue), 74% of firms earned more than half of their revenues in their home regions in 2017 (down from 88% in 2002).[3] So, despite globalization's advances over recent decades, most companies should still think about prospects for health, growth, and globalization on a regional basis.

SUPERPOWER FRICTIONS AND FRAGILITY

Beyond restoring public health and macroeconomic fundamentals, the greatest longer-run influence on globalization will be the future of the main "poles" of the world economy—the United States, China, and the European Union—and the relations between them. A prominent perspective among international relations scholars is that globalization is more likely to break down during periods of hegemonic decline or transition.[4] Frictions between rival superpowers could fragment the world into competing spheres.

There is already some evidence, as shown in Figure 5, of "decoupling" between the US and China, but its extent is still limited. The list of companies pulling supply chains out of China or building up capacity in other countries due to geopolitical tensions continues to grow.[5] But recent surveys cast doubt on the prospect of a major exodus of Western businesses from China. More European and American companies with Chinese operations said they were committed to staying in China in 2020 than in 2019, although a smaller proportion of both sets of companies planned to increase their investments in the country.[6]

On a global basis, the breadth dimension of the DHL Global Connectedness Index has been on a very modest declining trend since 2015. This means that international flows are not spread out quite as globally as they were. But the current level is still above where it was in 2013, and it fluctuates within historical norms. There is no sign yet of the sort of precipitous drop in the breadth of countries' international flows that would indicate a major fracturing of the world economy. Nor, as we showed in Figure 7, has there been a decline in the average distance across which countries trade, which would mark a transition toward an even more regionalized world. These data suggest that the threat posed to globalization by superpower frictions remains a prospect to take seriously, but not yet a historical shift.

The maps in the **DHL Global Connectedness 2020 Index Country Book** can help decision-makers to think through country-level implications of geopolitical tensions. Look at the percentages of a country's flows that take place with each of the major geopolitical powers, and how countries'





international flows relate to their political orientations. Rising tensions pose the greatest challenge for countries that have competing relationships. For example, a country might have close political or military ties to one power, but the preponderance of its international flows with a rival. These tensions may become opportunities for other countries, as supply chains shift due to geopolitical pressures. For example, Viet Nam and Mexico have sought to present themselves as attractive alternatives to China.

Analysis of relations between the key "poles" of the global economy should be paired with consideration of their internal functioning. Covid-19 has strained cohesion within countries and regions, placing further strain on long-festering fault lines. Think, for example, of political divides in the US and geographic ones in Europe. Internal frictions could sap nations' capacity to foster mutually beneficial international cooperation. This, in turn, could shrink their "spheres" in what might become a more regionalized world. Here, depth measures will be key to watch moving forward. Strong regional integration could sustain the depth of global connectedness, even if its breadth were to falter. But fragility within regions could reduce the depth of global flows.

SUPPLY CHAIN STRATEGIES: REVERSION, REDUNDANCY, OR RESHORING

Experts have been warning for years about the dangers of complex supply chains that depend on key inputs from a single location.[7] Some companies already boosted resilience before Covid-19 hit, heeding lessons from prior disruptions such as the 2011 earthquake and tsunami in Japan. But many were, again, struck unprepared when the pandemic snarled production and distribution of many types of goods. So, focus has shifted from efficiency to resilience. Moving forward, we are likely to see a mix of three types of responses across industries and firms: reversion to prior practices (status quo), redundancy (diversifying across locations), and reshoring (boosting domestic production).

While redundancy and reshoring get the most attention, it is important not to discount the likely outcome of history repeating itself. Some—perhaps many—companies are likely to maintain key features of their pre-pandemic supply chains, moderating the pandemic's long-run effects on globalization. The main reason, beyond inertia, is the simple cost of measures such as extra production lines and inventory. As Tokyo University's Takahiro Fujimoto reflected five years after the earthquake and tsunami, "companies which take such steps at the cost of competitiveness would probably go bust even before the next disaster occurs."[8] While 93% of companies indicated, on a May 2020 survey, that they planned to increase supply chain resilience,[9] the proportion that complete major changes is likely to be somewhat smaller.

Many companies, however, *will* take steps to boost redundancy, taking advantage of cost-effective opportunities to diversify sourcing and production across locations. Many firms embraced "China plus one" sourcing years ago as labor costs rose in China, and the US-China trade war accelerated this trend. But shifting production out of the world's largest manufacturing center is often a complex and slow process. Alternative locations often lack China's supplier network, infrastructure, and skilled labor pool. Thus, a trend toward more diversified supply chains is likely to develop gradually. Trade depth and breadth could both increase modestly as production is distributed across a wider set of countries, most of which rely more on imported inputs than China does because of their more limited networks of domestic suppliers.

A large reshoring trend, on the other hand, would put significant downward pressure on trade (and potentially also capital) flows. Significant reshoring is most likely in politically sensitive industries, such as those that produce necessities for health or national security, sell mainly to government rather than private-sector customers, and those with large roles in domestic labor markets.[10] More generally, though, reshoring will be constrained by the economic considerations

that drove production abroad in the first place. Even setting aside labor and other input costs, skills and scale economies constrain the feasibility of reshoring in many industries.[11] Most countries could produce their own face masks—at a cost—but not their own smartphones or jet airplanes. Also, even where relying solely on domestic production is feasible, this approach is still vulnerable to domestic supply disruptions.

It is also important in this context to keep in mind that changes in the geography of production represent just one of several avenues to address supply chain risk. The growth of international data flows can help boost resilience by improving supply chain visibility, with natural links to companies' broader environmental, social, and governance (ESG) agendas. Decisions about product design, production processes, buffer capacity, outsourcing, and logistics also come into play. Moreover, holistic thinking about the future of global supply chains must take into account the final two topics we discuss here, technology and public opinion.

TECHNOLOGICAL TRANSFORMATIONS

The long upward march of globalization through history—interrupted mainly by political setbacks—has been spurred on by successive technological advances: steamships, telegraphs, jet airplanes, the internet, and so on. In broad brushstrokes, this has been a history of technology expanding the geographic reach of human cooperation and competition. International flows still diminish sharply with distance and cross-country differences, as we discussed in **Section II**, but technology has greatly reduced the costs of transacting across vast distances.





> *"Recent public opinion data suggest that the pandemic might be fueling backlashes against major global powers rather than a general backlash against globalization."*

Recent debates on technology and globalization have centered on the possibility that some of the latest crop of technological advances, especially automation and additive manufacturing (3D printing), could favor localization rather than globalization. Automation, by replacing some workers with robots, reduces the attraction of labor-cost arbitrage as a motivator for trade. Additive manufacturing, at the same time, can reduce the minimum efficient scale of production, also creating opportunities for localization. However, it is important to maintain perspective around these possibilities. McKinsey estimates that only 18% of global goods trade is driven by labor-cost arbitrage,[12] and a recent World Bank study showed that 3D printing can increase trade in some industries.[13]

At the same time, the countervailing force of technology reducing transaction costs continues. Covid-19 has supercharged technological transformations that could open the way for more international flows. The 2020 boom in remote work—supported by improvements in online collaboration tools—could accelerate the growth of services trade. In fact, there is already some evidence of this happening, with more small businesses paying freelance workers abroad.[14] Similarly, the acceleration of e-commerce growth this year expands trade opportunities, especially for smaller companies.

A far greater threat to globalization than the push-pull between technologies favoring local versus global production is the possibility of geopolitical tensions fragmenting key technological platforms. As we discussed in **Section III**, the internet is primarily used for domestic rather than international communications. But global—or at least interoperable—platforms greatly reduce transaction costs. A major fragmentation of key technological platforms would represent a significant setback for globalization.

PUBLIC PREFERENCES AND PERCEPTIONS

Many have predicted that Covid-19 would provoke a renewed wave of public opposition to globalization.[15] Recent public opinion data, however, suggest that the pandemic might be fueling backlashes against major global powers rather than a general backlash against globalization. Large majorities in most countries covered on a mid-2020 survey felt that greater international cooperation could have helped soften the impact of Covid-19 and wanted their country to take other countries' interests into account to foster greater cooperation.[16]

In Germany, 65% of respondents to an April Körber-Stiftung survey felt it would be bad if the Covid-19 crisis "caused a decrease in the degree of globalization and interconnectedness." Just 24% said this would be a good development.[17] In the US, July 2020 polling by the Chicago Council on Global Affairs found that support for the view that globalization is mostly good for the US held steady at 65% in 2020 (the same level recorded every year since 2014).[18] And as we noted in **Section II**, recent Gallup surveys in the United States show record high levels of support for both trade and immigration.[19] On the other hand, the proportion of Australians saying that globalization is mostly good for Australia softened from 78% to 70% on an April 2020 survey by the Lowy Institute.[20]

What has shifted significantly in recent polling is public sentiment toward the US and China. Negative views about both countries have spiked during the pandemic. Across all 11 countries with trend data available, the Summer 2020 Pew Global Attitudes Survey showed double-digit declines over the past year in the proportion of respondents viewing the US favorably. In more than half of the countries, views of the US reached new record lows.[21] Likewise, negative views about China increased in most countries, with negative opinions setting new records in many of the world's largest economies. The largest jump in opposition to China was in Australia, where the share of respondents viewing the country negatively rose from 57% in 2019 to 81% in 2020.[22]



Looking across these disparate trends, one plausible interpretation is that Covid-19 provides a reminder of both our shared humanity *and* how far we still are from a world in which we instinctively come together to face common threats. Rather than a backlash against globalization, what we may be seeing in some quarters is fear about how much we stand to lose if the institutions and relationships that enable international cooperation fail to deliver.

Within Europe, there is some evidence of a parallel dynamic. In an April 2020 poll by the European Council on Foreign Relations, a mere 22% of respondents said the European Union "lived up to its responsibilities during the pandemic." But 63% felt that the crisis "showed the need for greater European cooperation." This survey also highlighted worsening views in Europe of both the US and China, and reported that, "almost half of Europeans see economic and political consolidation within Europe as the best insurance policy in the face of deglobalization."[23]

In this context, we hope that the globalization measures provided in this report can help foster calmer and more productive debates about how to connect across borders in ways that make all countries safer, healthier, and more prosperous. Recall from **Section II** that most people think the world is far more globalized than it really is, and that such misperceptions often enflame fears about globalization's consequences. We are all entitled to our own views about whether we want more or less globalization, but we should ground such debates in a common fact base about how globalized the world is today.

> *"We hope that the globalization measures provided in this report can help foster calmer and more productive debates about how to connect across borders in ways that make all countries safer, healthier, and more prosperous."*



GUEST CONTRIBUTION

THE FUTURE OF GLOBALIZATION

By Ian Goldin, Professor of Globalization, Oxford University

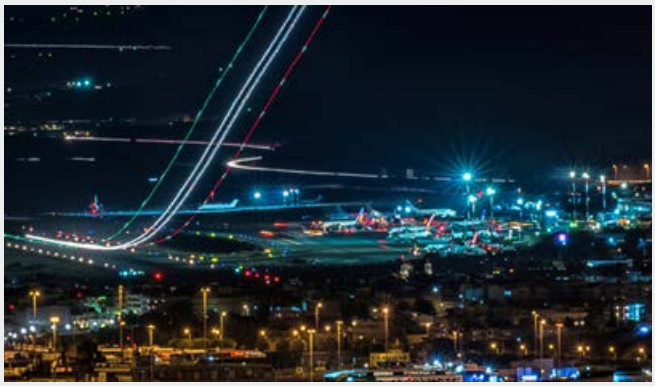
Globalization—the movement across national borders of goods, services, people and, most importantly, ideas, has been the most positive force in the history of humanity, bringing more progress, more quickly, to more people than anything preceding it. Globalization accelerated in the late 1980s and early 1990s with the collapse of the Soviet bloc, the opening up of China, the Maastricht Treaty which accelerated the integration of Europe, and NAFTA which similarly reduced trade barriers in North America, while the Uruguay Round halved tariffs globally. At the same time, the development of the World Wide Web ushered in the digital age.

The result has been that over the past three decades average per capita incomes globally have doubled, 1.3 billion people have escaped desperate poverty, average life expectancy globally has increased by about 10 years, and over 50 countries have become democratic. And yet, globalization appears more unpopular than ever. The reason is the butterfly defect of globalization as the hyper connectivity of increasingly complex systems leads to the spreading of new forms of risk as well as benefits.

Major financial centers generate financial opportunities, but networks of financial centers are also the source of financial contagion. Cyber systems allow for our digital economy, but also are the source of cyber viruses. And major airport hubs facilitate travel and logistics, but also bring the danger of illicit flows and the spread of pandemics. Meanwhile, the success of globalization has in itself generated new risks. Access to electricity and transport has led to soaring carbon emissions and accelerated climate change. Increased use of antibiotics has improved health outcomes but has also created a new threat of antibiotic resistance. Increasing internet connectivity has helped overcome the digital divide but also led to new threats posed by fake news and the dark web.

Covid-19 will not kill globalization, on the contrary it will accelerate its growth and transformation. Some aspects, such as scientific collaboration and digital connectivity have already increased dramatically since the pandemic began. The pandemic will also lead to a sharp increase in cross-border flows of capital, as a record number of countries seek financial support from international institutions and creditors. Private cross-border financal flows will also increase as the sharp repricing of different sectors and countries offers new opportunities for mergers and acquisitions.

Lockdowns have spurred international sourcing of goods and services which are delivered to homes, not least fitness, baking and gardening products. Automation and robotics in the future is likely to shift comparative advantage away from low-cost, low-skilled locations to closer to major markets, where skills and machines are available. It is not only manufacturing which is being automated, services are too,



> *"We need to redouble our efforts to create a more inclusive, sustainable and healthy world where globalization serves to overcome risks and social divides and is a tool for achieving shared and sustainable prosperity."*

with digital payment and legal processing in the cloud now circumventing the need for outsourcing to low cost locations. As customers increasingly demand individualized products, which reflect their personal identity, from garments to cars to medicines, trade patterns will shift to sourcing in locations that respond to this demand. The pandemic has highlighted the need to diversify sourcing, and this will further encourage cross-border flows from a widening range of countries.

The restructuring of trade to meet new demands and reflect new production methods, as well as risk management concerns, will not reverse globalization—it will transform it. The one area that the pandemic will reduce global flows is with respect to business travel as the efficiency, cost and carbon saving benefits of remote meetings mean that digital flows replace business travel. Foreign travel for leisure and tourism will however rebound, as authentic experiences become a more significant part of consumer spending as incomes increase, not least in Asia.

Globalization in the future will increasingly be centered on East Asia, which accounts for half of the world's population and is the fastest growing economic region. A rapid and sustained recovery of this region from the Covid-19 crisis will reinforce its rising economic and political power.

The changing economic and political landscape has led to a transitional period in which there is no effective global leadership. Global institutions are being starved of the resources, legitimacy, and mandates for reform that they urgently require. The lack of political will to manage global threats and build a more inclusive world is the greatest challenge facing globalization. In this respect, there is too little globalization, not too much.

This increases the importance of companies, cities, and communities cooperating with each other to build trust and global alliances and improve outcomes.

International firms operate seamlessly across national borders, and it is vital that they do not become the victims of increasingly protectionist politics. This would threaten investment and jobs and gives consumers less choice. To the extent that multinational companies are able to spread best practice and raise global standards, including by improving the welfare of their workers and paying taxes, they offer a means to create higher quality jobs and shared prosperity.

Globalization spreads opportunities but also risks. These need to be more effectively managed to ensure that there is not a backlash and to promote our shared prosperity. Turning our back on globalization is not the answer. There is no wall high enough to keep out climate change, pandemics, nuclear Armageddon or any of the other grave threats we face. But what high walls do keep out is the investments, trade, people, technologies and most importantly, the building blocks of cooperation that are urgently needed to address the threats and create higher growth and jobs. What Covid-19 has taught us is that we need to redouble our efforts to create a more inclusive, sustainable and healthy world where globalization serves to overcome risks and social divides and is a tool for achieving shared and sustainable prosperity for all of humanity.



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SECTION VI

METHODOLOGY AND DATA SOURCES

This section explains how the DHL Global Connectedness Index was constructed, describes the rationale for key methodological decisions, and lists the data sources used to calculate the index.





This section proceeds in five parts to explain the DHL Global Connectedness Index methodology and to acknowledge the data sources employed.[1] First, it describes the selection of a set of aspects of global connectedness that are covered in the index. Second, it defines metrics for the measurement of each of these aspects of connectedness. Third, it identifies sources used in the construction of the index and explains how gaps in data availability are addressed. Fourth, it describes how the metrics were made comparable before they were combined into the index ("normalization"). Fifth, it explains the aggregation and weighting mechanisms via which the metrics were combined into the index. Throughout this section, the example of the Netherlands (the top ranked country on the 2020 DHL Global Connectedness Index) will be used to illustrate the calculations that were performed to generate the index.

The focus of this section is on how *countries'* levels of global connectedness are analyzed. Please refer to the box titled **Global vs. Country Level Calculation Methods** on this page for distinct methods used to analyze global trends in this report.

The methodology used to calculate the 2020 DHL Global Connectedness Index remains largely the same as in previous editions of the index. The only significant methodological change introduced in this edition is the addition of international scientific research collaboration as a component measure within the information pillar of the index. The data used to compute the index have been completely updated both to extend the results up to 2019 as well as to incorporate revised source data for prior years.

GLOBAL VS. COUNTRY LEVEL CALCULATION METHODS

To provide the clearest and timeliest depiction of changes in the worldwide level of globalization, the global trends reported in Sections II and III of this report reflect four methodological differences relative to the country-level methodology described in this section:

- The global trends analysis measures changes relative to a 2001 baseline *without* applying the percentiles normalization used at the country level. Percent changes versus 2001 are first computed at the component level, and then higher levels of aggregation (overall index, depth/breadth, pillars) are calculated as weighted averages of the component-level percent changes (using the same weights as in the country-level analysis).
- We do not smooth capital flows over three years in the calculation of global trends to make these trends more sensitive to year-to-year fluctuations in investment patterns.
- We use distinct information pillar depth measures at the global level. For telephone calls, we estimate the international proportion of voice call minutes (including calls over the internet) rather than using international call minutes per capita. Similarly, for scientific research collaboration, we use the proportion of articles that are co-authored by researchers located in different countries rather than internationally co-authored articles per capita. Additionally, we exclude internet bandwidth per internet user at the global level because the growth of that measure is driven more by technological change than globalization (for further discussion of this issue, refer to endnote 37 in Section III.
- We do not limit repetition of values to fill data gaps to a maximum of five years, to ensure the global trends are not affected by changes in countries' data availability over time.

1. SELECTING ASPECTS OF CONNECTEDNESS TO MEASURE

Global connectedness is a multifaceted phenomenon incorporating many types of connections, so its measurement necessarily requires one to proceed from a specific definition of the phenomenon to the selection of a set of metrics that will be included in its assessment.

For the purpose of constructing the DHL Global Connectedness Index, the starting point is the following definition: 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.

As this definition implies, connectedness is measured here based on actual flows that take place between and among countries. Depending on relevant time frames and data availability, some flows are measured directly in the current year while others are measured based on stocks cumulated from prior-year flows. The focus on actual flows is motivated by the sense that, while connectivity or the technical potential for connectedness has improved a great deal thanks to changes in transportation and communications technologies, actual levels of flows significantly lag that potential.

Furthermore, by focusing the index itself on actual flows, enablers of connectedness (such as the political variables covering tariffs, embassies, and so on, included in other globalization indexes) may be analyzed separately in relation to the index (since they are not mixed into the index along with the actual flows). This is intended to make the index more useful for policymakers seeking insight into how to foster the aspects of connectedness that they deem most constructive for their countries, a topic that was examined at some length in Chapters 4 and 5 of the 2011 edition and Chapter 4 of the 2012 edition of this report.

TABLE 3: PILLARS AND COMPONENTS

Pillar	Component	Domestic Comparison for Depth	Covered in Breadth?
1. Trade	1.1. Merchandise Trade	GDP	Yes
	1.2. Services Trade	GDP	No
2. Capital	2.1. Foreign Direct Investment (FDI) Stocks	GDP	Yes
	2.2. Foreign Direct Investment (FDI) Flows	Gross Fixed Capital Formation (GFCF)	Yes
	2.3. Portfolio Equity Stocks	Stock Market Capitalization	Yes (Assets Only)
	2.4. Portfolio Equity Flows	Stock Market Capitalization	Yes
3. Information	3.1. International Internet Bandwidth	Internet Users	No
	3.2. International Telephone Call Minutes	Population	Yes
	3.3. Scientific Research Collaboration	Population	Yes
	3.4. Trade in Printed Publications (HS code 49)	Population	Yes
4. People	4.1. Tourists (departures and arrivals of overnight tourists)	Population	Yes (Inbound Only)
	4.2. International University Students	Tertiary Education Enrollment	Yes (Inbound Only)
	4.3. Migrants (foreign-born population)	Population	Yes



The definition of global connectedness used here also identifies four specific categories of flows that are covered as the four pillars of the index. These are: trade (products and services), investment (capital), information, and people. While the selection of these categories was ultimately a subjective choice, they broadly encompass aspects of international connectedness that have substantial relevance for business people, policymakers, and ordinary citizens concerned with the impact of globalization on their life opportunities.[2]

Within these four pillars, individual types of flows are the component building blocks from which the index is built. These were selected via an extensive search for data on actual flows corresponding to each of the four pillars, followed by the choice of a small set of flows within each based on their importance to the overall phenomenon of connectedness as well as the availability of data on which they could be measured. The 13 components that were ultimately selected across the four pillars are shown in **Table 3**.

A few points merit elaboration regarding the selection of aspects of connectedness for measurement. First are the cases where stocks cumulated from prior flows are utilized. In the capital pillar, flows are paired with stocks. Foreign investment stocks (the result of flows accumulated over time, as well as reinvested earnings and changes in the valuation of assets) are an important indicator of enduring connections between countries, which have ongoing effects via corporate governance, and in the case of FDI, through managerial control. Investment stocks also help balance out the high year-to-year volatility of capital flows. On the people pillar, migration and international students are also measured using stocks (the number of people abroad at a given time rather than those who moved in a given year). This aligns with the long-term and medium-term nature of these interactions (which have multi-year time horizons), and complements the short-term nature of tourism, which rounds out the people pillar and is measured based on annual flows. The links that migrants and students retain to their countries of origin reflect aspects of connectedness that persist beyond the years when they relocated.

The second departure from the standard focus on flows is the inclusion of international internet bandwidth, which is used as a proxy for international internet traffic because of the lack of sufficient data on the latter.[3]

Additionally, some aspects of connectedness were excluded due to normative considerations. Because the index has been designed to help countries identify and pursue opportunities to capture more of the potential benefits of connectedness, flows that are generally viewed as primarily harmful (especially on a net global basis) are not covered in the index.[4] For example, an index focused on harms might include international transmission of diseases and cross-border environmental pollution, but these are not covered here.[5]

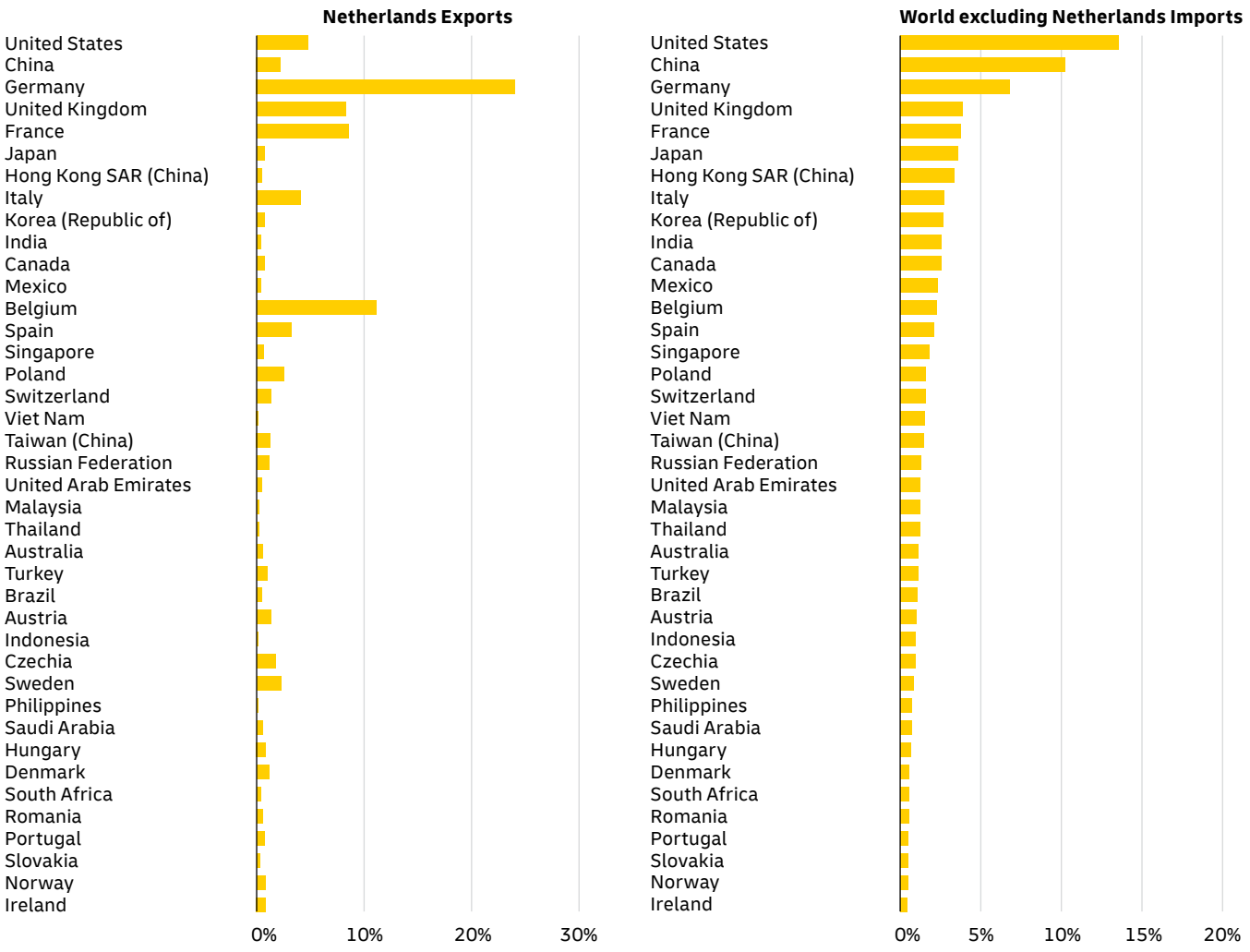
For this reason, the coverage of capital flows in this index focuses on equity capital and excludes all forms of cross-border debt except debt that is part of foreign direct investment. This reflects research indicating the more favorable impact of international equity investment (especially foreign direct investment but also portfolio equity) relative to debt investment. Recurrent financial crises have illustrated the risks associated with high levels of international indebtedness.

2. DEFINING METRICS

Having identified the set of component flows based on which to measure global connectedness, the next step is to identify appropriate metrics for each of these flows. Building on our definition of global connectedness, these metrics should capture each flow's depth as well as its breadth. Consider each of these aspects in turn.

DEPTH refers to the size of a country's international flows as compared to a relevant measure of the size of its domestic

FIGURE 32: MERCHANDISE TRADE BY PARTNER FOR SELECTED COUNTRIES



Data source: IMF Direction of Trade Statistics and UN Comtrade database

economy. It reflects in simple terms how important or pervasive interactions with the rest of the world are in the context of business or life in a particular country.

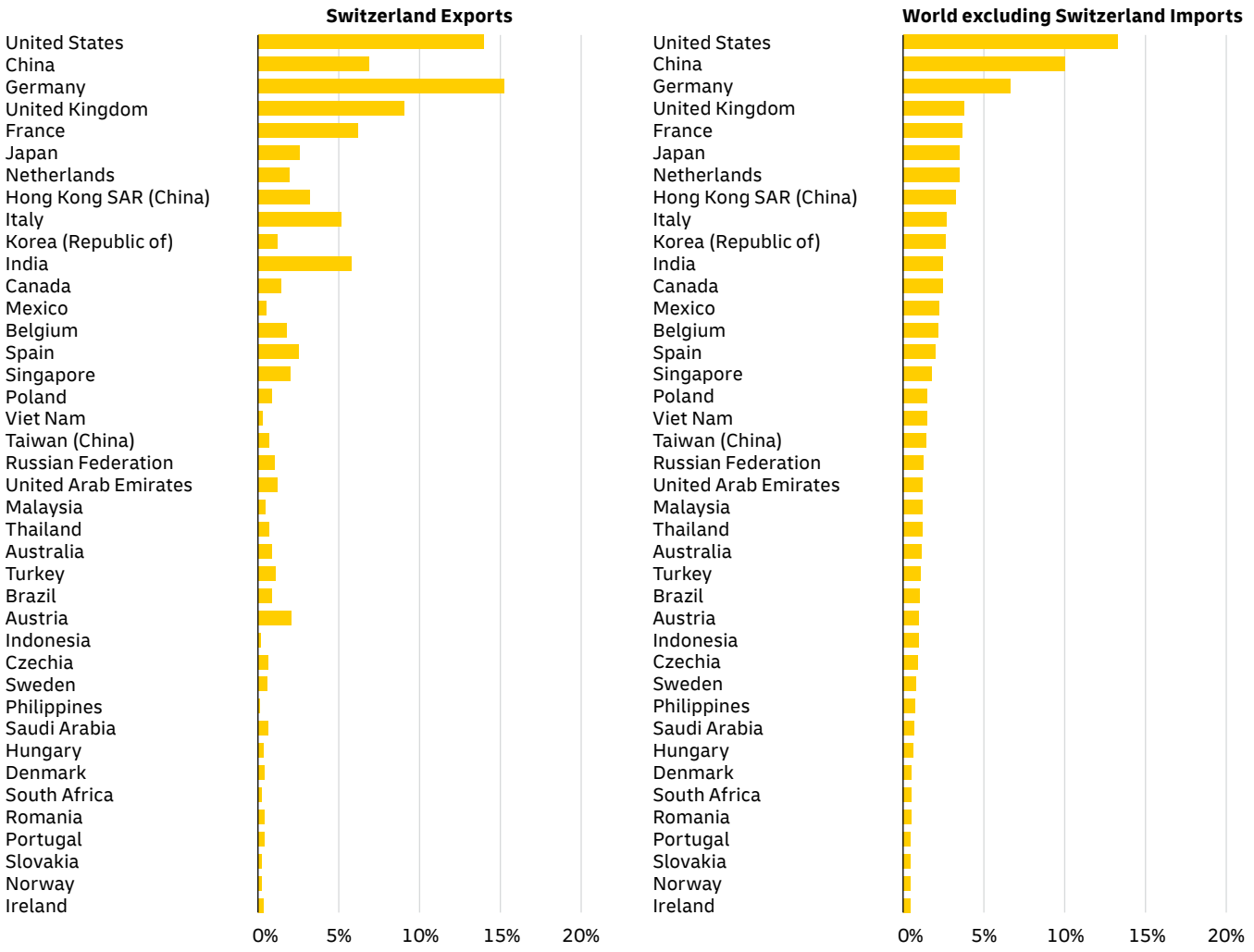
For the merchandise trade component, depth is measured by comparing the value of each country's merchandise exports and imports to its GDP, yielding the metrics merchandise exports and merchandise imports as percent of GDP. Thus, in 2019, the Netherlands' merchandise exports were 78% of its GDP and merchandise imports 70%.

A comparison of the Netherlands versus the United States illustrates the importance of scaling depth metrics based on the size of each country's national economy. US exports were more than twice as large as the Netherlands' exports in 2019, but the US economy was roughly 24 times larger. Thus, even though the United States was a much larger exporter, the Netherlands was far more connected than the United States internationally with respect to merchandise exports, as reflected by its exports as percent of GDP ratio of 78% versus only 8% for the United States. As tends to be the case, the vast majority of economic activity in a large country such as the US takes place within the country's borders, whereas smaller countries tend to have a much higher proportion of their business activity involving foreign buyers or sellers.

To implement these depth metrics, a relevant measure of a country's domestic economy must be selected as the basis of comparison for each type of international flow. Such measures are identified in the third column of Table 3, which also provides additional details about the flow metrics used for assessing depth.

Foreign direct investment (FDI) flows are compared with gross fixed capital formation (GFCF). This measure is a more precise match for FDI flows than GDP, allowing the metric to roughly characterize the percentage of a country's fixed capital investment that takes place across versus within

FIGURE 32 (CONT.): MERCHANDISE TRADE BY PARTNER FOR SELECTED COUNTRIES



Data source: IMF Direction of Trade Statistics and UN Comtrade database

international borders. For portfolio equity flows and stocks, stock market capitalization is used as the domestic comparison, as a large proportion of portfolio equity investment takes place on public stock markets.[6]

FDI and portfolio equity flows are measured using a three-year moving average because these flows tend to be especially volatile. Year-to-year fluctuations in such metrics tend to reflect macroeconomic conditions and merger waves more than long-lived changes in levels of connectedness.

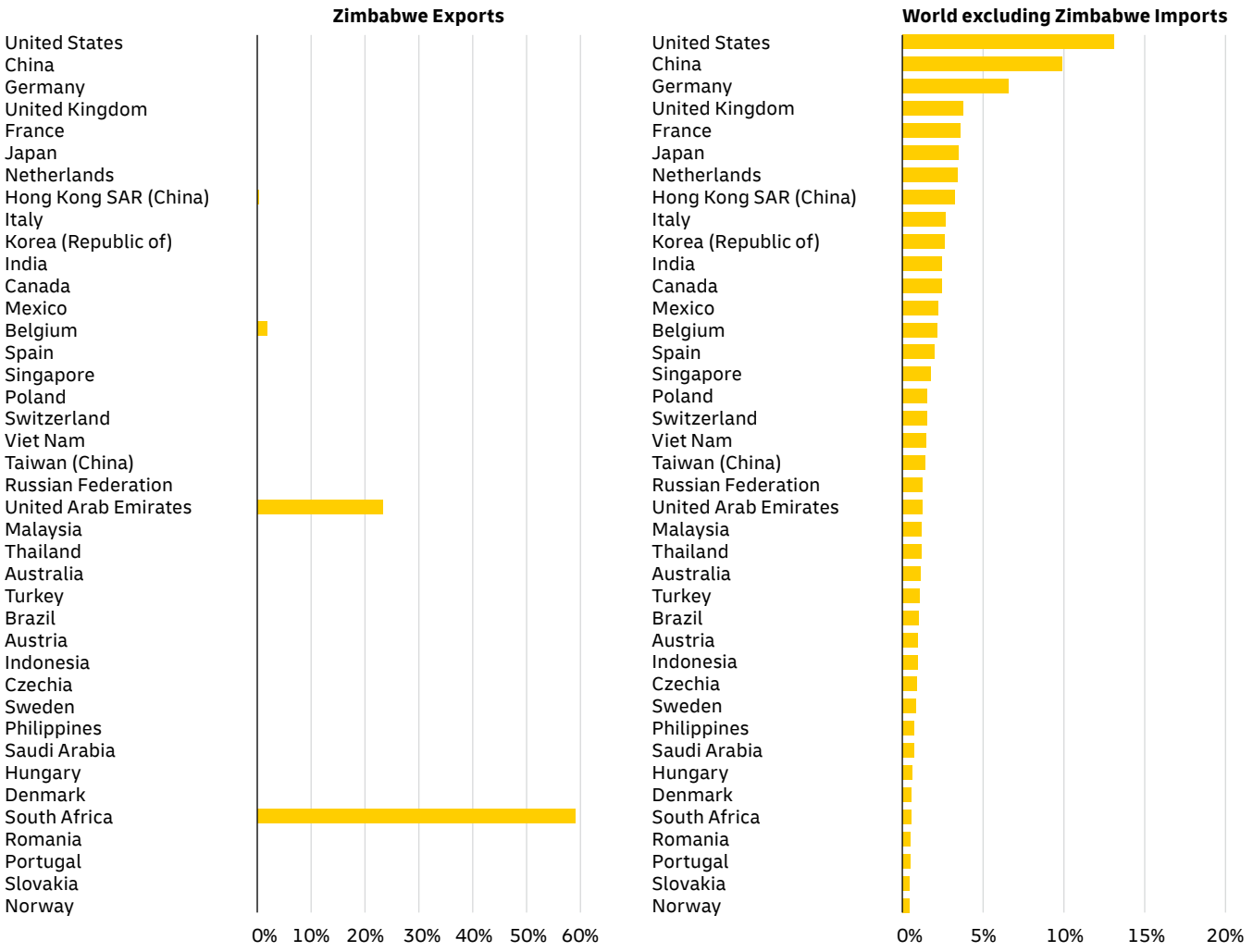
Information and people flows are measured on a per capita basis. Total population is used across all these metrics except international internet bandwidth (where internet users is a more precise match) and international university students (where total tertiary education enrollment is the best match).[7]

For the measurement of the depth of services trade, only commercial services are included; government services are excluded.

BREADTH measures how closely a 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.

To elaborate how this metric works, compare the breadth of the Netherlands' merchandise exports versus those of Switzerland and Zimbabwe. The Netherlands ranks 37th globally on this metric, and Switzerland and Zimbabwe are the top and bottom ranked countries on this metric, respectively. **Figure 32** juxtaposes each of these countries' distributions of merchandise exports by destination against the distribution

FIGURE 32 (CONT.): MERCHANDISE TRADE BY PARTNER FOR SELECTED COUNTRIES



Data source: IMF Direction of Trade Statistics and UN Comtrade database

of the rest of the world's merchandise imports. To make the charts easier to read, only the top 40 importers are shown in each pair. Notice how Switzerland's exports most closely resemble world imports, the Netherlands' bear moderately close resemblance, and Zimbabwe's bear almost no resemblance at all (59% of Zimbabwe's exports went to just one country, South Africa).

To convert the graphical pattern exhibited on these charts into a numerical metric, the smaller of each pair of bars on the right and left charts (share of the focal country's exports or world except focal country imports) is identified, and then these values are summed. The theoretical maximum, 1, is achieved if a country's exports shares exactly match those of the rest of the world's imports. On the other hand, breadth approaches 0 when a country sends all of its exports to economies with a very small share of rest-of-world imports, as seen in the example of Zimbabwe.[8]

To summarize mathematically:

$$Breadth_i = \sum_{j=1}^{n} \min\left(\frac{x_{i,j}}{x_i}, \frac{m_j}{m - m_i}\right)$$

Where *i* is the focal country and *j* represents each individual partner country, *x* is the flow of exports, and *m* is the flow of imports. However, the same equation is used for import breadth (with *x* as imports and *m* as exports), as well as for every other flow.[9]

As the focus in breadth is on the geographical distribution of the flows, the absolute value of capital flows is considered when calculating breadth. This eliminates the possibility of there being anomalous results for some countries due, for example, to a large negative value caused by a repatriation of capital, which is better captured in depth than breadth. In determining opposite direction flows, we rely primarily on



directly reported world totals, but in cases where those are not available, we employ sums across partner countries to add in implied opposite direction flows.[10]

Returning to the example, Switzerland's exports have the highest breadth (0.74 on a scale from 0 to 1), the Netherlands' are fairly close behind (0.55), and Zimbabwe's have very low breadth (0.05).

3. DATA 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 4**). More than 3.5 million data points were used to produce the index over a 19-year period. The **DHL Global Connectedness Index 2020 Country Book** that accompanies this volume contains a more extensive set of tables with definitions and listings of data sources.

Given the very large data requirements of an analysis such as the DHL Global Connectedness Index, there are many cases where the targeted data are unavailable. Data availability constraints are especially severe for breadth and for smaller and less developed countries. Therefore, five methods are employed to generate the index in spite of missing data: exclusion of some components from the breadth analysis, incorporation of data from alternative sources, filling gaps via interpolation and repetition, checking breadth data to ensure adequate coverage across partner countries, and adoption of minimum data availability thresholds to determine whether scores generated based on partial data are reportable.

First, it is not possible to cover all of the same component flows in breadth as in depth, because for many countries data are only available on the total magnitude of the flows in question, not how they are distributed by origin and destination. Therefore, some components that are included in depth are excluded from breadth (refer back to Table 3).

Second, we incorporate data from alternative sources to improve the coverage of the index across countries, components, and years. To the extent possible, we fill data gaps using reputable sources that employ comparable methodologies. We have also expanded the breadth data employed in the index by filling gaps with "mirror data." Where data for a particular flow are not reported by a given country, the flows in the opposite direction, as reported by the partner countries, are used in the breadth calculation, subject to the requirement that they meet our coverage standards.

Third, for both depth and breadth, there are cases where the required data for one or more countries are available in some but not all the years for which the index is to be calculated. The 2020 DHL Global Connectedness Index is based primarily on 2019 data, but where 2019 data are unavailable, the most recent available data are used.

When there are gaps in the available data in the middle of a data series (e.g. data are available for 2007 and 2009 but not 2008), constant growth rate interpolation is used to fill the gaps.[11] When data gaps lie before or after all of the available data, they are filled by repeating the values for the closest available year (with a given value repeated a maximum of five times). For example, if the latest data available are from 2015 (no data are available for 2016 – 2019), the 2015 value will be repeated over the period 2016 – 2019. If the most recent available data pertain to 2011, the 2011 value would be repeated over the period 2012 – 2016, and the value would be treated as missing (and not reported) in 2017 – 2019.[12]

In most cases, data gaps affect only a subset of the countries on any given component in any given year. However, there are some components where most or all countries have missing data for at least one year. Those cases and the remedies

TABLE 4: DATA SOURCES

Indicator	Depth (Size)	Depth (Scaling)	Breadth
1.1. Merchandise Trade	World Bank World Development Indicators; World Trade Organization Data Portal; IMF Direction of Trade Statistics; UN Comtrade database; UNCTADstat Database	World Bank World Development Indicators; UNCTADstat Database; IMF International Financial Statistics	IMF Direction of Trade Statistics; UN Comtrade database
1.2. Services Trade	World Bank World Development Indicators; World Trade Organization Data Portal; UN Comtrade database; UNCTADstat database	World Bank World Development Indicators; UNCTADstat Database; IMF International Financial Statistics	–
2.1. FDI Stocks	UNCTAD World Investment Report	World Bank World Development Indicators; UNCTADstat Database; IMF International Financial Statistics	IMF Coordinated Direct Investment Survey; UNCTAD FDI/MNE data; OECD International Direct Investment; Eurostat; and national statistical agencies and central banks
2.2. FDI Flows	UNCTAD World Investment Report	World Bank World Development Indicators; UNCTADstat Database; IMF International Financial Statistics; UNCTAD World Investment Report 2020 Country Fact Sheets	OECD International Direct Investment Statistics, Eurostat, UNCTAD FDI/MNE data, ASEAN FDI Database, and national statistical agencies and central banks
2.3. Portfolio Equity Stocks	IMF International Financial Statistics and Balance of Payments and International Investment Position Statistics	Euromonitor Passport database; World Federation of Exchanges; Bloomberg; World Bank World Development Indicators	IMF Coordinated Portfolio Investment Survey
2.4. Portfolio Equity Flows	IMF International Financial Statistics and Balance of Payments and International Investment Position Statistics; World Bank World Development Indicators	Euromonitor Passport database; World Federation of Exchanges; Bloomberg; World Bank World Development Indicators	–
3.1. International Internet Bandwidth	TeleGeography Global Internet Geography database; International Telecommunication Union (ITU), World Telecommunication/ICT Indicators Database	International Telecommunication Union (ITU), World Telecommunication/ICT Indicators Database	–
3.2. Telephone Calls	TeleGeography database; Ovum OTT VoIP Forecast	TeleGeography Report and Database; Ovum OTT VoIP Forecast Report; ITU World Telecommunication/ICT Indicators; World Bank World Development Indicators; UN DESA World Population Prospects	TeleGeography Report and database
3.3. Scientific Research Collaboration	Clarivate Web of Science	UN DESA World Population Prospects	Clarivate Web of Science
3.4. Printed Publications Trade	UN Comtrade database; ITC Trade Map	UN DESA World Population Prospects	UN Comtrade database; ITC Trade Map
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; national statistical agencies	UNESCO Institute for Statistics; national statistical agencies
4.3. Migrants	UN DESA Population Division, International Migrant Stock: The 2019 Revision; Eurostat; OECD International Migration Database; national statistical agencies	UN DESA World Population Prospects	UN DESA International Migration database; Eurostat; OECD International Migration Database; national statistical agencies

TABLE 5: MISSING COMPONENTS

Depth Components

Component	Data Gap	Remedy
3.2. Telephone Call Minutes	No country-level 2019 data for TDM calls and VoIP calls terminated on fixed and mobile phones; no country-level OTT VoIP data for 2001 – 2012	For TDM calls and VoIP calls terminated on fixed and mobile phones in 2019, reported world total is distributed across countries according to the 2018 distribution; For OTT VoIP calls 2005 – 2012, estimated world totals distributed across countries according to the 2013 distribution; negligible OTT VoIP calls fit to curve before 2005
4.1. Tourists	No 2019 data	2018 data repeated in 2019
4.2. University Students	No 2019 data for most countries	2018 data repeated in 2019 where missing
4.3. Migrants	Data available only for 2000, 2005, 2010, 2015 and 2019 for many countries	Interpolation employed over 2001 – 2004, 2006 – 2009, 2011 – 2014 and 2016 – 2018

Breadth Components

Component	Data Gap	Remedy
2.1. FDI Stocks	No 2019 data for most countries	2018 data repeated in 2019 where missing
2.2. FDI Flows	No 2019 data for most countries	2018 data (3 year averages) repeated in 2019 where missing
3.2. Telephone Call Minutes	No 2019 data	2018 data repeated in 2019
4.1. Tourists	No 2019 data	2018 data repeated in 2019
4.2. University Students	No 2019 data available for most countries	2018 data repeated in 2019 where missing
4.3. Migrants	Data available only for 2000, 2005, 2010, 2015 and 2019 for many countries	Interpolation employed over 2001 – 2004, 2006 – 2009, 2011 – 2014, and 2016 – 2018

employed are described in **Table 5**. Note that the data gaps are especially severe in 2019 for breadth, owing to much more limited and slower reporting of flows by partner country as compared to aggregate flows.

Fourth, because a country may report breadth data, but those data may only cover a subset of partner (origin and destination) countries, we screen the breadth data to ensure adequate coverage across partners. Breadth scores for a given country in a given year are only deemed reportable if that country's flows (or stocks) add up to between 80% and 110% of that country's reported world total flows (or stocks) within the same breadth data source.[13] When a country's data fail to meet these coverage criteria in a given year but are available in at least one other year, its breadth score is replaced with one generated based on interpolation or repetition according to the rules described above. If a country's data fail to meet the coverage criteria in any year, no breadth score is reported for that country for that component.

The use of a uniform coverage requirement across all breadth components enables uniform treatment of missing values across breadth datasets. Countries may report interactions with only a subset of their partners for a variety of reasons: unreported flows may reflect negligible values, lack of data availability, confidential data, or other reporting preferences on the part of the data source. Having restricted the analysis to data with coverage ratios between 80% and 110%, all breadth data gaps are filled with zeros.

Fifth, after employing the various techniques to address data gaps described in this section, many countries will still have some component metrics missing in some years. Therefore, we must specify thresholds below which a given country's data are deemed insufficient to calculate and report global connectedness scores. To address such cases the following rules are applied:[14]

- For the overall index, if more than 33% of the depth components (by weight) or if more than 50% of the breadth components (by weight) are missing, the overall index is not computed. Countries not meeting these thresholds in 2019 are dropped from the analysis.

- At the pillar level, if more than 30% of the depth components (by weight) or if more than 50% of the breadth components (by weight) are missing, then the pillar score is not reported. Countries not meeting these thresholds in 2019 are dropped from the pillar level index.

Why the stricter rules for depth than for breadth and the acceptance of only a subset of components for the latter?



This reflects both the challenge entailed with producing breadth measures (which require hundreds of data points per country covered for each component versus only two for depth) and their importance and novelty.

Furthermore, the differences in coverage may also be justified in part by the fact that the unavailable data are unlikely to be distributed randomly. The countries that are missing data, especially in the capital pillar, tend to have more limited levels of capital market integration (lower depth). When a country has a very low level of depth on a given component, its score on breadth for that component is less relevant for the assessment of its overall level of global connectedness.

4. MAKING METRICS COMPARABLE (NORMALIZATION)

After computing the metrics and filling in the data gaps as described above, the results must be made comparable or "normalized" before they can be combined into the index. This is necessary because the various metrics have different units and distributions.

The simple method employed in the DHL Global Connectedness Index to make all the diverse metrics comparable is to convert each distribution into its corresponding percentile ranks, over the period from 2001 to 2019. Thus, rather than comparing the different metrics directly, instead, each country's rank position on each of the metrics' distributions is compared.

For example the Netherlands' merchandise exports as percentage of GDP (the metric employed to measure the depth of its merchandise exports), was 78% in 2019. A full 96% of the scores across all countries on this metric over the period from 2001 to 2019 were lower than 78%. Thus, the Netherlands' raw score of 78% converts to a normalized score of 0.96. The United States' score of 8% converts to a normalized score of 0.11, because only 11% of all of the scores observed on that metric were less than 8%.

Note that the normalization calculations are performed over the period 2001 to 2019 rather than year-by-year. This method, called "panel normalization," was selected because it permits the comparison of global connectedness scores across this period to spot trends in levels of connectedness. Because this method requires re-normalizing the data each time the index is updated, scores should only be compared across years within a single edition of the index. Readers should, for example, assess changes from 2013 to 2019 by comparing 2013 versus 2019 scores in this edition of the index rather than by comparing 2019 scores from this edition with 2013 scores from the 2014 edition.

5. AGGREGATION AND WEIGHTS

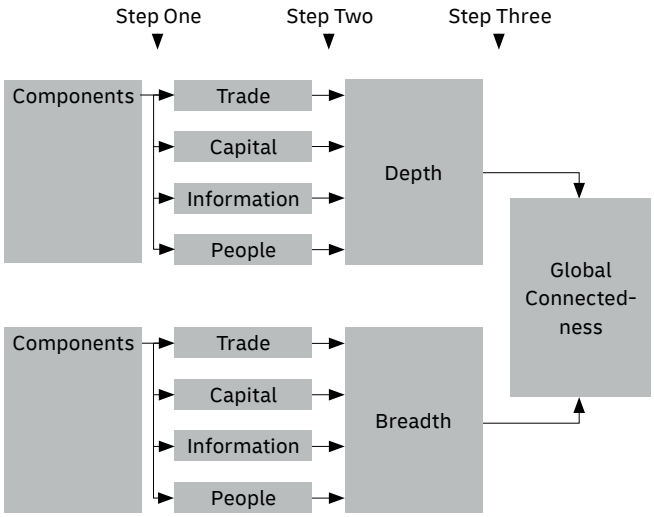
The overall index is built up from its constituent components via three steps, as illustrated in **Figure 33**. First, the individual components are aggregated into pillars, resulting in the computation of distinct pillars of the same type for depth and breadth. Then, overall depth and breadth scores are computed. Finally, these two dimensions of the analysis are combined to produce the DHL Global Connectedness Index.

At each stage of the aggregation process, the components are added together as weighted sums, according to the weights shown in **Table 6**. These weights reflect the authors' judgment of the relative importance of each pillar and component to the overall evaluation of global connectedness, based on the rationales described below.

The trade and capital pillars are each assigned higher weights (35% each) than the information and people pillars (15% each). These pillar weights reflect our sense of the relative priorities business and economics audiences place on aspects to consider when measuring globalization.



FIGURE 33: AGGREGATION OF THE DHL GLOBAL CONNECTEDNESS INDEX



Within the trade pillar, 75% of the weight is assigned to merchandise trade and 25% is assigned to services trade. Between 2001 and 2013, merchandise trade on average was roughly four times larger than services trade. However, the growth rate of services trade has tended to be higher. Thus, in 2019, merchandise trade was only 3.2 times larger than services trade. Reflecting this long-term trend, we assign three times higher weight to merchandise versus services trade.

In the capital pillar, equal weights are assigned to FDI and portfolio equity. The relative magnitudes of FDI versus portfolio equity investment stocks vary year-to-year, without one consistently far outstripping the other, as was the case in the trade pillar. Furthermore, within FDI, equal weights are assigned to both stocks and flows because they each measure distinct and important aspects of connectedness: flows indicating a country's current participation in cross-border investment activity and stocks indicating its participation in another country's economy via the exercise of its rights as a shareholder (and manager in the case of FDI).

Among the information components, telephone calls and international internet bandwidth are assigned twice the weight of scientific research collaboration and printed publications. This reflects the fact that scientific research is more of a niche part of information flows and that publications are often printed in multiple locations rather than traded across borders in physical form.

Within the people pillar, equal weights are assigned to migration, tourism, and student mobility. Each of these components reflects a distinct aspect of connectedness and spawns distinct effects that span across the other components (e.g. students serving as conduits of information and migrants promoting trade). Without a logical basis for assigning different weights, they are treated as having equal importance.

In cases when a country has sufficient data to report an index score but one or more component metrics are missing, weights must be adjusted to address the data gap(s). When a country is missing component metrics in the most recent year (2019 for this edition of the index), the weights for calculating its pillar and index scores are adjusted so that the weight that would normally be applied to a missing component is redistributed proportionally across the available components.

To ensure that changes in data availability do not result in misleading connectedness trend results, we calculate scores for years prior to the most recent one based on changes in the available component scores, working backwards from the most recent year. For each year, scores for that year (e.g. 2018) and the next year (e.g. 2019) are calculated using only the component metrics that are available in both years. Then, the percent change between the two years is applied to the next year's score (calculated separately using all available

TABLE 6: 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. International Internet Bandwidth (33%)	–
	3.2. Telephone Call Minutes (33%)	3.2. Telephone Call Minutes (50%)
	3.3. Scientific Research Collaboration (17%)	3.3. Scientific Research Collaboration (25%)
	3.4. Trade in Printed Publications (17%)	3.4. 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%)

components) to determine the score for the year in question. This method ensures that trends across years with differing data availability are consistent with actual changes in measured components' scores, and scores cannot rise or fall because of changes in data availability.

Finally, to return to our example, in Step 1, the Netherlands' trade pillar score for depth is computed as follows. The Netherlands' normalized scores for each of the trade components are: merchandise exports 0.96, merchandise imports 0.94, services exports 0.84, and services imports 0.90. Within each type of flow, the weights are divided equally among the directional flows. Thus, the 75% weight assigned to merchandise trade becomes 37.5% each for merchandise exports and merchandise imports, and the 25% weight assigned to services trade becomes 12.5% each for services exports and services imports. Multiplying the normalized scores times the corresponding weights and then adding up the products, the Netherlands receives a score of 0.93 for the trade pillar for depth.

Step 2 proceeds in the same fashion as Step 1, but includes all of the components across the four pillars to generate overall results for the depth and breadth dimensions. Even if the rules for dealing with missing data outlined above do not allow a given pillar for a particular country to be displayed, the available components from that pillar are still used to generate the depth and breadth results, if missing data rules allow those aggregate results to be shown.

Finally in Step 3, the depth and breadth scores are combined, applying equal weights to both. However, to ensure that the different shapes of their distributions 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 re-scaled between 0 and 50, taking all years into account. Then, they are simply added together, producing the final Global Connectedness Index, with possible scores ranging from 0 to 100.

Thus, the Netherlands' original depth and breadth scores of 0.84 and 0.91 respectively were rescaled to become 44.4 and 46.4. The sum of these scores, 90.8, is the Netherlands' overall 2019 score on the 2020 DHL Global Connectedness Index.

NOTES SECTION I.
EXECUTIVE SUMMARY

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3 UNCTAD, World Investment Report 2020.

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HOW GLOBALIZED IS THE WORLD?

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3 See "How Global Connectedness is Measured in This Report" on Page 15.

4 The 2019 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.

5 The 2020 forecast ranges were developed using three types of inputs: published forecasts for flows with forecasts available, partial-year data for flows with monthly or quarterly data available, and historically observed flow levels and volatility. The forecasts represent the authors' views of the range of likely outcomes, given currently available data. They do not, however, present the full range of possible outcomes. The elevated uncertainty prompted by the Covid-19 pandemic, along with normal forecasting limitations, leave open the possibility of upside or downside surprises. Note that all inputs used in these forecasts predate the sharp rise of Covid-19 cases and resulting control measures in many countries during October, which could significantly affect international flow patterns.

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19 These developments are discussed (and sources cited) in Section III.

20 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, no. 1 (2014); exports 1950–1959: Penn World Tables 9.0; exports 1960–2019: World Bank World Development Indicators; foreign direct investment (FDI) 1913–1985: United Nations Conference on Trade and Development (UNCTAD), World Investment Report 1994 (Geneva: United Nations, 1994); FDI 1990–2019: UNCTAD, World Investment Report (various editions) and International Monetary Fund, World Economic Outlook (various editions); migrants 1870-1938: Laurence Chandy and Brina Seidel, "Is globalization's second wave about to break?" Brookings, October 4, 2016; migrants 1960-2019 UN International Migrant Stock database (various editions).

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30 Ghemawat's CAGE (Cultural, Administrative, Geographic, Economic) distance framework was introduced in Pankaj Ghemawat, "Distance Still Matters: The Hard Reality of Global Expansion," *Harvard Business Review*, September 2001.

31 Estimates generated based on a standard gravity model of multiple types of economic activity. See Pankaj Ghemawat, *The New Global Road Map: Enduring Strategies for Turbulent Times*, Harvard Business Review Press, 2018, Figure 1 – 8.

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33 Under frictionless benchmark assumptions, each country consumes imports from every other country in proportion to every other country's share of world output. While this type of benchmark was developed originally for trade analysis, we construct analogous benchmarks here for other flows based on the denominators of the their depth ratios: gross fixed capital formation for FDI flows, market capitalization for portfolio equity, population for telephone calls, scientific research collaboration, migration, and tourism, and tertiary education enrollment for students. For additional background, refer to Keith Head and Thierry Mayer, "What Separates Us? Sources of Resistance to Globalization," *Canadian Journal of Economics/Revue canadienne d'économique* 46(4), November 2013.

NOTES SECTION III.

FOUR FLOWS THAT CONNECT THE WORLD

1 While the index itself comprises a select set of indicators from each of these categories, most types of human activity that can take place either within or across national borders fall into one of these categories. Exceptions include flows in the natural realm, such as animals and plants (whether as part of an ecosystem that spans borders or as invasive species carried by human activities), as well as transfers of environmental harms across borders, from regional watersheds to global greenhouse gas emissions. This being 2020, we must also mention viruses and other types of disease that spread across borders.

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3 Average crude oil price (UK Brent, Dubai Fateh, and West Texas Intermediate) from IMF World Economic Outlook, October 2020.

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7 While the total value of all reported exports of merchandise and services sums to 29% of world GDP, this traditional trade depth measure overstates the extent of globalization via trade. As we described earlier in this report, just about 21% of all of the value generated in the world economy ends up in a different country from where it was produced. Why the difference? Because of the importance of multi-country value chains, especially in manufacturing. Roughly 28% (down from a peak of 31% in 2008) of the value in "gross" exports (the traditional measure) is value that crosses more than one border before it reaches its final destination (UNCTAD World Investment Report 2020). The lower "value added" trade depth measure (21%) counts the value of exported content only once regardless of how many borders it crosses, resulting in a more appropriate comparison relative to GDP.

8 The World Bank reports that high-income countries continue to dominate imports of medical supplies, noting large disparities across countries both in terms of imports and mortality rates. See World Bank, "COVID-19 Trade Watch #6 – Goods lead, services lag in recovery," September 30, 2020.

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26 A wave of tax-motivated "corporate inversions" boosted FDI flows and then, after FDI flows had already declined following the end of that temporary boost, FDI flows were depressed by another tax policy change that prompted US-based multinationals to repatriate earnings they had been holding abroad.

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38 Rough estimate based on data from Telegeography, Ovum TMT Intelligence, International Telecommunications Union (ITU), and World Bank World Development Indicators. The data on domestic fixed and mobile calls (sourced from the ITU) have especially severe coverage gaps, prompting us to fill gaps with estimates based on mobile and fixed line subscriptions from the World Bank's World Development Indicators. These data are available on an annual basis and without significant gaps for most countries. These proxy variables were used to develop fixed effects models of the per capita levels of fixed-to-fixed, fixed-to-mobile and mobile-to-mobile minutes. The fixed effects employed were countries (if there was sufficient data to ascertain a trend) and regions. Each of these fixed effects was interacted with the subscription data so that individual countries' and regions' trends were preserved when they were known, and the country-level estimates were aggregated to generate a world total.

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NOTES SECTION IV.

HOW GLOBALIZED ARE COUNTRIES AND REGIONS?

1 The term "countries" is used throughout this report to refer to all of the countries and territories in the index, regardless of their political status. The Hong Kong and Macau Special Administrative Regions (SARs) of the People's Republic of China, as well as Taiwan (China), are treated as separate economic areas from Mainland China. China, throughout this report, refers to Mainland China. This treatment reflects the way data on these areas are covered in our primary data sources, i.e. with data for Hong Kong, Macau, and Taiwan reported separately from Mainland China in light of their maintenance of distinct economic systems and economic statistics, separate customs areas, separate immigration controls, etc. These territories were deemed important to include in the index due to the sizes of their economies: Taiwan ranks 21st globally on GDP in US Dollars at market exchange rates (between Switzerland and Poland), Hong Kong ranks 34th (between Singapore and Malaysia), and Macau ranks 82nd (between Lithuania and Slovenia).

2 In this edition, seven countries (Burundi, Democratic Republic of the Congo, Republic of the Congo, Grenada, Guinea-Bissau, Guyana, and Malawi) were included in the index that did not meet the coverage requirements in 2018. Unfortunately, we were not able to find sufficient data to incorporate seven other countries (Bhutan, Comoros, Lesotho, Maldives, Marshall Islands, Palau, and Papua New Guinea) that were included in the 2018 edition. Thus, the 2020 edition includes a total of 169 countries (no change from 2018), covering 98% of the world's population and 99% of its GDP.

3 The current IMF country classifications are reported at https://www.imf.org/external/pubs/ft/weo/2020/02/weodata/weoselagr.aspx.

4 Based on the World Bank's income classifications, which are reported at http://data.worldbank.org/about/country-and-lending-groups.

5 The region classifications employed here and results by region are discussed in the final part of this section.

6 South Africa (ranked 57th) is the top-ranked country within continental sub-Saharan Africa.

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8 The McKinsey Global Institute Country Connectedness Index takes a different approach, complementing depth with "each country's share of the global total to offer a more accurate perspective on its significance in world flows" (see McKinsey Global Institute, "Digital Globalization: The New Era of Global Flows," March 2016, p. 56). This choice is an interesting contrast to our view that global connectedness is best measured from the point of view of the country itself, rather than from that of other countries.

9 The 2016 DHL Global Connectedness Report featured a ranking of global cities both as "hotspots" and "giants," and Singapore ranked first on both measures. In 1972, less than seven years after Singapore's independence and almost two decades before Saskia Sassen inserted the term "global city" into the academic discourse, Singapore's first foreign minister, S. Rajaratnam, gave a speech titled "Singapore as a Global City." Singapore went on to implement a multi-pronged approach to globalization tying together industry-specific strategies, infrastructure development, promotion of inward foreign direct investment, and so on.

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13 Readers who wish to examine countries' global connectedness trends over time should use the scores and ranks computed for this edition of the index, which are provided back to 2001 on the web at dhl.com/gci, rather than comparing this year's report with prior editions. There are three reasons for this: First, this report incorporates slight methodological adjustments, as well as the most recent revisions to the source data underlying the index. Second, the index has a different composition of countries than the previous edition, due to changing availability of data at the country level. This shifts the field of comparison against which countries' positions on the index are calculated. Third, comparing results across years within a single edition of this report rather than across editions is consistent with the technical requirements of the normalization method used to compute the index, as described in Section VI.

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20 More connected countries tend to be more prosperous than less connected countries. All else equal, if one country has twice as high a GDP per capita as another, its global connectedness score will tend to be about 6 points higher on average. Regarding country locations, when countries are assigned remoteness scores between 0 and 10 based on their distance from foreign markets, an increase of 5 points in remoteness is associated with a reduction of almost 7 points on global connectedness (5 points is about how much more remote Burundi is from the world's economic center of gravity than the Netherlands). And regarding size, if one country has twice the population of another, its global connectedness score will tend to be roughly 1 point higher. Taken together, countries' per capita GDPs, remoteness, and populations alone explain about 73% of the variation in their global connectedness scores.

21 While considering this analysis, keep in mind that "outperformance" and "underperformance" are relative to historically observed levels of globalization—not potential levels. The world's global connectedness remains limited in absolute terms, with substantial headroom to grow. Even the Netherlands, the world's most globally connected country and an outperformer relative to expectations based on its structural conditions, could still become more deeply connected. So, the true "connectedness possibility frontier" remains above the line traced out by the outperformers in the figure.

22 The predictions in this section are based on a linear model, in which the dependent variable is a country's global connectedness score. The model includes data from 2001-2019 with fixed effects for year. The results of the linear regression are shown in the following table:

	Coefficient	Standard Error
GDP per Capita (logged)	8.78	0.49
Remoteness	-1.37	0.32
Population (logged)	1.62	0.32
Constant	-43.42	7.55

The regression had 3,072 total observations and an adjusted R-squared of 0.73.

23 For more on these countries, see Pankaj Ghemawat and Caroline R. Bastian, "Southeast Asia's globalization outperformers," *Nikkei Asian Review*, March 29, 2017.

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25 We developed these classifications for the DHL Global Connectedness Index based on the World Bank's regions, with the most significant adjustment being our grouping of Central Asia together with South Asia Instead of Europe. The regions are: **East Asia and the Pacific:** Australia, Brunei Darussalam, Cambodia, China, Fiji, Hong Kong SAR (China), Indonesia, Japan, Kiribati, Korea (Republic of), Lao People's Democratic Republic, Macau SAR (China), Malaysia, Mongolia, Myanmar, New Zealand, Philippines, Samoa, Singapore, Solomon Islands, Taiwan (China), Thailand, Timor-Leste, Tonga, Vanuatu, Viet Nam. **Europe:** Albania, Austria, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Moldova, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Russian Federation, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, United Kingdom. **Middle East and North Africa:** Algeria, Bahrain, Egypt, Iraq, Israel, Jordan, Kuwait, Lebanon, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, United Arab Emirates, Yemen. **North America:** Canada, Mexico, United States. **South and Central America and the Caribbean:** Antigua and Barbuda, Argentina, Bahamas, Barbados, Belize, Bolivia (Plurinational State of), Brazil, Chile, Colombia, Costa Rica, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela (Bolivarian Republic of). **South and Central Asia:** Afghanistan, Armenia, Azerbaijan, Bangladesh, Georgia, India, Iran (Islamic Republic of), Kazakhstan, Kyrgyzstan, Nepal, Pakistan, Sri Lanka, Tajikistan, Turkey, Uzbekistan. **Sub-Saharan Africa:** Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tanzania (United Republic of), Togo, Uganda, Zambia, Zimbabwe.

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28 Note that the four freedoms also apply beyond the EU to the other member countries of the European Economic Area (EEA): Iceland, Liechtenstein, Norway, and, with some limitations, Switzerland. Until the end of the transition period in 2020, the United Kingdom also participates in the four freedoms. As members of the Deep and Comprehensive Free Trade Area (DCFTA), Georgia, Moldova, and Ukraine also participate in the four freedoms in a limited way.

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30 European Commission, "Digital Single Market: Commission publishes guidance on free flow of non-personal data," Press Release, May 29, 2019.

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44 For information about tracking the progress of the Phase One Deal, see Chad P. Brown, "US-China phase one tracker: China's purchases of US goods," PIIE Charts, Peterson Institute for International Economics, August 25, 2020.

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47 *Al Jazeera*, "UAE scraps Israel economic boycott after US-brokered deal," August 29, 2020.

48 Mark Landler, "Another Gulf state recognizes Israel. Here's why it matters." *The New York Times*. September 12, 2020.

49 On an export-weighted basis, 29% of the value of exports from East Asia & Pacific countries came from a country other than the one that recorded the exports, slightly above Europe's 28% and well above the third-ranked region, South and Central Asia (21%). On a simple average basis, however, Europe ranks first with 32% relative to East Asia & Pacific's 29%, due to the higher proportion of small countries in Europe. These calculations are based on 2014 data from OECD's Trade in Value Added (TiVA) Nowcast Estimates.

50 In addition to the effects of regional supply chains already discussed, this is also due in part to the fact that the region so large. For example, while only 26% of South & Central Asia's flows were intra-regional in 2017, the average distance traversed by that region's flows was 4,280 km. By contrast, 59% of East Asia & the Pacific's flows were intra-regional, but the average distance traversed was 6,392 km.

51 Brunei Darussalam, Indonesia, Cambodia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam.

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59 Elliot Smith, "Africa's free trade area is delayed by the coronavirus, but experts say it's vital to recovery," *CNBC*, May 26, 2020.

NOTES SECTION V.
CONCLUSION

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5 Masamichi Hoshi, Rei Nakafuji, and Yusho Cho, "China scrambles to stem manufacturing exodus as 50 companies leave," *Nikkei Asia*, July 18, 2019.

6 AmCham Shanghai Press Release, "AmCham Shanghai Releases 2020 China Business Report," September 9, 2020; European Chamber, "European Business in China: Business Confidence Survey 2020," 2020.

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8 Naomi Tajitsu, "Five years after Japan quake, rewiring of auto supply chain hits limits," *Reuters*, March 16, 2016.

9 Knut Alicke, Richa Gupta, and Vera Trautwein, "Resetting supply chains for the next normal," McKinsey & Company, July 2020.

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22 Laura Silver, Kat Devlin, and Christine Huang, "Unfavorable Views of China Reach Historic Highs in Many Countries," Pew Research Center, October 6, 2020. Strongly negative views about China spanned world regions, with the most negative views recorded in Japan (86%) and Sweden (85%). The proportion of Americans with negative views about China rose from 60% to 73%.

23 Ivan Krastev & Mark Leonard, "Europe's pandemic politics: How the virus has changed the public's worldview," European Council on Foreign Relations, June 2020.

NOTES SECTION VI.
METHODOLOGY AND DATA SOURCES

1 For a more academically oriented discussion of how to measure globalization, drawing extensively on the research behind the DHL Global Connectedness Index, refer to Pankaj Ghemawat and Steven A. Altman, "Defining and Measuring Globalization," Chapter 1 in Pankaj Ghemawat, *The Laws of Globalization and Business Applications*, Cambridge University Press, 2017.

2 The selection of these four categories also draws support from definitions of globalization drawn from various research fields. Thus, for example, writings about globalization by economist Michael Mussa cite "trade, factor movements (of capital and people) and communication of economically useful knowledge and technology" while those by anthropologist Arjun Appadurai mention "ideas and ideologies, people and goods, images and messages, technologies and techniques." See Michael Mussa, "Factors driving global economic integration," paper presented at Global economic integration: Opportunities and challenges conference, Jackson Hole, Wyoming, USA, August 25, 2000, and Arjun Appadurai, "Grassroots globalization and the research imagination," *Public Culture* 12 (1):1–19, 2000.

3 Where available, we employ data on "used international internet bandwidth" to best proxy international internet traffic. Otherwise, "international internet bandwidth" is employed. Among the 103 countries with data available on both variables in 2016 in the International Telecommunication Union's World Telecommunication/ICT Indicators database (July 2018 edition), the values reported were the same for 87 countries and the correlation between the two variables was 0.999

4 For an extended discussion of potential harms associated with globalization, refer to chapters 5 – 11 of Pankaj Ghemawat, *World 3.0: Global Prosperity and How to Achieve It*, Harvard Business Review Press, 2011.

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7 We chose to measure the depth of scientific research collaboration on a per capita basis to capture how connected a whole country's population is to international research via the collaborative efforts of scholars in that country. As alternatives, we considered internationally co-authored publications as a percent of total publications and internationally co-authored publications per researcher. We chose not to use co-authored publication as a percent of total publications because that measure would show as most connected countries where research output is low and all or nearly all publications are internationally co-authored. We chose not to use internationally co-authored publications per researcher due to lack of complete, recent, and comparable data on the number of researchers in each country.

8 A breadth score of 0 is impossible, since it would require division by 0, but it approaches zero as its partner country or countries' imports shares decrease.

9 Previous editions of the index described breadth as the sum of the absolute values of the differences between a country's share of exports and the rest of the world's share of imports, rescaled and reversed such that it fit onto a 0 to 1 scale. This method is mathematically equivalent to the method described here. Summing the absolute differences results in a scale between 0 and 2, with 0 being the highest possible breadth (absolute difference of zero from the world distribution) and the minimum approaching 2 as the differences in shares reach 1 on both sides. The alternative explanation is favored here because it does not need to be rescaled nor reversed, but this does not represent a change in methodology from that used in previous editions.

10 This adjustment was first used in the 2018 edition of the index. We chose to make the directly reported world totals for the opposite direction flows our primary source because these values, subject to worldwide reporting standards, should be more consistent across countries. There remains, however, some inconsistency due to differences in reporting standards across flow directions. For example, merchandise exports are reported using the free-on-board (FOB) standard, whereas imports include cost, insurance and freight (CIF). The impact of such inconsistencies on the breadth scores, however, appears to be very small, prompting us to conclude that this method makes the best use of the available data.

11 Economic and demographic data tend to conform better to constant growth models rather than linear growth models, and constant growth rate interpolation is therefore used here. In cases where constant growth rate interpolation is not possible due to zero values or a change from positive to negative, linear interpolation is used instead.

12 The 5-year limit on repetition was introduced in the 2016 edition of the index and is discussed further in Chapter Four of the 2016 report.

13 For telephone calls breadth, because the source dataset employed covers only a sample of partners for each reporter, we also require that data be available for at least four partner countries.

14 Note that in the Depth Dimension, the data availability rules applied here are stricter than those in the KOF Globalization Index (which focuses on depth metrics in its assessment of "de facto" globalization). The 2018 edition of that index allows results to be displayed if up to 40% of the underlying variables are missing.

FULL COUNTRY RANKINGS



DHL GLOBAL CONNECTEDNESS INDEX, OVERALL RANKING AND CHANGES FROM 2017 TO 2019

Rank	Country	Score	Change	
			Rank	Score
1	Netherlands	91	0	-2
2	Singapore	89	0	+1
3	Belgium	83	+1	-1
4	United Arab Emirates	82	+2	-1
5	Ireland	82	0	-2
6	Switzerland	81	-3	-3
7	Luxembourg	80	0	-2
8	United Kingdom	79	0	+1
9	Denmark	77	0	-1
10	Malta	77	+4	+3
11	Norway	77	0	+1
12	Sweden	76	0	+1
13	Germany	76	-3	0
14	Czechia	76	-1	+1
15	Hungary	76	+4	+4
16	Malaysia	73	+1	0
17	Finland	73	-1	0
18	Austria	72	+3	+1
19	Taiwan (China)	72	+5	+2
20	Estonia	72	0	+1
21	France	72	-6	-1
22	Korea (Republic of)	72	+1	+1
23	Slovenia	71	-5	-1
24	Israel	71	-2	0
25	Hong Kong SAR (China)	71	+1	+1
26	Italy	70	+1	0
27	Spain	70	-2	0
28	Iceland	69	+5	+2
29	Cyprus	69	-1	0
30	Thailand	68	-1	-1
31	Qatar	68	0	0
32	Canada	68	-2	0
33	Bulgaria	68	-1	+1
34	Australia	67	+4	0
35	Slovakia	67	+2	0
36	Portugal	67	0	0
37	United States	66	-2	-1
38	Viet Nam	66	+1	0
39	Bahrain	66	-5	-1
40	New Zealand	65	+1	+1
41	Poland	64	-1	-1
42	Saudi Arabia	63	0	-1
43	Latvia	63	0	0
44	Japan	62	+3	0
45	Lithuania	61	0	-1
46	Cambodia	60	0	-2
47	Chile	60	+2	0
48	Mauritius	60	+3	+1
49	Greece	60	+1	0
50	Serbia	59	+5	+2
51	Ukraine	59	+3	+1
52	Seychelles	58	-8	-4
53	Russian Federation	58	+6	+2
54	Lebanon	58	-2	-1
55	Turkey	58	+10	+4
56	Kuwait	57	-3	-1
57	South Africa	57	-1	0
58	Georgia	56	+8	+3
59	Brunei Darussalam	56	+12	+4
60	Brazil	56	+1	+1
61	Jordan	55	-1	0
62	Morocco	55	+5	+2
63	Kazakhstan	55	-5	-1
64	Philippines	55	-7	-1
65	Mexico	54	-1	0
66	Azerbaijan	54	+4	+1
67	Peru	54	-4	0
68	Mongolia	54	+16	+6
69	North Macedonia	53	+5	+2
70	China	53	-1	0
71	Romania	53	-3	0
72	Tunisia	53	0	+2
73	Panama	52	-25	-8
74	Costa Rica	52	+6	+3
75	Croatia	52	-2	+1
76	Barbados	51	-1	0
77	Sri Lanka	50	-1	0
78	Belize	50	+5	+2
79	Oman	50	-17	-4
80	Ghana	49	+2	+1
81	India	48	0	0
82	Armenia	48	-5	-1
83	Argentina	48	+9	+3
84	Trinidad and Tobago	48	+25	+8
85	Montenegro	48	+10	+4
86	Fiji	48	-7	-1
87	Colombia	47	+2	0
88	Moldova	47	-1	0
89	Jamaica	47	-3	0
90	Uruguay	46	+6	+2
91	Gabon	46	-1	0
92	Ecuador	46	+9	+3
93	Grenada	46	-8	-2
94	Suriname	46	+3	+2
95	Guyana	45	-17	-4
96	Honduras	45	-5	0
97	Nicaragua	45	-9	-2
98	Albania	45	+4	+2
99	St. Lucia	44	-6	-1
100	Macau SAR (China)	44	0	+1
101	Congo	43	+2	+1
102	Bosnia and Herzegovina	43	-3	0
103	Egypt	43	-9	-2
104	Antigua and Barbuda	42	+2	+1
105	Côte d'Ivoire	41	+3	+1
106	Indonesia	41	+5	+1
107	Dominican Republic	41	+9	+2
108	Namibia	41	+16	+3
109	Belarus	40	+5	+1
110	Mozambique	40	+3	+1
111	Togo	40	-4	0
112	Nigeria	40	-7	-1
113	Tonga	40	+4	+1
114	Bahamas	40	-2	+1
115	Madagascar	39	-17	-5
116	Iraq	39	-6	-1
117	Sierra Leone	39	-13	-3
118	Solomon Islands	39	-3	0
119	El Salvador	39	+10	+3
120	Cameroon	39	+11	+3
121	St. Kitts and Nevis	38	0	0
122	Liberia	38	0	0
123	Senegal	38	+3	+1
124	St. Vincent and the Grenadines	38	-4	0
125	Myanmar	37	+7	+2
126	Pakistan	36	+2	0
127	Guatemala	36	+10	+2
128	Zambia	35	+17	+3
129	Ethiopia	35	+1	-1
130	Algeria	35	-7	-3
131	Venezuela (Bolivarian Republic of)	34	+19	+5
132	Mauritania	34	+1	-1
133	Kenya	34	+5	0
134	Bolivia (Plurinational State of)	34	-16	-4
135	Bangladesh	34	+4	+1
136	Haiti	33	+6	0
137	Dominica	33	+4	0
138	Kyrgyzstan	33	-2	-1
139	Samoa	33	+9	+3
140	Uzbekistan	33	+20	+10
141	Cabo Verde	33	-7	-2
142	Paraguay	32	+4	+1
143	Guinea	32	-18	-5
144	Iran (Islamic Republic of)	32	-25	-6
145	Nepal	32	-10	-3
146	Lao People's Democratic Republic	31	-3	-1
147	Gambia	31	+8	+5
148	Vanuatu	30	+8	+4
149	Niger	29	+12	+7
150	Tanzania (United Republic of)	28	+9	+5
151	Eswatini	28	0	-1
152	Burkina Faso	28	-8	-4
153	Angola	27	-26	-10
154	Botswana	27	-5	-3
155	Malawi	27	-15	-6
156	Mali	27	-3	-1
157	Tajikistan	26	-3	-1
158	Rwanda	26	-6	-3
159	Sudan	26	+8	+10
160	Benin	26	-3	0
161	Timor-Leste	25	-14	-5
162	Uganda	25	-4	0
163	Afghanistan	20	+2	+2
164	Kiribati	18	-1	-1
165	Democratic Republic of the Congo	18	-3	-2
166	Zimbabwe	18	+2	+3
167	Yemen	18	-3	0
168	Guinea-Bissau	18	-2	+1
169	Burundi	16	0	+1

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DHL GLOBAL CONNECTEDNESS INDEX, DEPTH RANKING AND CHANGES FROM 2017 TO 2019

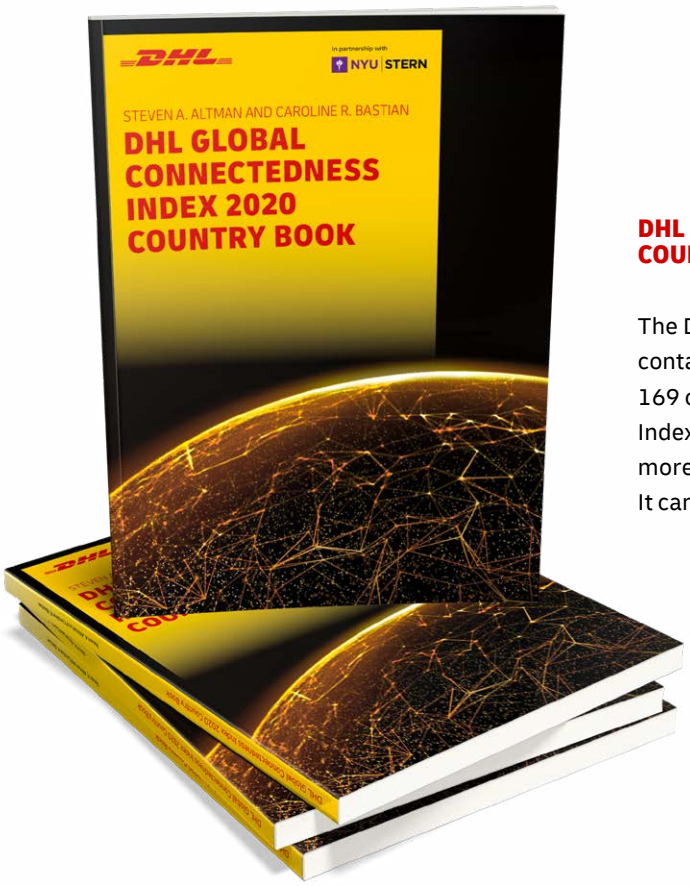
Rank	Country	Score	Change	
			Rank	Score
1	Singapore	50	0	+1
2	Hong Kong SAR (China)	46	+1	0
3	Belgium	45	-1	-1
4	Netherlands	44	0	-2
5	Estonia	44	+1	-1
6	United Arab Emirates	44	+2	0
7	Czechia	43	+4	+1
8	Ireland	43	-1	-2
9	Luxembourg	42	-4	-4
10	Cyprus	42	0	-1
11	Malta	42	+5	+2
12	Seychelles	42	-3	-2
13	Slovenia	42	0	+1
14	Hungary	41	+4	+2
15	Slovakia	41	-1	+1
16	Austria	41	-1	+1
17	Latvia	39	0	-1
18	Lithuania	39	+1	+1
19	Switzerland	38	-7	-3
20	Bulgaria	37	0	0
21	Bahrain	37	0	0
22	Taiwan (China)	36	+3	+1
23	Malaysia	36	-1	-1
24	Cambodia	36	0	+1
25	Belize	35	+7	+2
26	Georgia	35	+5	+2
27	Sweden	35	+2	+1
28	Brunei Darussalam	35	+18	+4
29	Denmark	35	-6	-1
30	Finland	34	-3	-1
31	Viet Nam	34	+3	+1
32	Portugal	34	-6	-1
33	Iceland	34	+11	+3
34	Germany	34	-4	0
35	Oman	34	-7	0
36	Nicaragua	33	+9	+2
37	Grenada	33	-1	+1
38	Norway	33	-1	+1
39	Guyana	33	+9	+2
40	Montenegro	33	+17	+3
41	Suriname	32	-8	-1
42	North Macedonia	32	-3	0
43	Mauritius	32	-2	0
44	Serbia	32	-2	+1
45	Mongolia	32	+33	+5
46	Albania	32	-3	+1
47	Canada	32	-9	0
48	Spain	31	-8	-1
49	Antigua and Barbuda	31	-2	0
50	Poland	31	-15	-2
51	United Kingdom	31	+12	+2
52	Azerbaijan	31	-2	0
53	Qatar	31	0	+1
54	Italy	30	+6	0
55	Croatia	30	+14	+1
56	St. Kitts and Nevis	30	+2	0
57	Namibia	30	+19	+3
58	Bahamas	30	-6	-1
59	Fiji	30	+7	+1
60	St. Vincent and the Grenadines	30	-11	-1
61	Ukraine	30	-7	0
62	Thailand	30	-3	0
63	Kuwait	29	+5	0
64	Tonga	29	-9	-1
65	Moldova	29	+5	+1
66	Jamaica	29	-1	0
67	Honduras	29	-16	-2
68	Lebanon	29	+5	+1
69	France	28	-8	-2
70	Armenia	28	-14	-2
71	Belarus	28	+3	0
72	Tunisia	28	+8	+1
73	Solomon Islands	28	-6	-1
74	Greece	28	+1	0
75	Barbados	28	-11	-1
76	St. Lucia	27	-14	-2
77	New Zealand	27	+5	0
78	Korea (Republic of)	27	+6	0
79	Mexico	27	+6	0
80	Costa Rica	27	+15	+3
81	Bosnia and Herzegovina	27	-9	-1
82	Dominica	27	+5	+1
83	Israel	26	-6	-1
84	Romania	26	-5	-1
85	Macau SAR (China)	26	+14	+3
86	Congo	26	-15	-2
87	Chile	26	+2	0
88	Jordan	26	-2	-1
89	Eswatini	26	-8	-1
90	Australia	25	+8	+1
91	Cabo Verde	25	-3	-1
92	El Salvador	25	+5	+1
93	Mozambique	25	-3	0
94	Mauritania	25	+13	+4
95	Panama	25	-12	-2
96	Samoa	25	-4	0
97	Saudi Arabia	24	-6	-1
98	Kazakhstan	24	+2	+1
99	Togo	24	-3	0
100	Gabon	24	+3	+2
101	Kyrgyzstan	24	-7	0
102	Morocco	23	+2	+1
103	Liberia	23	-1	0
104	South Africa	23	+1	+1
105	Trinidad and Tobago	22	-12	-3
106	Uruguay	22	+13	+4
107	Lao People's Democratic Republic	21	+1	0
108	Uzbekistan	21	+43	+10
109	Russian Federation	20	+3	+1
110	Zambia	20	+10	+2
111	Botswana	20	-10	-3
112	Vanuatu	20	-6	-2
113	Peru	20	0	+1
114	Sudan	20	+41	+10
115	Turkey	20	+2	+2
116	Tajikistan	19	-6	-1
117	United States	19	-6	0
118	Gambia	19	+9	+2
119	Argentina	19	+15	+4
120	Ghana	18	-6	-1
121	Dominican Republic	18	-3	0
122	Madagascar	18	-6	0
123	Sierra Leone	18	+3	+1
124	Haiti	18	-1	+1
125	Senegal	18	+5	+2
126	Japan	18	-4	+1
127	Philippines	18	-12	-1
128	Paraguay	17	0	+1
129	Mali	17	-4	0
130	Timor-Leste	17	+11	+3
131	Colombia	17	-2	+1
132	Rwanda	16	+10	+2
133	Burkina Faso	16	-2	0
134	Kiribati	16	-13	-1
135	Zimbabwe	16	+8	+2
136	Iraq	16	+1	+1
137	Guatemala	16	-2	+1
138	Guinea-Bissau	16	-6	0
139	Myanmar	16	0	+2
140	Ecuador	15	+5	+1
141	Sri Lanka	15	+3	+1
142	Egypt	15	-9	0
143	Brazil	14	+3	0
144	Venezuela (Bolivarian Republic of)	14	+18	+6
145	Benin	14	-7	-1
146	Nepal	14	-6	0
147	Côte d'Ivoire	14	+3	+1
148	Bolivia (Plurinational State of)	14	-24	-3
149	Guinea	13	-40	-7
150	China	13	-2	0
151	Algeria	13	-4	0
152	Malawi	12	-16	-3
153	Angola	12	-4	-1
154	Uganda	11	+2	+2
155	Niger	11	-3	0
156	Nigeria	11	+2	+3
157	Kenya	10	-4	0
158	Cameroon	10	+1	+2
159	Indonesia	10	-2	+1
160	Afghanistan	10	+1	+2
161	Iran (Islamic Republic of)	9	-1	+1
162	India	9	+1	+1
163	Democratic Republic of the Congo	8	-9	-2
164	Burundi	8	+3	+2
165	Yemen	7	-1	0
166	Tanzania (United Republic of)	7	-1	0
167	Bangladesh	6	-1	0
168	Pakistan	6	0	0
169	Ethiopia	3	0	-1

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DHL GLOBAL CONNECTEDNESS INDEX, BREADTH RANKING AND CHANGES FROM 2017 TO 2019

Rank	Country	Score	Change	
			Rank	Score
1	United Kingdom	48	0	-1
2	United States	48	0	+1
3	Netherlands	46	0	-1
4	Israel	45	+4	+2
5	Korea (Republic of)	44	0	0
6	Japan	44	-2	0
7	Norway	44	-1	0
8	France	44	-1	+1
9	Switzerland	43	0	0
10	Denmark	43	+1	+1
11	Germany	42	+1	0
12	Australia	42	-2	-1
13	Sweden	41	+1	0
14	Brazil	41	-1	0
15	Italy	40	+1	0
16	India	40	-1	-1
17	Singapore	40	+2	+1
18	China	40	-1	0
19	Ireland	39	-1	0
20	Finland	39	+4	+1
21	Saudi Arabia	39	0	0
22	Thailand	39	-2	0
23	Belgium	39	+2	+1
24	Spain	39	-2	0
25	United Arab Emirates	38	-2	-1
26	Turkey	38	+9	+3
27	New Zealand	38	+2	+1
28	Russian Federation	38	0	+1
29	Qatar	37	-2	-1
30	Luxembourg	37	0	0
31	Malaysia	37	+3	+1
32	Philippines	37	-6	-1
33	Canada	36	-2	-1
34	Sri Lanka	36	-1	0
35	Taiwan (China)	35	+1	0
36	Malta	35	+4	+1
37	Iceland	35	-5	-1
38	Hungary	34	+7	+1
39	South Africa	34	-2	-1
40	Peru	34	-2	-1
41	Chile	34	-2	0
42	Czechia	33	+5	0
43	Poland	33	+3	0
44	Portugal	33	+5	+1
45	Ethiopia	32	+3	0
46	Viet Nam	32	-3	-1
47	Greece	32	+3	0
48	Morocco	32	+3	+1
49	Austria	32	+6	+1
50	Ghana	31	+12	+2
51	Colombia	31	+6	+1
52	Indonesia	31	+4	0
53	Bulgaria	31	+5	+1
54	Kazakhstan	31	-12	-2
55	Ecuador	31	+10	+2
56	Pakistan	30	-2	-1
57	Argentina	30	+3	0
58	Slovenia	30	-6	-1
59	Jordan	30	+7	+1
60	Bahrain	29	-1	-1
61	Nigeria	29	-17	-4
62	Lebanon	29	-9	-2
63	Ukraine	29	+7	+2
64	Cameroon	28	+3	0
65	Kuwait	28	-2	-1
66	Egypt	28	-2	-1
67	Panama	28	-26	-5
68	Mauritius	28	0	0
69	Estonia	28	+5	+2
70	Bangladesh	28	+2	+1
71	Mexico	27	0	0
72	Côte d'Ivoire	27	-3	-1
73	Serbia	27	+5	+1
74	Romania	26	+5	0
75	Cyprus	26	-2	-1
76	Slovakia	26	+1	0
77	Trinidad and Tobago	26	+48	+11
78	Costa Rica	25	+8	+1
79	Hong Kong SAR (China)	25	+5	+1
80	Tunisia	25	+5	+1
81	Cambodia	24	-6	-2
82	Uruguay	24	-6	-2
83	Kenya	24	+7	0
84	Latvia	24	+7	+1
85	Barbados	23	+8	+1
86	Iraq	23	-4	-2
87	Iran (Islamic Republic of)	23	-26	-7
88	Azerbaijan	23	+6	+1
89	Dominican Republic	23	+9	+2
90	Lithuania	22	-3	-2
91	Gabon	22	-2	-2
92	Algeria	22	-9	-3
93	Myanmar	22	+6	+1
94	Mongolia	22	+7	+2
95	Tanzania (United Republic of)	21	+21	+4
96	Madagascar	21	-16	-4
97	Croatia	21	-5	-2
98	Sierra Leone	21	-17	-4
99	Georgia	21	+3	+1
100	Brunei Darussalam	21	-3	0
101	North Macedonia	21	+6	+2
102	Venezuela (Bolivarian Republic of)	20	-7	-1
103	Armenia	20	+5	+1
104	Senegal	20	-4	0
105	Bolivia (Plurinational State of)	20	-9	-1
106	Guatemala	20	+3	+1
107	Guinea	19	+8	+2
108	Moldova	18	+3	-1
109	Jamaica	18	+3	0
110	Nepal	18	-7	-2
111	Macau SAR (China)	18	-6	-2
112	Fiji	18	-6	-1
113	Niger	17	+27	+5
114	Congo	17	+20	+3
115	St. Lucia	17	+7	+1
116	Bosnia and Herzegovina	17	+12	+2
117	Honduras	16	+12	+1
118	Seychelles	16	-8	-3
119	Oman	16	-15	-4
120	Togo	16	-1	0
121	Paraguay	16	+10	+2
122	Liberia	15	+4	0
123	Angola	15	-35	-9
124	Haiti	15	0	0
125	Zambia	15	+7	+1
126	Montenegro	15	+7	+1
127	Mozambique	15	+8	+1
128	Belize	15	-1	0
129	Malawi	15	-16	-3
130	El Salvador	14	+7	+2
131	Uganda	14	-11	-2
132	Suriname	13	+11	+2
133	Albania	13	+9	+2
134	Grenada	13	-11	-2
135	Guyana	13	-21	-5
136	Uzbekistan	12	+2	0
137	Gambia	12	+13	+2
138	Belarus	12	+3	+1
139	Nicaragua	12	-18	-4
140	Burkina Faso	12	-23	-4
141	Benin	11	+3	0
142	Solomon Islands	11	+7	+1
143	Yemen	11	+2	0
144	Antigua and Barbuda	11	+7	+1
145	Namibia	11	+3	+1
146	Tonga	10	+11	+2
147	Mali	10	-8	-2
148	Afghanistan	10	+5	0
149	Lao People's Democratic Republic	10	-3	-1
150	Vanuatu	10	+15	+5
151	Rwanda	10	-21	-4
152	Democratic Republic of the Congo	10	-5	0
153	Kyrgyzstan	9	-1	-1
154	Mauritania	9	-18	-4
155	Bahamas	9	0	0
156	Timor-Leste	9	-38	-7
157	Samoa	8	+7	+3
158	St. Kitts and Nevis	8	0	0
159	Burundi	8	-5	-1
160	St. Vincent and the Grenadines	8	-1	+1
161	Botswana	7	-1	0
162	Cabo Verde	7	-6	-2
163	Tajikistan	7	-2	0
164	Dominica	7	-2	+1
165	Sudan	6	-2	0
166	Eswatini	3	0	+1
167	Guinea-Bissau	2	+1	+1
168	Kiribati	2	+1	+1
169	Zimbabwe	2	-2	0

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DHL GLOBAL CONNECTEDNESS INDEX 2020 COUNTRY BOOK

The DHL Global Connectedness Index 2020 Country Book contains detailed profiles with the newest data for all 169 countries featured in the DHL Global Connectedness Index 2020. It also contains additional country rankings and more information about the data used to calculate the index. It can be downloaded at **www.dhl.com/gci**.

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