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DHL GLOBAL CONNECTEDNESS INDEX

Mapping the Current State of Global Flows

2019 Update

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“Not surprisingly, this 2019 update of the DHL GCI reveals that the current political climate is taking a toll.”

DEAR READER,

Fifty years ago, in 1969, three pioneering entrepreneurs had an idea that spawned an industry, and wrote business history along the way, turning the first letters of their surnames into a logo that now stands for one of the world's most international companies. The idea that Adrian Dalsey, Larry Hillblom and Robert Lynn came up with was equally simple and brilliant: delivering cargo documents by air overnight so that they arrived at customs offices well before the freight, thus enabling the goods to pass through customs faster. San Francisco is where it all started. The first port of call was Honolulu. And the rest is history.

Today, Deutsche Post DHL Group's divisions cover the entire spectrum of logistics and supply chain services across more than 220 countries and territories. Every day, our employees bring the world together, united by one common purpose: “Connecting people, improving lives.”

As a key enabler of international trade, we take a keen interest in the development of globalization. With our established, biennial DHL Global Connectedness Index (GCI), we regularly analyze the development of trade, capital, information and people flows at the global, regional and national levels. For the first time, we now also publish a compact update one year ahead of the next regular GCI release. At a time of growing protectionism and nationalism, it offers a source of fresh insight for fact-based assessments of globalization.

Not surprisingly, this update of the DHL GCI reveals that the current political climate is taking a toll. Global connectedness declined in 2018 – a development that was driven by shrinking

international capital flows. And while trade flows were surprisingly resilient in 2018, they have weakened this year amid ongoing trade tensions. In contrast, international information and people flows continue to advance, powered by digital communications and the expansion of international tourism.

There is no doubt that globalization is under pressure. But it is holding up remarkably well. The overall dip in connectedness remains limited compared to longer-term trends. In fact, the world is still more globalized than at almost any previous point in history. That's something I find very reassuring. And even today, most business activity is still local, not global. There remains a lot of room to boost prosperity by strengthening links between countries.

With a wealth of fascinating data and insights, this report should provide new perspectives for anyone interested in the current state and future of the world economy. We hope you find it both useful and inspiring.

Yours sincerely,

Frank Appel
CEO, Deutsche Post DHL Group

DEAR READER,

With globalization facing greater headwinds than we have seen in decades, a grounded perspective on how much global flows are actually changing is essential to prudent business and public policy decision-making. In response to this need, we are pleased to introduce this first DHL Global Connectedness Index update, which highlights global developments over the past year. We will release our next full DHL Global Connectedness Index report, including country rankings, in late 2020.

My key take-away from this year's report is that recent declines in global flow measures are still modest both in historical perspective and relative to the turbulence surrounding globalization in the public policy arena. Globalization is not dead, nor has it clearly given way to regionalization. Nonetheless, the past year has highlighted the costs of escalating protectionism. Rising barriers to international flows and questions about future levels of openness have contributed to a slowdown in global economic growth.

This report builds upon more than two decades of globalization research by NYU Stern and IESE Business School professor Pankaj Ghemawat, lead author of the 2011–16 editions of the DHL Global Connectedness Index. I am grateful to Pankaj for his longstanding mentorship and support. My sincere thanks also to Phillip Bastian, whose involvement has greatly strengthened this research and who has co-authored this report. Thanks also to Sinziana Dorobantu, Robert Salomon, and Robert Seamans for reviewing preliminary drafts, to Ahsan Usmani for research assistance, and to Dirk Hrdina for turning our text and graphics into a compelling visual product.

My deepest thanks to Deutsche Post DHL Group for entrusting my co-authors and myself with this project and supporting it over the years. I am especially grateful to Jill Meiburg and Johannes Oppolzer, who have championed this research and facilitated its dissemination to the widest possible audience. Finally, I would like to thank New York University's Stern School of Business for providing an excellent home as well as generous support for our research.

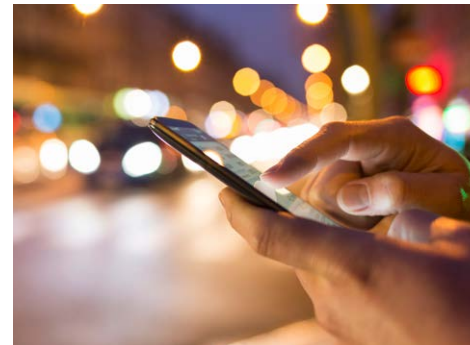


Steven A. Altman
Senior Research Scholar
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“A grounded perspective on how much global flows are changing is essential to prudent business and public policy decision-making.”

SIX KEY TAKE-AWAYS



1

The world's level of connectedness declined in 2018, reversing part of the gains that had propelled it to a record high in 2017. The DHL Global Connectedness Index was pulled down by capital flows, even as flows of trade, information, and people intensified.

2

In spite of escalating trade tensions, trade remained resilient during 2018. However, this strength has not extended into 2019: The proportion of global output traded internationally declined during the first half of the year.

3

China's reliance on exports to the U.S. was falling sharply even before the U.S.-China trade war started. The country's faster growth, however, has meant that U.S. imports from China stabilized rather than shrinking relative to the size of the U.S. economy.

4

The average distance across which countries trade has held steady since 2012. Data on global flows through 2018 do not indicate a robust shift from globalization to regionalization.

5

Digital technologies are transforming information flows. However, after nearly two decades in which growth of cross-border communications far outpaced domestic communications, both seem to be expanding at more similar rates now.

6

While the world is more connected than at almost any previous point in history, international flows are far smaller than most people presume. Most business still takes place within rather than across national borders.

EXECUTIVE SUMMARY

This report provides an update on the state and trajectory of globalization, highlighting key developments since we published the *DHL Global Connectedness Index 2018*. It focuses on global levels of connectedness. Our next ranking of the world's most internationally connected countries and regions will be released in late 2020.

As this report shows, global connectedness—as measured by flows of trade, capital, information, and people—declined in 2018. However, this decline only reversed part of the increase that had propelled globalization to a record high in 2017. Although public policy headwinds are taking a toll, the world is still more connected today than at almost any previous point in history.

This update of the DHL Global Connectedness Index covers the period from 2001 to 2018 and encompasses more than 3.5 million data points on country-to-country flows. These data show that the pullback in global connectedness in 2018 was driven by shrinking international capital flows, specifically foreign direct investment (FDI) and portfolio equity investment. While early capital flow data for 2019 suggest some stabilization, a robust recovery on these metrics remains elusive. However, a large part of the recent drop in FDI was due to U.S. tax policy changes, which have prompted U.S. multinationals to repatriate earnings held abroad. Alternative measures not affected by tax-motivated financial flows show continued growth in the international activities of multinational firms. Seen in this context, the drop in capital flows does not indicate a broad retreat from corporate globalization.

Trade flows continued to intensify through the early stages of the U.S.-China trade war in 2018. In the first half of 2019, however, the share of global output traded across national borders fell, and current forecasts call for full-year declines in 2019 and 2020. While trade volume growth is likely to remain positive over this period, it is not expected to keep pace with GDP growth. Nonetheless, current forecasts—with high uncertainty—still suggest that the share of global output traded internationally will only retreat to around its 2016 level by 2020. Thus, despite major downgrades to trade forecasts over the past year, trade's contribution to the world's overall level of connectedness is on track for only a modest decline.

“Although public policy headwinds are taking a toll, the world is still more connected today than at almost any previous point in history.”

The trade analysis in this report features special coverage of two topics. First, the U.S.-China trade war has prompted us to include a deep-dive on this key trading relationship. This analysis traces the sharp decline in U.S.-China trade amid multiple rounds of tariff escalation. More surprisingly, it also shows how the changes wrought thus far by the trade war are smaller than the transformation that has taken place due to China's growth and rebalancing toward domestic consumption over the past decade.





Second, we examine the contention that world trade may be fracturing along regional lines. The data analyzed here do not show a robust shift from globalization to regionalization. Trade and other international flows are already much more intense between neighboring countries than between distant ones. Fraying relations between major economies could combine with broader economic and technological trends to favor even stronger connections within rather than between world regions. However, such a shift has not yet conclusively taken place.

Looking beyond trade and capital flows, the globalization of information flows continues to advance, but available measures suggest a possible slowdown. Given the proliferation of digital channels, we cannot track information flows as precisely or comprehensively as we measure trade and capital flows. However, rather than propelling forward a new wave of globalization, digitization seems to be transforming both domestic and international information flows. While the growth of international communications has typically far outpaced the growth of domestic communications since at least the early 2000s, recent international growth appears to have only modestly exceeded domestic growth.

Global flows of people also continue to advance. International tourism extended a strong growth trend in 2018, although it expanded at a slower pace than during the previous two years. Outbound travel from emerging economies and liberalization of tourist visa requirements continue to power the expansion of international tourism. Migration, despite public policy controversies, also continues to grow.

“All four categories of flows measured by the DHL Global Connectedness Index—trade, capital, information, and people—face powerful headwinds.”

Looking ahead, globalization's future depends on the choices of policymakers around the world. All four categories of flows measured by the DHL Global Connectedness Index—trade, capital, information, and people—face powerful headwinds. Threats to the global trading system dominate the headlines, but corporate takeovers, data flows, and immigration have all taken their turns in the crossfire.

Prior research on the DHL Global Connectedness Index has highlighted the power of closer connections between countries to accelerate economic growth. The present context, however, puts the spotlight on even more tangible costs associated with the prospect of declining connectedness. A potential shift away from the globalization of the last half-century would leave the world with less capacity to address serious challenges many countries are facing. This makes it even more essential to track the progress of global connectedness and to inform a meaningful public debate about how to build a more prosperous future.

SECTION II

RECENT DEVELOPMENTS IN GLOBAL CONNECTEDNESS

This section analyzes the trajectory of globalization. We begin by examining the latest data on trade, capital, information, and people flows. Then, we put recent changes into historical context. Next, we look at developments across globalization's most sensitive fault line, the U.S.-China trade conflict. Finally, we take a closer look at changes in global trading patterns, examining shifts in regionalization and the distances across which countries trade.

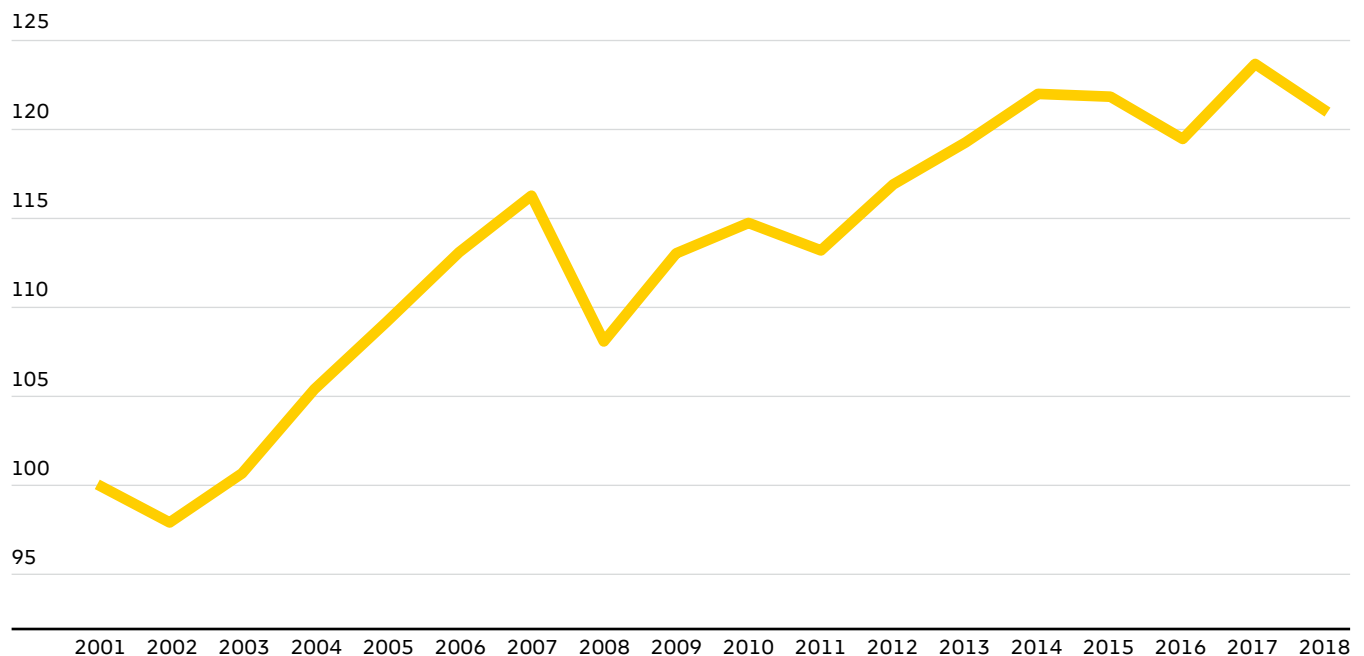
1 WHERE DOES GLOBALIZATION STAND TODAY?

The public debate about globalization scaled new rhetorical heights in 2019, with dramatic headlines such as “Globalization is dead and we need to invent a new world order”¹ facing off against others such as “Globalization isn’t dying, it’s just evolving.”² Are we really witnessing the beginning of a deglobalization revolution? Is globalization giving way to regionalization? Or will digitization power a new wave of global integration? Political and technological changes could, in principle, bring about any of these transformations. But if we put aside the policy debates and predictions to focus instead on actual flows between countries, the global data—thus far—suggest evolution more than revolution.

The DHL Global Connectedness Index measures globalization based on trade, capital, information, and people flows.³ As shown in **Figure 1**, the index declined in 2018.⁴ However, it only gave up *part* of the increase that propelled it to a record high in 2017. Two years after the twin shocks of 2016—the Brexit vote in the UK and the election of President Trump in the U.S.—the world is still more connected than at almost any previous point in history.

To begin to explain why global connectedness declined in 2018, **Figure 2** separates the overall index into four *pillars*: trade, capital, information, and people. These pillars summarize connectedness trends across the individual types of flows (and stocks accumulated from prior year flows) that comprise the index.

FIGURE 1: DHL GLOBAL CONNECTEDNESS INDEX, 2001 – 2018



The DHL Global Connectedness Index retreated from its 2017 peak, but its 2018 level is still close to the all-time high.

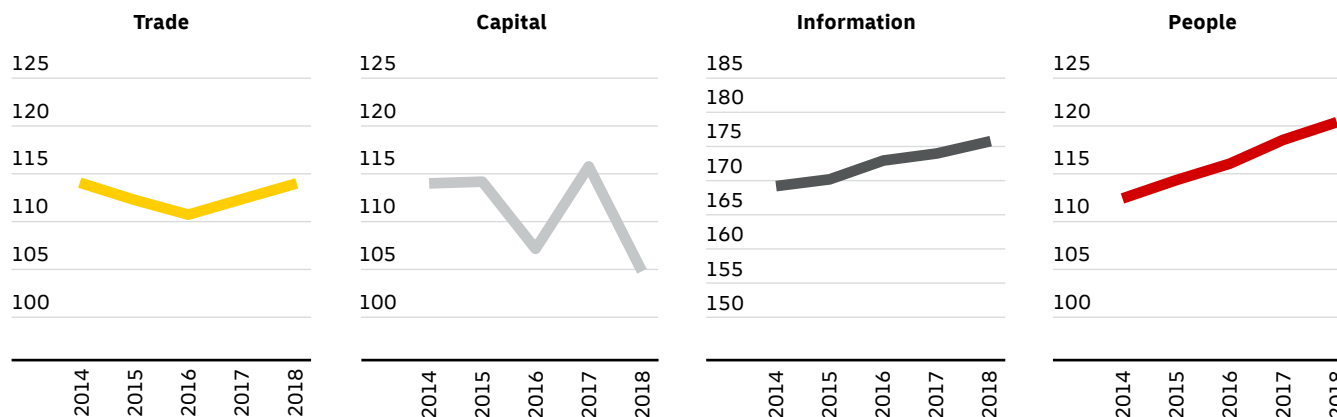
“In 2018, the DHL Global Connectedness Index gave up part of the gains that propelled it to a record high in 2017.”

The drop in global connectedness in 2018 was driven by the capital pillar. Shrinking international capital flows pulled the index down below its peak level. More specifically, flows of foreign direct investment (FDI) and portfolio equity investment both fell, and FDI stocks declined as well. Changes in U.S. tax policy that went into effect at the beginning of 2018 prompted U.S. multinationals to repatriate earnings they had been holding abroad, putting downward pressure on global FDI flows and stocks, as discussed in **Section IV**. By contrast, flows of trade, information, and people all intensified in 2018.

Currently available data do not permit us to calculate the full DHL Global Connectedness Index past 2018. But we can extend the most volatile parts of the index, those capturing trade and capital flows, into 2019 using quarterly data (See **Figure 3**). However, we should note that these data capture only part of the overall index: they measure the size of trade and capital flows compared to the size of domestic activity (what we call *depth*). They do not measure whether these flows are spread out globally or more narrowly focused between specific countries (what we call *breadth*).

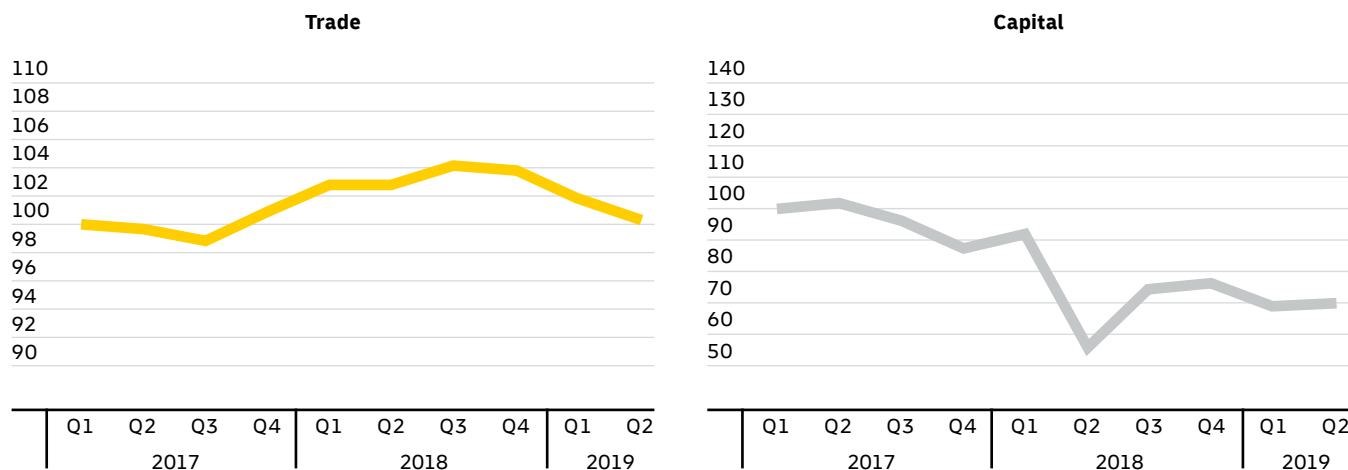
Quarterly trade data indicate that the resilience of trade flows as tensions escalated during 2018 did not extend into 2019. The proportion of output traded internationally declined in both of the first two quarters of 2019, down to roughly its level during the second half of 2017.⁶ Rising trade barriers and slowing macroeconomic growth are beginning to take a toll. Trade forecasts for the full year 2019 have been downgraded repeatedly, and most forecasts released

FIGURE 2: FOUR PILLARS OF GLOBAL CONNECTEDNESS: TRADE, CAPITAL, INFORMATION, AND PEOPLE, 2014 – 2018



The decline in global connectedness in 2018 was driven by the capital pillar. The trade, information, and people pillars all saw moderate growth in 2018.

FIGURE 3: QUARTERLY TRADE AND CAPITAL DEPTH TRENDS, 2017 – 2019⁵



Preliminary analysis indicates that trade intensity declined in the first half of 2019, while a falling trend in capital flows moderated.

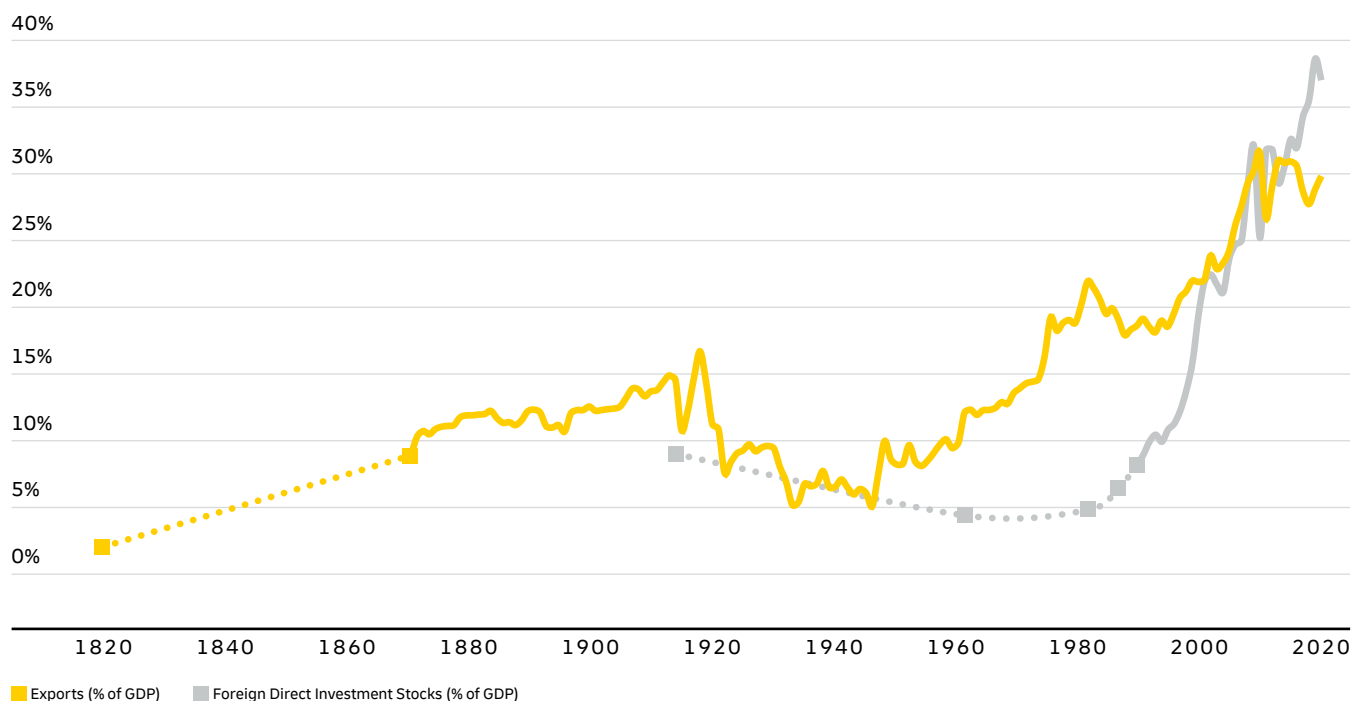
in the latter part of 2019 call for slower trade volume growth than GDP growth, implying that a full-year decline in trade intensity is likely. On a more positive note, however, recent forecasts call for trade growth to accelerate in 2020.⁷

Quarterly data on the intensity of international capital flows, in contrast to the trade data, suggest some stabilization relative to recent declines. Preliminary measures indicate that capital depth in the first two quarters of 2019 was just slightly below its 2018 full-year level. The one-time effects of U.S. tax policy changes appear to be fading, and the United Nations Conference on Trade and Development (UNCTAD) forecasts a return to growth for FDI in 2019.

To maintain a balanced perspective, it is essential to consider the recent weakness in trade and capital flows in historical perspective. **Figure 4** tracks trade flows and FDI stocks relative to world GDP over more than a century. This chart highlights how the recent dips on both metrics are small in comparison to how much they have grown over decades.

Exports as a percentage of world GDP in 2018—despite a weak post-crisis recovery—was still 25% higher than in 2000, more than twice as high as in 1970, and almost six times higher than in 1945. Meanwhile, the ratio of FDI stocks to world GDP is still above its 2016 level, almost four times higher than it was in 1990. We will examine trends since 2001 in greater detail in the next subsection of this report. But these long-term comparisons highlight the salience of NYU Stern and IESE Business School professor Pankaj Ghemawat's warnings about equating declines in globalization

FIGURE 4: WORLD EXPORTS AND FDI STOCKS (PERCENT OF GDP), 1820 – 2018⁸



While trade depth in 2018 was below its 2008 peak, this pullback is relatively small compared to the dramatic growth of trade intensity since the mid-20th Century. The deepening of FDI stocks is a more recent phenomenon, and its decline in 2018 is small relative to a sharply rising trend beginning in the 1990s.

metrics with the end of globalization. In Ghemawat's words, "It would be a mistake to talk about the end of globalization: The 'rewind' button on a tape recorder shouldn't be confused with the 'off' button."⁹

The latest data on information and people flows also corroborate the sense that globalization has not broadly gone into reverse. International information flows have continued to intensify, with both international internet traffic and voice

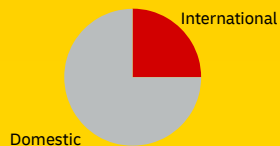
calls growing faster than their domestic counterparts have. However, this trend appears to have slowed since 2014, as we discuss later in this report. Meanwhile, the rapid growth of international tourism has continued to power gains on the people pillar of the index, and international migration continues to rise as well.

HOW GLOBAL CONNECTEDNESS IS MEASURED IN THIS REPORT

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

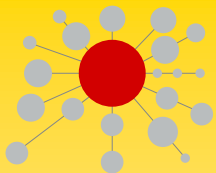
We could measure these flows by just tracking metrics such as the quantity of traded goods, the amount of international investment or the number of migrants. But a sole focus on such absolute numbers says little about the actual extent of globalization. As an example, should we be afraid of hyper-globalization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

Depth
International flows relative to domestic activity



1. **We measure the *depth* of international flows:** This means we compare each cross-border flow to relevant domestic activities. For trade, for example, we compare exports to total economic output. This and other ratios help us evaluate 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.

Breadth
Geographic Distribution of International Flows



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 2018. Altogether, this analysis draws on more than 3.5 million data points across the 12 measures of country-to-country flows listed below.



TRADE

- Merchandise Trade
- Services Trade



CAPITAL

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



INFORMATION

- International Internet Traffic
- Telephone Call Minutes
- Trade in Printed Publications



PEOPLE

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

→ For more about the DHL Global Connectedness Index methodology and a list of data sources, refer to Section VI at the back of this report. A full technical description of the index methodology is provided in Chapter 3 of the DHL Global Connectedness 2018 report, available for free download at logistics.dhl/gci.

2 HOW HAVE GLOBAL FLOWS EVOLVED BETWEEN 2001 AND 2018?

When we look back at the evolution of global connectedness over the period since 2001 (Figures 5 and 6), three distinct phases stand out:

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 up markets and attracting foreign investment. The internet's explosive growth expanded international information flows. Globalization seemed, to many, an unstoppable force. *New York Times* columnist Thomas Friedman captured the spirit of this period in his 2005 book, *The World is Flat*, the best-selling book ever written about globalization.

2007 – 2009: GLOBAL FINANCIAL CRISIS

The global financial crisis that began to unfold in 2007 was widely viewed as the worst since the Great Depression. It also brought about the sharpest decline in the DHL Global Connectedness Index over the period for which the index has been calculated (since 2001). Capital flows plummeted first, as financial markets cratered and investors sought safety. Trade was the next domino to fall, as the downturn 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. In 2009, the term “deglobalization” entered the mainstream debate, and *Foreign Affairs* ran an article titled “Globalization in Retreat.”¹⁰ More recent publications have also emphasized the global financial crisis as a pivotal transition in the course of globalization. In January 2019, *The Economist* adopted Adjiedj Bakas's term “slowbalization” to describe the period since 2008.¹¹

2009 – 2018: VOLATILE AND UNEVEN RECOVERY

After the 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, economic recovery was painfully sluggish. The Eurozone crisis prolonged the pain, depressing international flows in Europe, the world's most connected region. Protectionist trade policies outnumbered liberalizing policies, and the proportion of new investment policy measures favoring foreign direct investment was lower than before the crisis.¹²

The post-crisis period has also been marked by uneven growth across types of international flows. The intensity of global trade and capital flows remains *below* its pre-crisis peak. Both of these pillars of the index rebounded from their crisis-era lows, but neither resumed the steady pattern of increases that prevailed before the crisis. In contrast, information and people flows did continue to advance, with both of these pillars setting new records year after year. We discuss the development and future prospects for each of the four types of flows in **Section IV**.



The dramatic changes over recent years are mostly driven by changes in the intensity of globalization (the *depth dimension*).

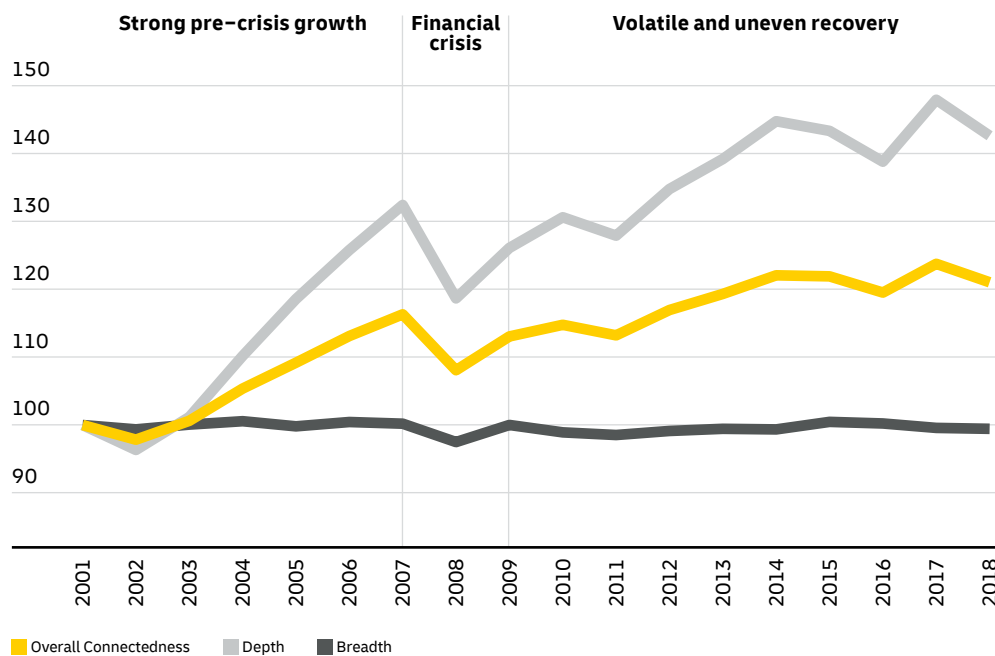
This is the dimension that varies the most over time. After all, flow volumes can expand or contract sharply due to macroeconomic or other shifts. Therefore, they typically drive developments of overall connectedness.

The 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' geographic locations.

In 2016, political shocks prompted even deeper questions about the future of globalization.¹³ When the UK voted to leave the European Union, the *Washington Post* ran the headline, “Britain just killed globalization as we know it.”¹⁴ And when Donald Trump won the presidency in the U.S., *The Guardian* proclaimed, “Globalization is dead.”¹⁵ In 2018, Trump's trade policy threats turned from rhetoric to reality, leading to a series of tit-for-tat tariff escalations, particularly between the U.S. and China. In the next subsection, we examine the latest data on the U.S.-China trade war.



FIGURE 5: TRENDS IN GLOBAL CONNECTEDNESS, 2001 – 2018



Trends in the DHL Global Connectedness Index can be broken into three phases: the pre-crisis phase, when global connectedness grew steadily, a major drop and partial rebound during the global financial crisis, and a volatile and uneven recovery in the post-crisis era.

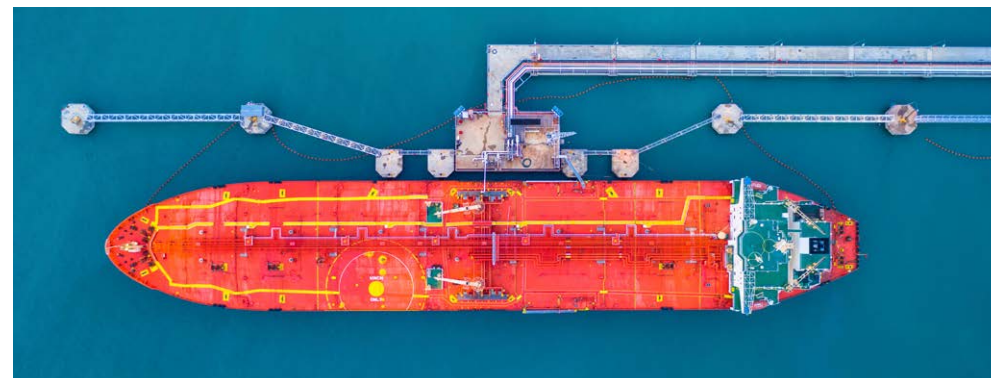
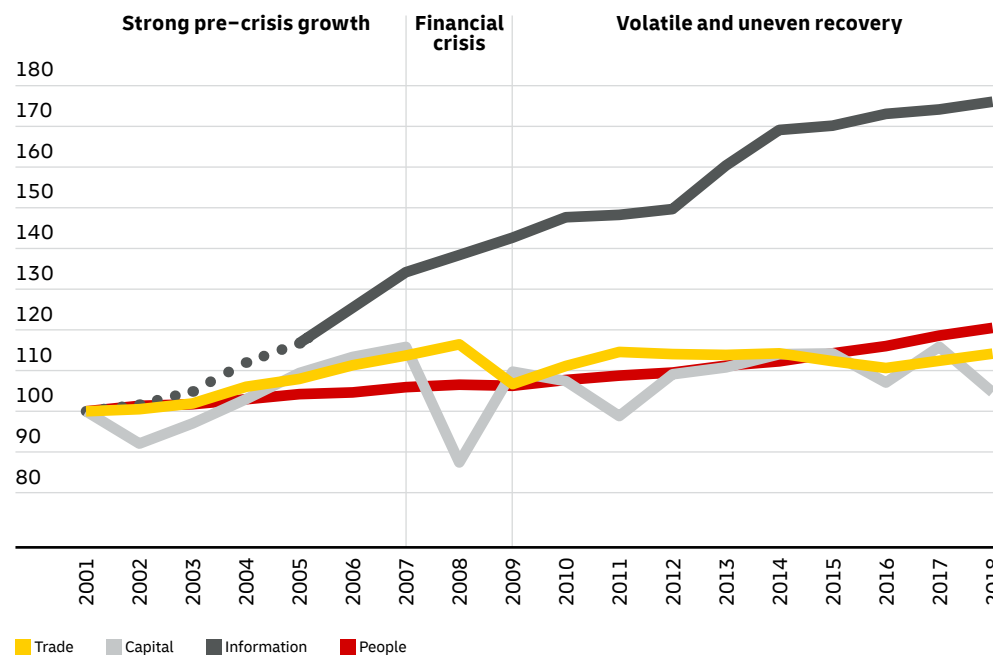


FIGURE 6: FOUR PILLARS OF GLOBAL CONNECTEDNESS, 2001 – 2018



The trade and capital pillars of the index have been volatile, rising in the pre-crisis era before crashing during the crisis years, and fluctuating below their prior peaks in the post-crisis period. By contrast, the information and people pillars have risen in every year since 2001. Note: Information pillar does not include internet traffic prior to 2005.

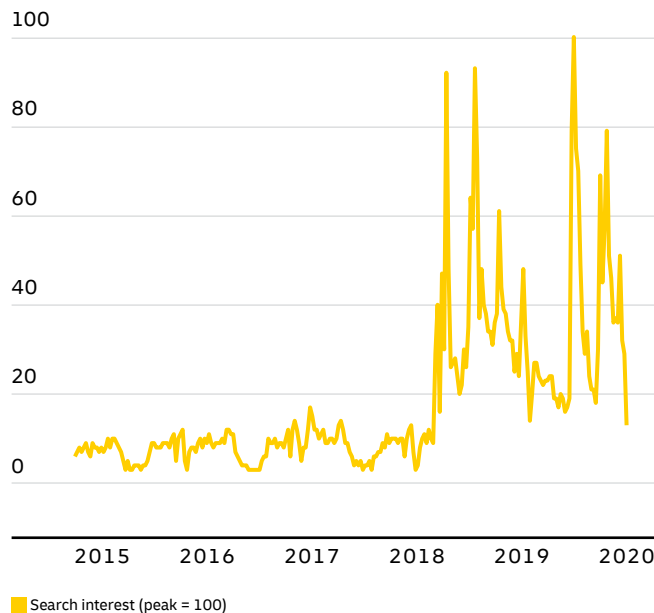
3 THE U.S.-CHINA TRADE WAR

One of U.S. President Donald Trump's main promises during the 2016 campaign was that he would get tough with China on trade. Although there were some hints of this policy starting early on in his presidency, it was on March 1, 2018 that this promise really started to come to fruition, with the announcement of new steel and aluminum tariffs. Google searches for "trade war" spiked (see Figure 7), and Trump responded to a slew of critical editorials by tweeting, "trade wars are good, and easy to win." This launched what would become the largest proliferation of tit-for-tat tariff escalation since the 1930s. The International Monetary Fund (IMF) forecasts that U.S.-China trade tensions will reduce global GDP a cumulative 0.8% by 2020.¹⁶

While other countries were caught up in some of the tariffs early on, China was Trump's primary focus from the beginning. The average U.S. tariff imposed on imports from China rose from roughly 3% at the beginning of 2018 to 21% in September 2019. In response, China raised its average tariff on imports from the U.S. from 8% to 22%. In contrast, China lowered its average tariff on imports from the rest of the world from 8% to 6.7%.¹⁷

Nor was tariff escalation the only front in the conflict. Huawei, China's top telecommunications equipment company, faced restrictions on its access to U.S. technology, battles over its sales of 5G networking gear, and the arrest of its Chief Financial Officer. Currency conflicts resurfaced as China allowed the yuan to fall below 7 per U.S. dollar, prompting the U.S. to label China a currency manipulator. Perhaps most provocatively, U.S. president Trump tweeted

FIGURE 7: GOOGLE SEARCH INTEREST FOR "TRADE WAR" WORLDWIDE, JAN 2015 TO SEP 2019



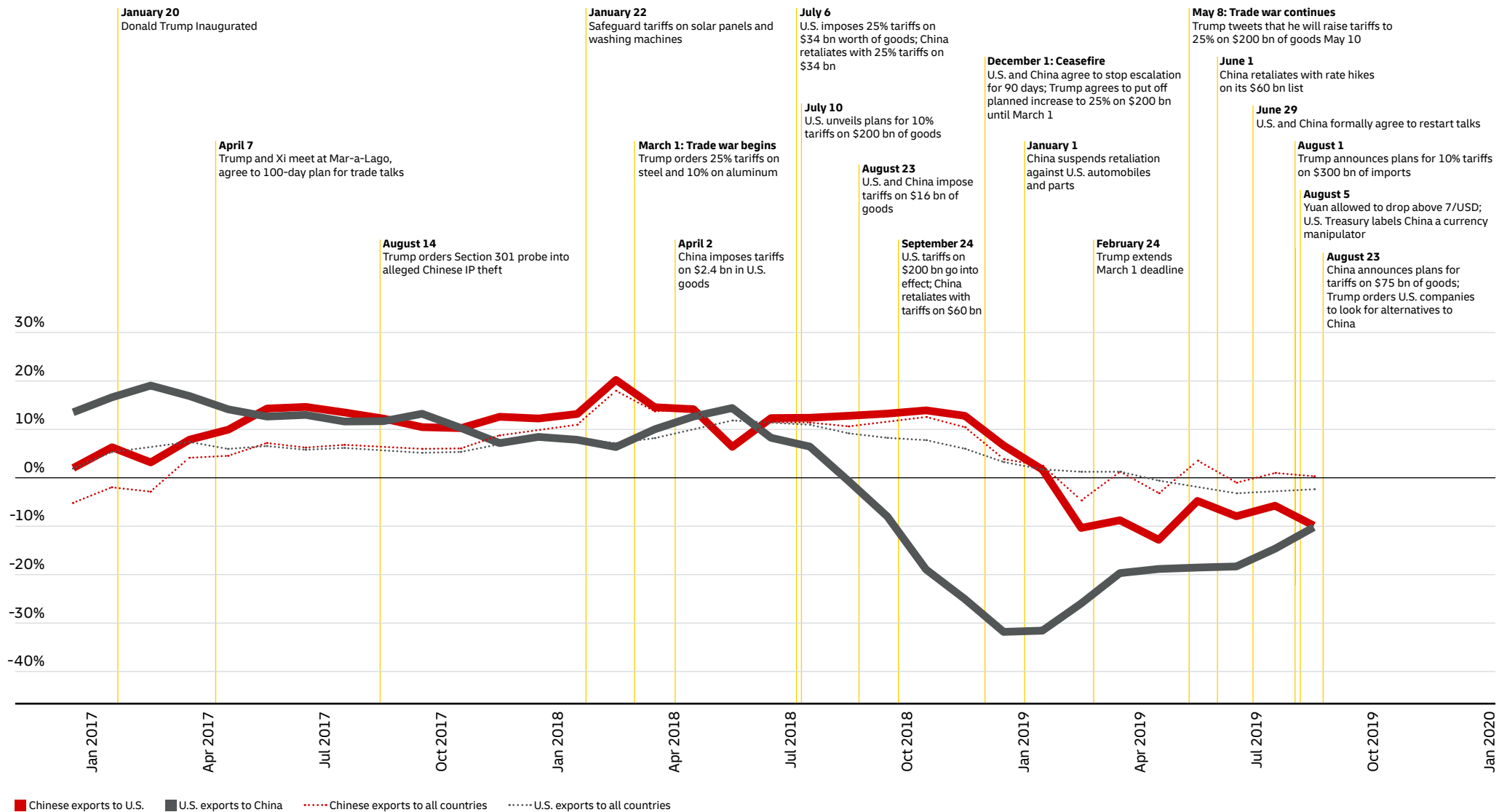
Searches for "trade war" on Google show how this topic surged from obscurity to become a major focus since March 2018.

Data source: Google Trends

in August 2019, "Our great American companies are hereby ordered to immediately start looking for an alternative to China."¹⁸

Amid the policy crossfire, what actually happened to U.S.-China trade flows? Figure 8 tracks year-on-year merchandise exports growth for the U.S. and China. Both countries' trade with the other declined sharply, and both countries' overall exports to the world flattened by mid-2019. The decline in U.S. exports to China started first, and it has been deeper in percentage terms than the decline in Chinese exports to the U.S. Over the three months ending in December 2019, U.S. exports to China were down 32% versus the same period a year earlier. By contrast, the largest decline for China was a 13% drop in the three months ending April 2019. Since China exports more to the U.S. than vice versa, though, the absolute fall in Chinese exports has been larger.

While the trade data alone highlight the distinct effects of the conflict, thus far, for the U.S. and China, a broader understanding requires a sense of how the trade history that led up to the present conflict looks very different from the Chinese versus the American perspective, to which we turn next.

FIGURE 8: U.S.-CHINA MERCHANDISE EXPORT GROWTH, YEAR-ON-YEAR, JANUARY 2017 THROUGH AUGUST 2019¹⁹

Trade between the U.S. and China shrunk significantly amid waves of tariff increases, while both countries' exports to the world flattened. Note: 3-month moving average



TRADE TRENDS IN CHINESE CONTEXT

From the Chinese perspective (shown in **Figure 9**), it is essential to recognize how recent trends fit into China's rebalancing away from export-led growth. China jump-started its economic miracle by focusing on export markets. After China joined the World Trade Organization (WTO) in 2001, merchandise exports soared from 20% of China's GDP to 35%. In 2006, a whopping 7.4% of China's entire economic output was exported to the U.S. alone.²⁰

Facing intense pressure from abroad, China began allowing its currency to rise in 2005, and its 11th five-year plan (published in 2006) called for a shift from exports to domestic consumption.²¹ By 2017, the share of China's output going to the U.S. was down to 3.6%. Even before the trade war began, the proportion of China's output destined for the U.S. market had already fallen by more than half. Most of the decline in China's reliance on the U.S. market reflected its rebalancing

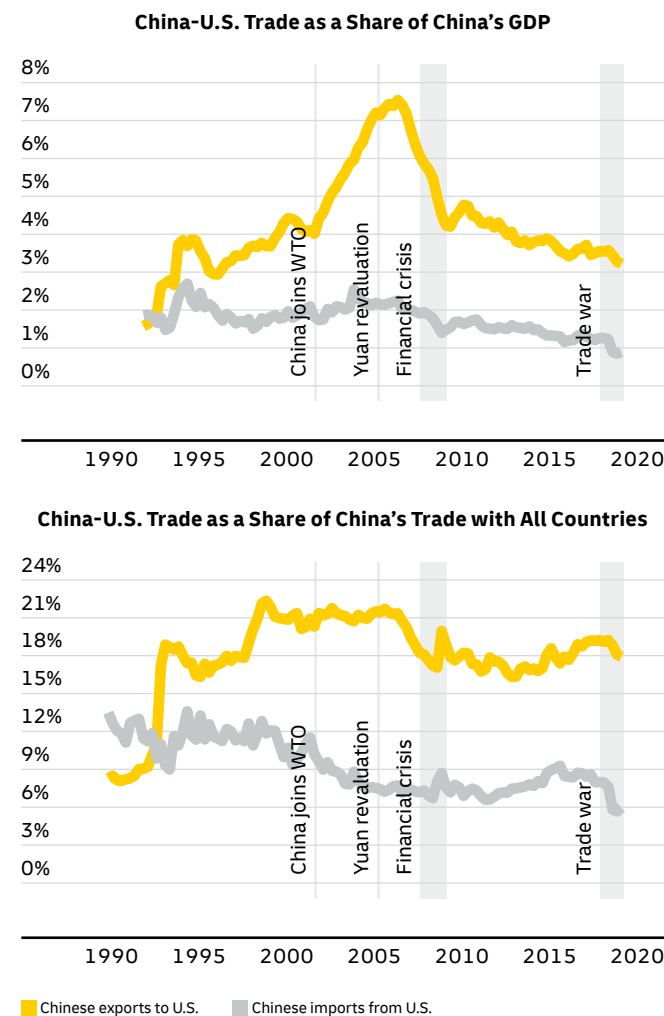
away from exports in general. The share of China's exports going specifically to the U.S. declined only from 21% in 2006 to 19% in 2017.

In comparison to these longer-run developments, the effects of the trade war, thus far, on China's exports have been smaller. Exports to the U.S. have fallen from 3.5% of China's GDP in the first quarter of 2018 to 3.2% in the second quarter of 2019, as the overall proportion of China's output destined for international markets remained flat. The share of China's total exports going to the U.S. fell just over one percentage point to 18% in the second quarter of 2019.

More dramatic, in contrast, is the decline in China's imports from the U.S. The U.S. share of China's imports fell from 8.0% in the first quarter of 2018 to 5.7% in the second quarter of 2019. Recall that as China dramatically raised tariffs on U.S. imports, it modestly reduced tariffs on other trade partners.²²

“Even before the trade war began, the proportion of China's output destined for the U.S. market had already fallen by more than half.”

FIGURE 9: CHINA-U.S. MERCHANDISE TRADE FROM THE CHINESE PERSPECTIVE



China's merchandise exports to the U.S. as a percentage of its GDP grew rapidly from the early 1990s to a peak in 2006 and then fell by more than half. China's merchandise imports from the U.S., by contrast, have declined modestly as a percentage of its GDP.

Note: Seasonally adjusted. Data sources: IMF, OECD



TRADE TRENDS IN AMERICAN CONTEXT

China's rebalancing over the past decade led to a plummeting share of its output going to the U.S. However, this development looks much less dramatic from the U.S. perspective. The reason for this is that China's economy also grew much faster than the U.S. economy. As a result, merchandise imports from China did not decline as a share of the U.S. economy (see **Figure 10**). From 1990 to 2010, imports from China rose from 0.3% of U.S. GDP to 2.6%, but they were still at 2.6% in 2017. According to MIT economist David Autor, "The China shock on large-scale manufacturing and its mass employment effects, that part is largely behind us."²³

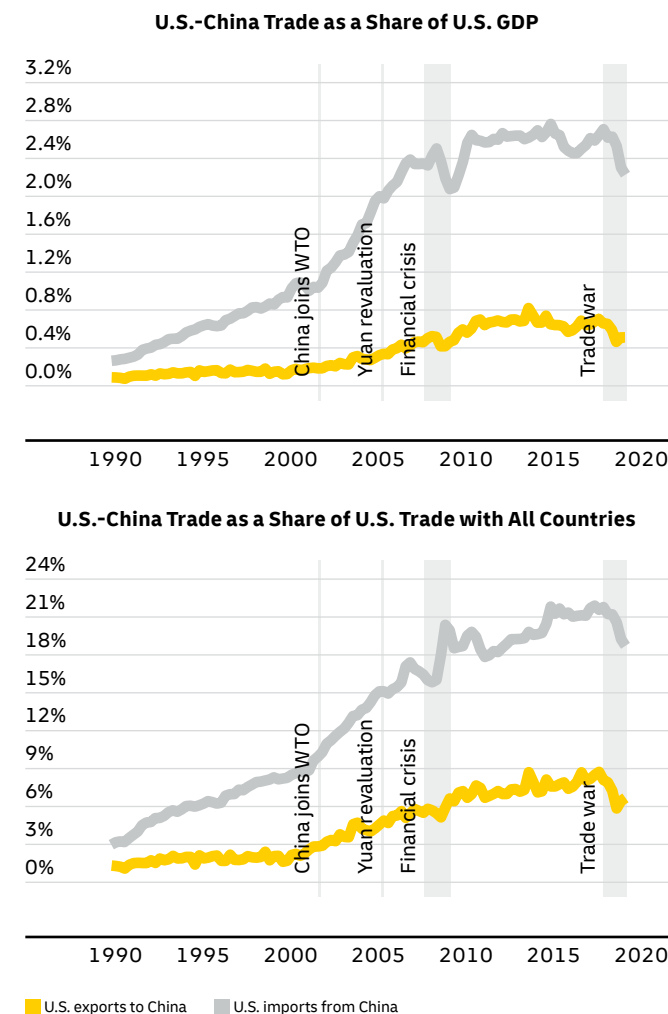
Meanwhile, it would be a mistake to ignore U.S. exports. The share of U.S. goods exports going to China rose from 2.1% in 2000 to 8.4% in 2017. And China's share of U.S. services exports grew almost as swiftly, from 1.8% to 7.2%.

Since the start of the trade war, trade with China as a share of U.S. GDP has dropped to a level last seen during the global financial crisis. U.S. exports to China as a share of U.S. GDP fell 22% from the first quarter of 2018 to the second quarter of 2019, while Chinese exports to the U.S. fell just 8.7% as a share of Chinese GDP. Nonetheless, given China's much greater initial reliance on exports to the U.S., the absolute decline was larger for China. Exports to the U.S. declined from 3.5% of China's GDP to 3.2%, while exports to China declined from just 0.66% of U.S. GDP to 0.51%.

Additionally, the U.S. trade deficit as a percent of GDP has remained fairly stable since the onset of the trade war, rather than shrinking. The U.S. bilateral trade deficit with China is modestly smaller, but this has been offset by larger deficits with other trading partners.²⁴ An UNCTAD analysis shows that Taiwan, Mexico, the EU and Viet Nam are among the exporters that benefited most from U.S. imports diverted away from China.²⁵

Finally, one should keep in mind that both the U.S. and China, with their enormous domestic markets, rely less on international trade than do most economies. Despite all of the concern about imports in U.S. politics, imports only equal about 15% of U.S. GDP. At that level, the U.S. ranks last among advanced economies and only five emerging economies import less intensively than the U.S. does.²⁶ And even though China runs a trade surplus, it exports less than 19% of its total output, putting it in the bottom sixth of nations.²⁷

FIGURE 10: U.S.-CHINA MERCHANDISE TRADE FROM THE AMERICAN PERSPECTIVE



U.S. merchandise imports from China grew rapidly as a share of U.S. GDP from the 1990s to mid-2000s, but have since plateaued. U.S. merchandise exports to China are a smaller percentage of GDP, but were a growing share of U.S. exports until the trade war.

Note: Seasonally adjusted. Data sources: IMF, OECD

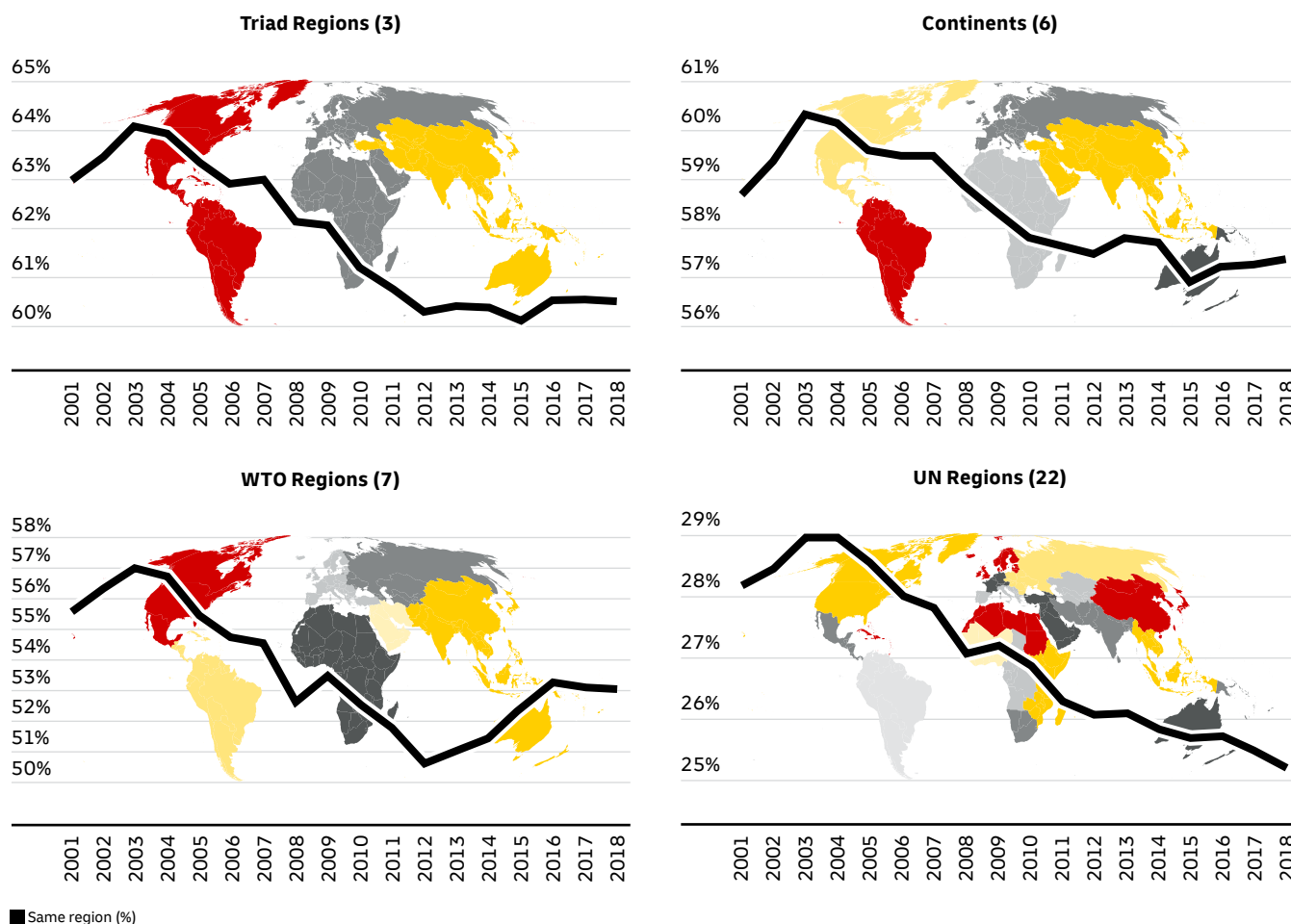
4 IS GLOBALIZATION GIVING WAY TO REGIONALIZATION?

One of the major themes in recent analysis about globalization is the contention that the world could be fracturing along regional lines.²⁸ It is indeed plausible that a multipolar world, with fraying relations between the largest economies, could lead to a higher proportion of international flows happening within regions. So could new technologies that make it more efficient to produce goods closer to their final markets. However, the data on actual international flows do not conclusively demonstrate that a major realignment along regional lines is underway. This is important, because companies and countries must make decisions today based on expectations about future linkages between countries. If decision makers over-weight the probability of a major shift toward regionalization, companies are liable to invest in sub-optimal supply chain arrangements, and governments could misdirect their economic development efforts.

In support of the argument that globalization is giving way to regionalization, several observers have pointed to an increase in the intra-regional proportion of trade flows since 2012.²⁹ We raise three concerns about that reading of the recent trade data.

First, the rebound in trade regionalization after 2012 is not robust to alternative ways of classifying countries into regions. **Figure 11** tracks the intra-regional proportion of world merchandise trade flows using four alternative region classifications, which are depicted in the maps shown behind the trendlines. Only one of the four region classifications—a seven-region version using a classification from the World

FIGURE 11: MERCHANDISE TRADE, PERCENT INTRA-REGIONAL WITH DIFFERENT REGION CLASSIFICATIONS³⁰



Whether or not trade became more regionalized since 2012 depends on how countries are grouped into regions. A significant regionalization trend appears when using only one out of the four classification schemes tested here, the seven-region classification from the World Trade Organization (WTO).

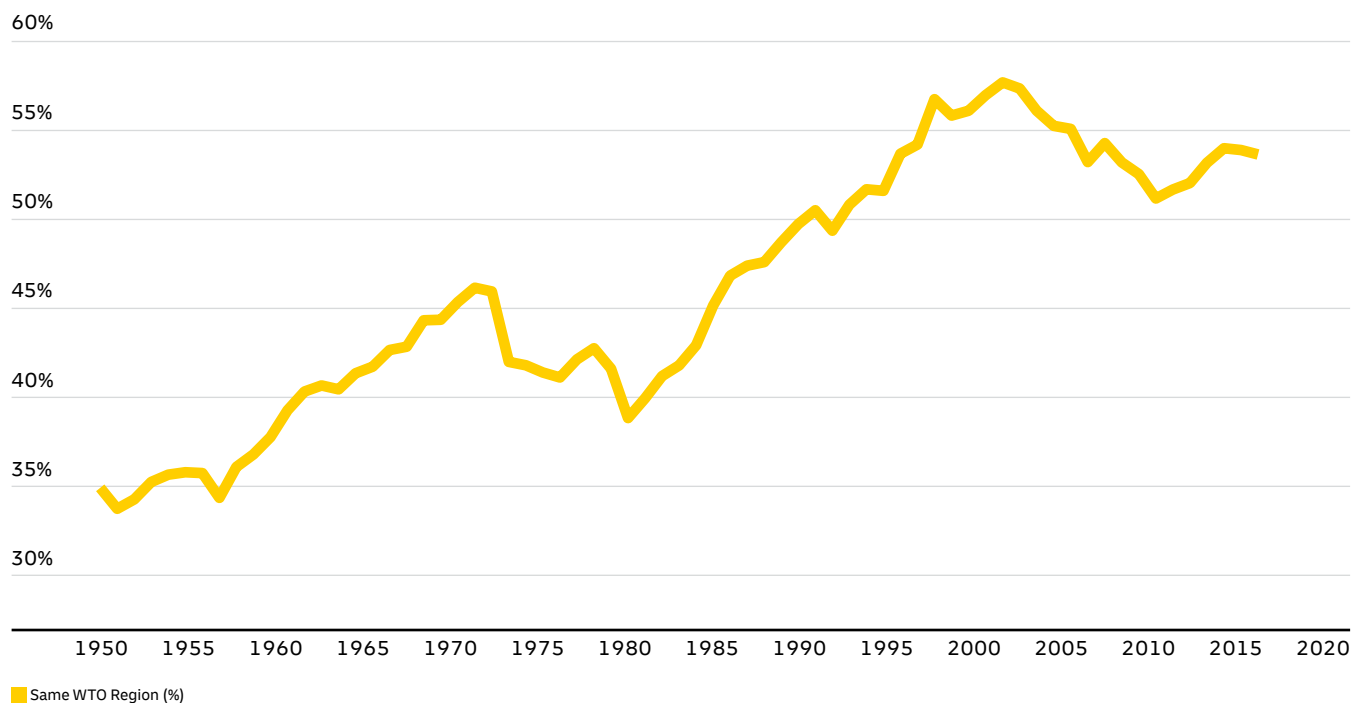
Trade Organization (WTO)—shows a clear rebound in trade regionalization after 2012 (bottom left panel of Figure 11).³¹

Second, even using this WTO region classification, the rising trend appears only from 2012 through 2016. In 2017 and 2018, trade regionalization appears to have declined very modestly. Thus, the rising trend that does show up in the global trade data may have already ended.

Third, recent changes in trade regionalization are relatively small in historical context. **Figure 12** extends the time series using the WTO classification back to 1950. Contrast, for example, the recent uptick from 51% intra-regional trade in 2012 to 54% in 2016 versus the surge from 39% in 1981 to 58% in 2003. It is also important to note that the decline between 2003 and 2012 was more than twice as large as the increase from 2012 to 2016.

Since different choices about how to classify countries into regions lead to very different conclusions, and all such classification schemes involve subjective judgments, we prefer to focus on a more objective measure of shifts in global trade patterns: the average distance traversed by merchandise trade flows.³² If there really was a robust shift toward regionalization, one would expect trade, on average, to take place over shorter distances. **Figure 13** shows that trade flows are no longer stretching over longer distances, as they were before 2012, but the average distance across which they take place is stable rather than declining.

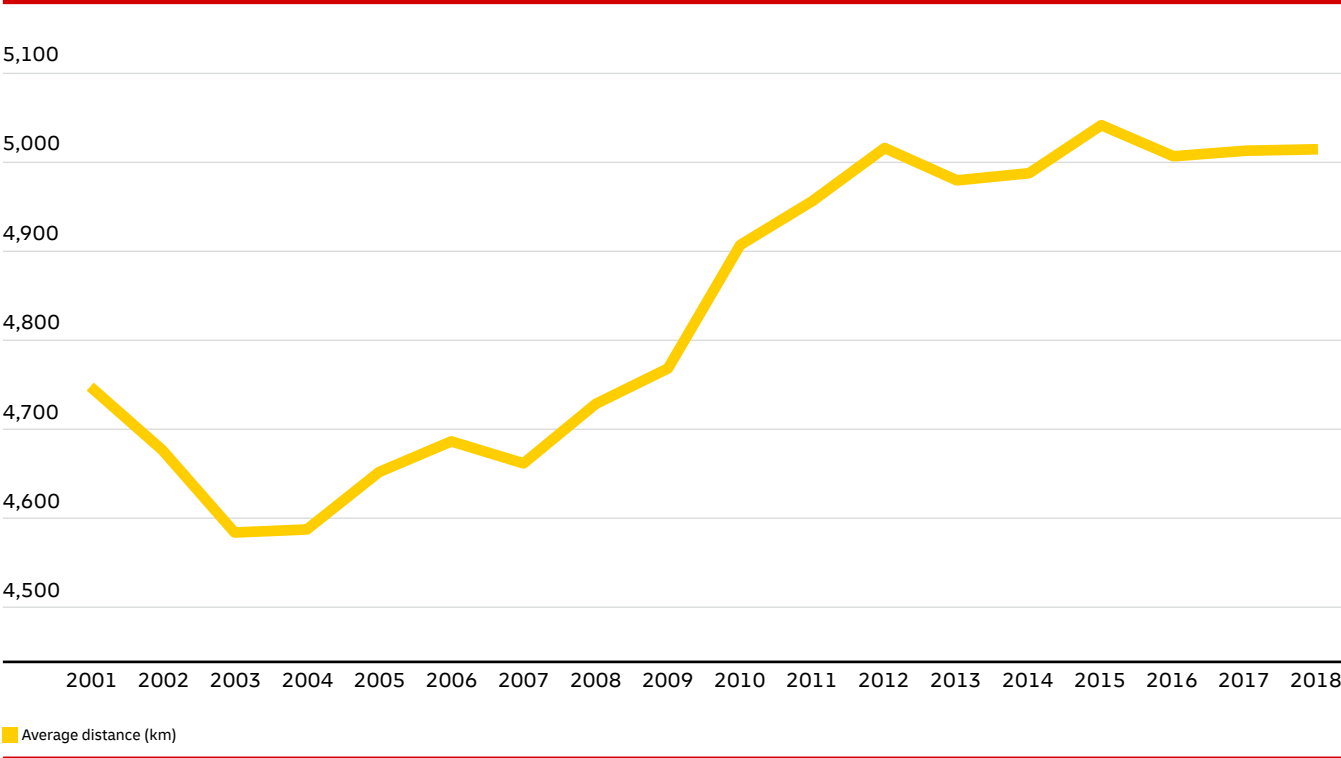
FIGURE 12: MERCHANDISE TRADE, PERCENT INTRA-REGIONAL USING WTO REGION CLASSIFICATION, 1950 – 2018



Although trade became more regionalized using the WTO region classification scheme between 2012 and 2016, that change was small in historical context.

Data sources: IMF Direction of Trade Statistics (DOTS), WTO

FIGURE 13: AVERAGE DISTANCE TRAVERSED BY MERCHANDISE TRADE (KILOMETERS), 1950 – 2018



The average distance traversed by trade is an alternative way to measure shifting trade patterns. This measure shows a levelling off since 2012, rather than a decline, as one would expect if trade had become significantly more regionalized.

Data sources: IMF Direction of Trade Statistics (DOTS), UN Comtrade, and CEPII GeoDist database

These results, to recap the point with which we opened this subsection, imply that actual trade flows do not demonstrate a clear shift from globalization to regionalization. Long-distance trade has not, at the aggregate global level, declined in favor of short-distance trade. Shifts in the

composition of the world economy, new technologies, or breakdowns in international relations could still bring about such a transformation, but it remains a possibility rather than a historical fact.

ARE FLOWS OTHER THAN TRADE BECOMING MORE REGIONALIZED?

Most types of international flows have stretched out over *greater* distances since 2012, becoming *less* regionalized. Across the following sample of flows, only telephone calls and migration have taken place, on average, over shorter distances.

	Change in Average Distance since 2012
Merchandise Trade	→
Foreign Direct Investment	↑
Portfolio Equity Investment	↑
Telephone Calls	↓
Migration	↓
University Students	↑
Tourists	↑

Looking beyond trade, it is also important to recognize that regionalization is not a new phenomenon. International business research since the seminal work of Alan Rugman and Alain Verbeke in the early 2000s has emphasized how most large multinational firms operate regionally rather than globally.³³

SECTION III

THE EXTENT OF GLOBAL CONNECTEDNESS

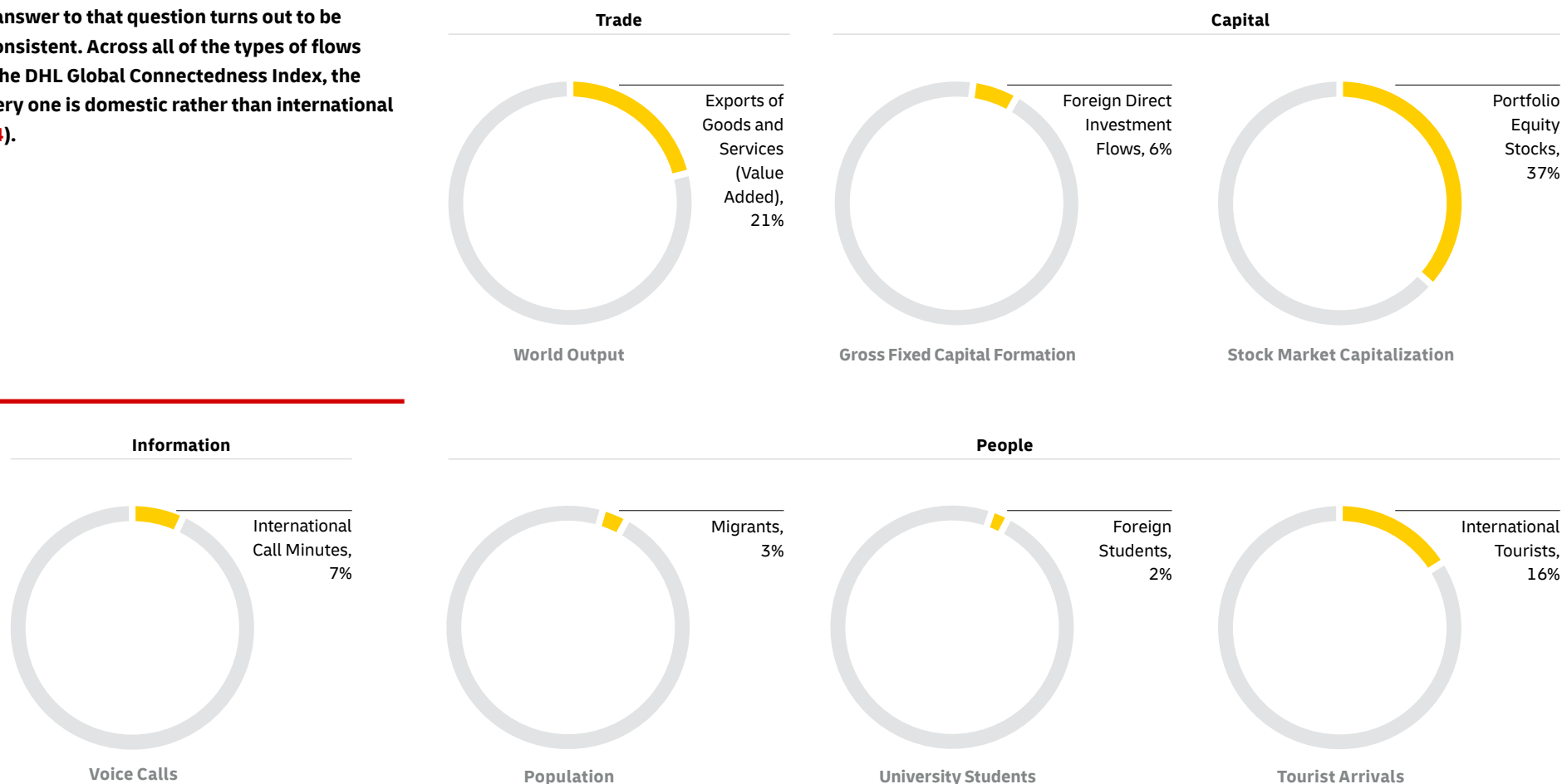
The previous section described how global connectedness has developed in recent years, highlighting how the data suggest that globalization continues to evolve, but it has not—or at least not yet—clearly gone into reverse. Considering these developments, how connected is the world today? Are we living in an age of hyper-globalization or are the world's flows not very globalized at all? The following subsections will examine this question, measuring actual levels of globalization and comparing the results with what most people believe.



1 HOW SIGNIFICANT ARE GLOBAL FLOWS?

For any kind of activity that could happen either domestically or internationally, how much actually crosses national borders? The answer to that question turns out to be surprisingly consistent. Across all of the types of flows measured on the DHL Global Connectedness Index, the majority of every one is domestic rather than international (see Figure 14).

FIGURE 14: MOST FLOWS ARE PRIMARILY DOMESTIC RATHER THAN INTERNATIONAL, 2018³⁴



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



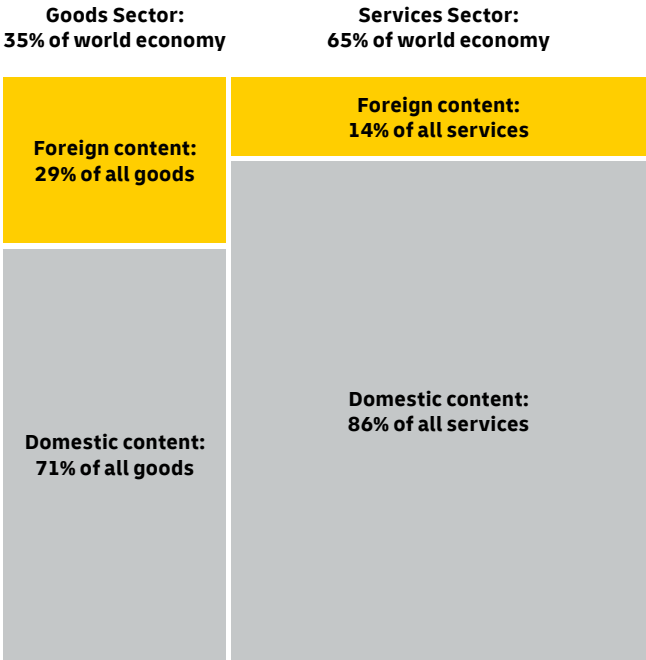
In some cases, domestic activity far surpasses international activity. For example, just about 21% of all of the economic output generated around the world is exported,³⁵ roughly 7% of telephone calls (including calls over the internet) are international, foreign direct investment (FDI) flows equal 6% of gross fixed capital formation, and a mere 3% of people live outside of the countries where they were born. In **Section IV**, we provide additional details about these metrics and discuss how they are trending. The key point here, however, is simply that most trade, capital, information, and people flows are domestic rather than international.

From a business perspective, it is important to keep in mind that the significance of global flows varies widely across industries. While tangible goods often come to mind first in conceptions of economic globalization, modern economies are dominated by services. In 2015, roughly two-thirds of all

of the output consumed or invested around the world (“final demand”) was in the services sector, which is much less globalized than goods-producing sectors (**Figure 15**). Roughly 14% of all of the value that went into services came from outside of the country where it ultimately ended up, as compared to 29% for goods.³⁶

The preponderance of services in the world economy helps to explain why the proportion of foreign labels on store shelves seems to be much higher than the share of world output that is traded across borders. Even when we buy foreign goods, part of what we are paying for is domestic services. According to a study published by the Federal Reserve Bank of San Francisco, more than half of what Americans pay for goods imported from China goes to “U.S. businesses and workers transporting, selling, and marketing goods carrying the ‘made in China’ label.”³⁷

FIGURE 15: GLOBALIZATION OF GOODS VERSUS SERVICES, 2015



Two-thirds of the world economy is in the services sector, which is much less globalized than goods-producing sectors. Just 14% of value added in services final demand comes from abroad, as compared to 29% for goods. Data source: OECD Trade in Value Added (TiVA) database

2 HOW BROADLY DISTRIBUTED ARE INTERNATIONAL FLOWS?

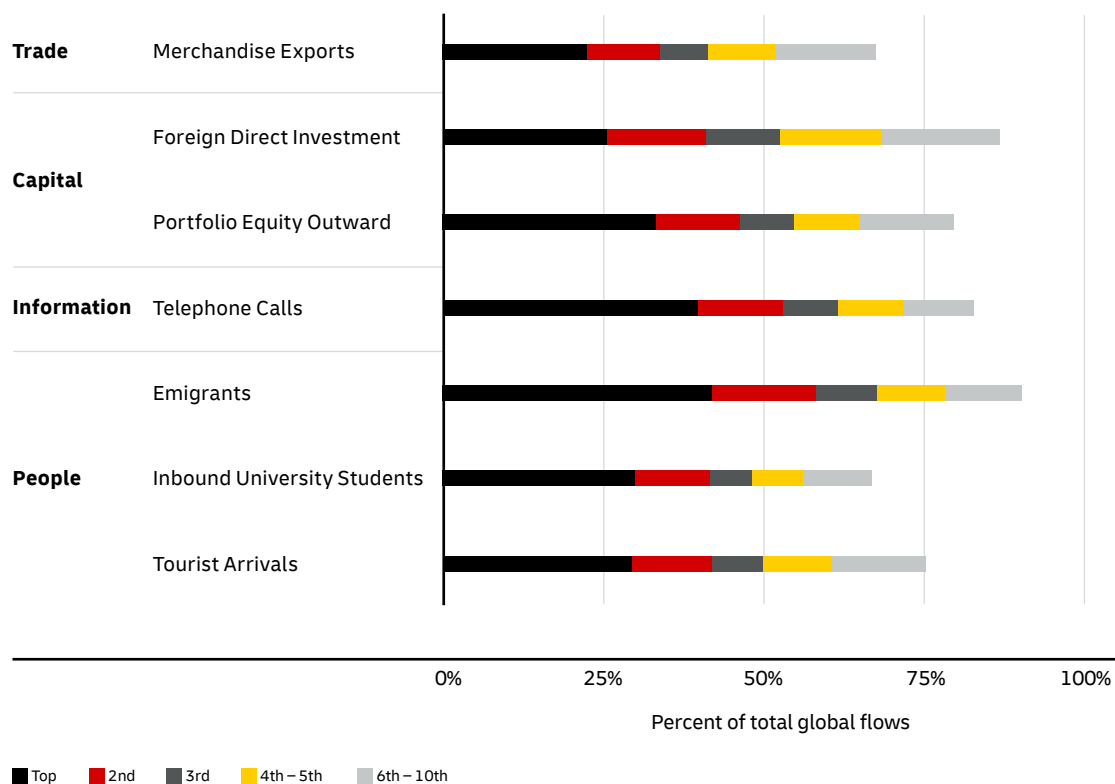
This subsection examines whether international flows are broadly and evenly spread across the world, or if they tend to be rather concentrated between selected countries. In fact, the results are also surprisingly consistent on this topic. Most countries' international flows are so highly concentrated with key partner countries (usually neighbors) that it hardly makes sense to think of them as global at all.

Flows between countries and their single largest partners (e.g. export destinations for trade) make up more than one-fifth of all merchandise trade and more than one-quarter of the other flows on the breadth dimension of the DHL Global Connectedness Index (see **Figure 16**). 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.³⁸

Expanding the same analysis beyond only countries and their single largest partners, more than 40% of all flows take place between countries and their top three partners, and more than two-thirds are between countries and their top 10 partners. Most countries simply do not maintain strong connections to a large number of other countries.

Geographic distance, along with cultural, administrative/ political, and economic differences go a long way toward explaining this phenomenon. For example, if one pair of countries is half as distant as another otherwise similar pair of countries, this greater physical proximity alone would be

FIGURE 16: PROPORTION OF INTERNATIONAL FLOWS BETWEEN COUNTRIES AND THEIR TOP PARTNER COUNTRIES



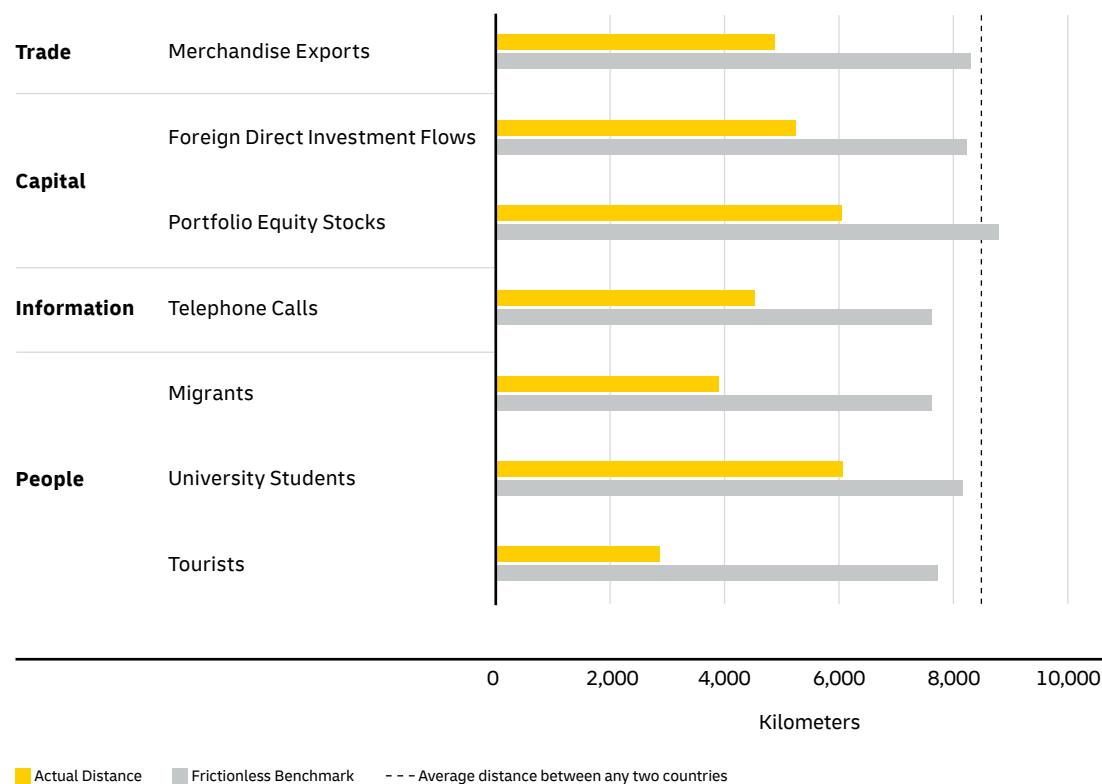
Most countries maintain strong connections to only a small number of other countries. Flows between countries and their single largest partners make up nearly one-quarter of all merchandise trade and more than one-quarter of all the other flows analyzed.

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 official language roughly doubles both trade and foreign direct investment.³⁹

Thus, despite the widespread perception that advances in transportation and telecommunications technologies are rendering distance irrelevant, international activity continues to be much more intense among proximate countries. The average distance between two countries around the globe is roughly 8,500 km, but the flows covered on the breadth dimension of the DHL Global Connectedness Index averaged a distance of only 5,024 km in 2018.⁴⁰ **Figure 17** 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.⁴¹ On average, this sample of flows went only about 60% as far as they would in a “flat” world.

“International activity continues to be much more intense among proximate countries.”

FIGURE 17: AVERAGE DISTANCE TRAVERSED BY INTERNATIONAL FLOWS



International flows—even “weightless” flows such as portfolio equity investment and telephone 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.

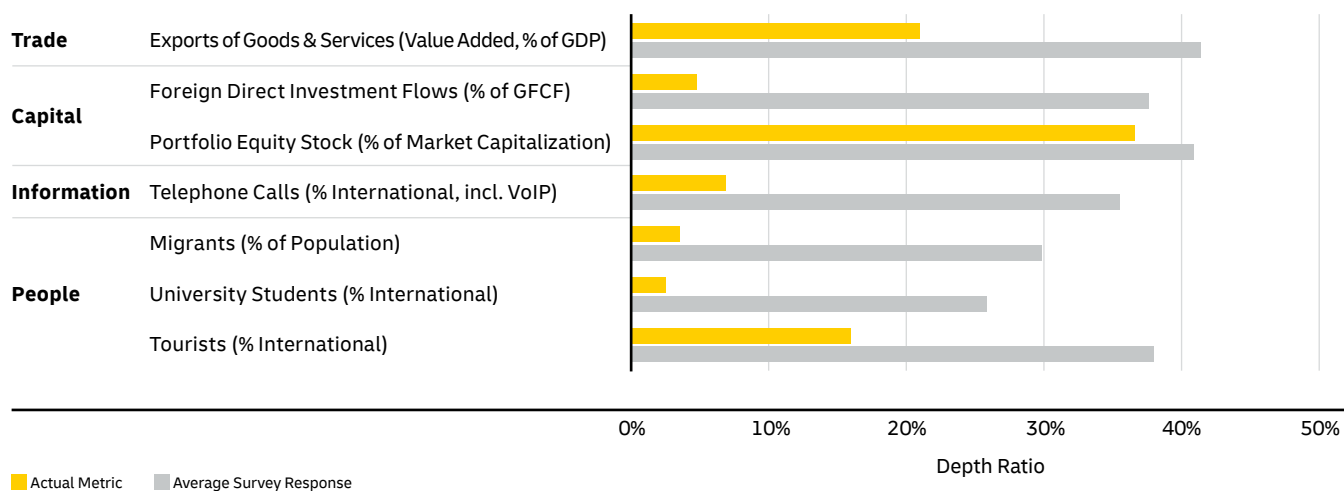
3 HOW DO PERCEPTIONS OF GLOBALIZATION COMPARE WITH REALITY?

Does the public grasp that the world is not very globalized and that many international flows are very small, compared to what happens at a national level? Surprisingly, large surveys show that most people do not realize the limited extent of global connectedness. Actually, one commonality between many of globalization's supporters and its critics is that they tend to believe the world is already far more globalized than it really is.⁴²

For example, **Figure 18** highlights how managers tend to greatly overestimate measures of the intensity of globalization. The actual levels are juxtaposed on the graph against perceived levels from a survey of 6,035 managers across three advanced economies (Germany, the UK, and the U.S.) and three emerging economies (Brazil, China, and India) that we conducted with Pankaj Ghemawat in 2017.⁴³ On average, the managers guessed that the world was five times more deeply globalized than it really is! In fact, their perceptions were no more accurate than those of students surveyed across 138 countries or members of the general public in the United States.⁴⁴ And CEOs and other senior executives had even more exaggerated perceptions—perhaps because their own lives tend to be far more global than those of most other people.

The managers we surveyed also had exaggerated perceptions of multinational business. The combined output of all multinational firms outside of their home countries added up to only 9% of global economic output in 2017, and just 2% of all employees around the world worked in the international operations of multinational firms.⁴⁵ In part, those statistics

FIGURE 18: GLOBALIZATION MEASURES VERSUS MANAGERS' PERCEPTIONS



International trade, capital, information, and people flows are much smaller than most managers presume them to be.

reflect the fact that most companies are still domestic. Less than 0.1% of all firms have foreign operations and about 1% export.⁴⁶ Small firms are, on average, much less international than large ones, and most companies are small. But even among the *Fortune* Global 500, the world's largest firms by revenue, domestic sales exceed international sales.⁴⁷

Exaggerated perceptions of globalization can significantly distort business and public policy decision-making. In business, managers who think the world is more globalized than it really is are prone to underestimating the need to respond carefully to cross-country differences. This can lead to underperformance in foreign markets while fueling societal

animosity towards multinational corporations. In public policy, people who overestimate levels of globalization more than others do tend to worry more about its potential to exacerbate problems such as inequality and climate change. At the same time, exaggerated perceptions of the current level of globalization can lead to underestimation of the potential benefits available from strengthening connections between countries.⁴⁸ Regardless of one's own policy preferences, meaningful debate about whether to favor more or less globalization requires accurate measures of how globalized the world is today.

SECTION IV

FOUR FLOWS THAT CONNECT THE WORLD

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



1 TRADE

Trade growth continued to outpace global economic growth in 2018, but the proportion of output traded across borders remains below its pre-crisis peak. Strong headwinds from trade disputes and weakening macroeconomic conditions dampened global trade growth in 2019.

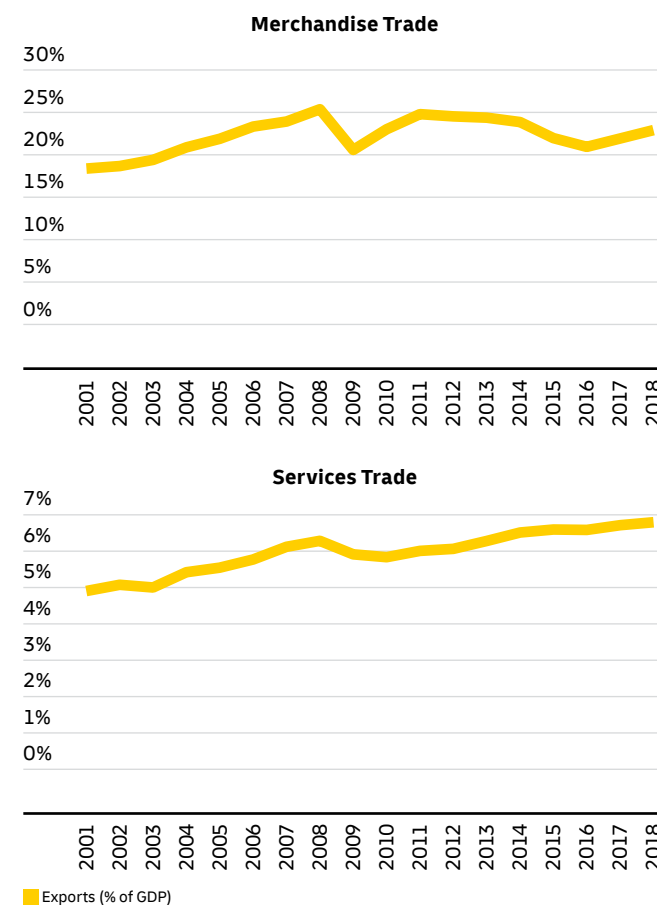
Figure 19 shows the evolution of merchandise and services trade intensity since 2001. The value of merchandise trade grew 10.4% in U.S. dollars at market exchange rates in 2018, but most of this expansion was due to higher commodity prices. Merchandise trade growth was only 3.0% in volume terms in 2018, down from 4.6% in 2017.⁴⁹ Merchandise exports closed out 2018 at 23% of world GDP. Meanwhile, services trade depth continued a long-term rising trend in 2018. Services exports equaled 7% of world GDP in 2018.

While the total value of all reported exports of merchandise and services sums to 30% 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.⁵⁰ 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.⁵¹



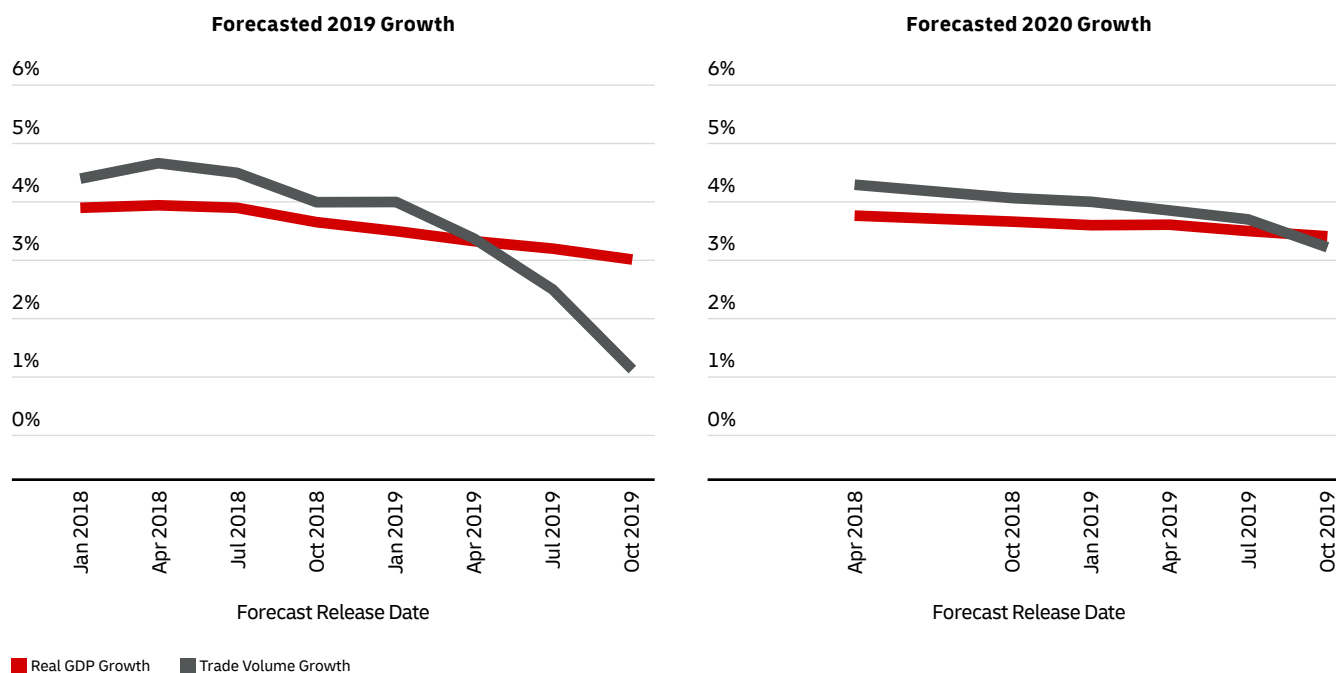
Looking beyond 2018, recent data and forecasts point to a weakening trade environment. As we covered earlier in this report, trade depth declined during the first two quarters of 2019 (refer back to **Figure 3**). Forecasted trade growth for the full year of 2019 has also been revised downward repeatedly since the U.S. began imposing new tariffs in the first half of 2018 (see **Figure 20**). Meanwhile, trade tensions and the uncertainty they generated have also contributed to a slowdown in global GDP growth.

FIGURE 19: TRADE TRENDS, 2001 – 2018



Depth of merchandise trade increased again in 2018—a continuation of the previous year’s trend. This, together with a modest increase in services trade depth, led the trade pillar to rise.

Data sources: IMF Direction of Trade Statistics, World Bank World Development Indicators, and IMF World Economic Outlook

FIGURE 20: EVOLUTION OF IMF TRADE VOLUME AND GDP GROWTH FORECASTS RELEASED SINCE JANUARY 2018

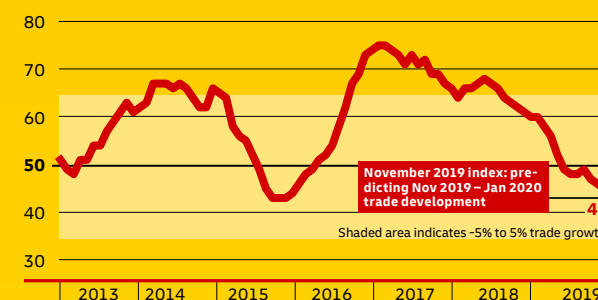
As the global trade environment has weakened, the IMF (and other forecasters) have lowered their expectations for trade growth in 2019 and 2020. Trade is currently projected to grow more slowly than GDP.

Data sources: IMF World Economic Outlook; IMF World Economic Outlook Update

In October 2019, the IMF forecasted only 1.1% global trade volume growth in 2019—substantially lower than its forecast of 3.0% real GDP growth, and other forecasts show similar patterns.⁵² One should note that the latest IMF forecast assumes that all threatened tariff increases announced by

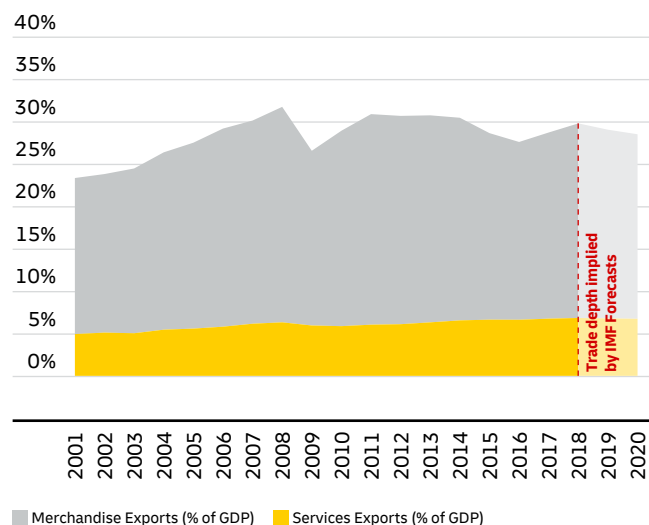
August 2019 will be implemented and remain in place, i.e., it does not factor in a potential U.S.-China “phase one” trade deal. Nonetheless, the IMF still forecasts a major rebound in trade volume growth in 2020 to 3.2%, almost matching the 3.4% real GDP growth rate projected for that year.⁵³

DHL GLOBAL TRADE BAROMETER—WORLD 2013 – PRESENT



Index = expected trade development within next three months
50 = stable | > 50 = expansion | < 50 = contraction

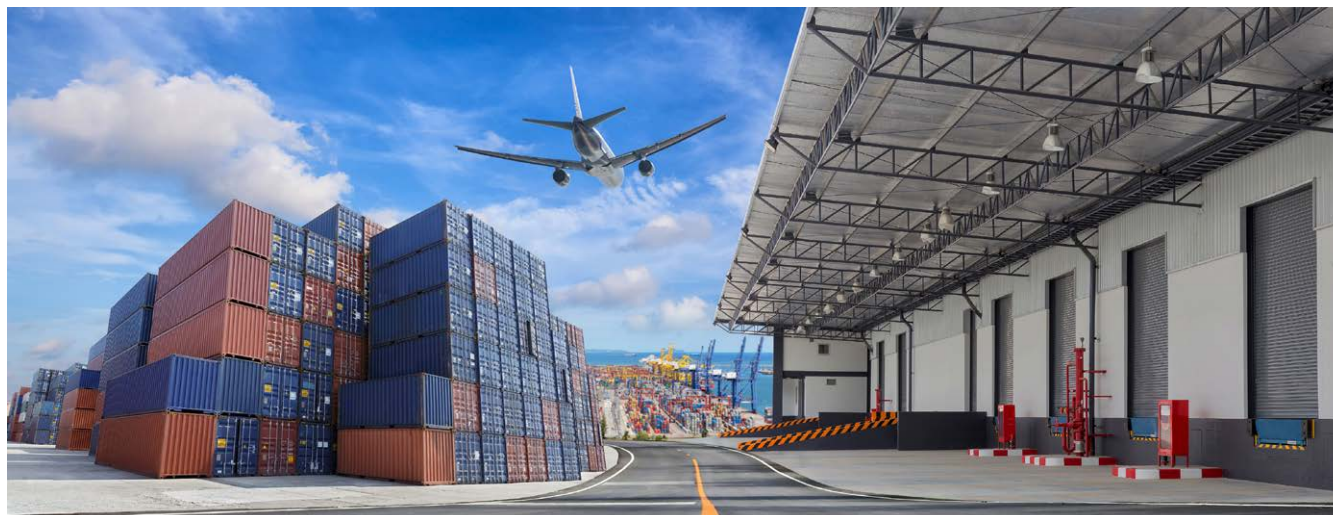
The DHL Global Trade Barometer, which forecasts short-term trade growth over a three-month period, also demonstrates the weakening environment for global trade. This indicator dipped to 48 in June of 2019, the first time it fell below 50 since its inception, indicating a decline in world trade. In September, it slipped further to 47, and in November, it dropped again to 45. These results support the gloomy trade forecasts we have cited, although implications for trade depth depend on changes in global output.

FIGURE 21: TRADE DEPTH, 2001 – 2018 AND IMF FORECASTS FOR 2019 – 2020

Although forecasts from the IMF point to a decline in trade depth in both 2019 and 2020, they imply a return only to 2016 levels of trade depth.

Data sources: IMF Direction of Trade Statistics World Bank, World Development Indicators, and IMF World Economic Outlook

These trade and GDP forecasts imply that the proportion of global output traded between countries is likely to decline in both 2019 and 2020, as shown in **Figure 21**. Since we measure trade depth in value rather than volume terms, forecasts in this area are subject to especially high uncertainty. This is because they depend on predicted price levels and exchange rates, alongside forecasted trade volume and GDP growth. With that caveat in mind, however, it is noteworthy



that the IMF's latest forecasts imply a decline in trade depth that is *smaller* than the dip that took place in 2015 and 2016, and much less severe than the 2009 drop during the global financial crisis. Thus, despite the drastic downgrades that have come in over the past year, trade's overall contribution to global connectedness is expected to remain within recent norms rather than to suffer a major collapse.

In terms of public policy developments, 2019 has been a very challenging year for the global trading system. The biggest story was the trade war between the United States and China, which has escalated several times since its beginnings in 2018. We highlighted in **Section II** how U.S.-China trade flows shrank as tariff increases and heightened policy uncertainty took their toll. As of this writing, an interim deal

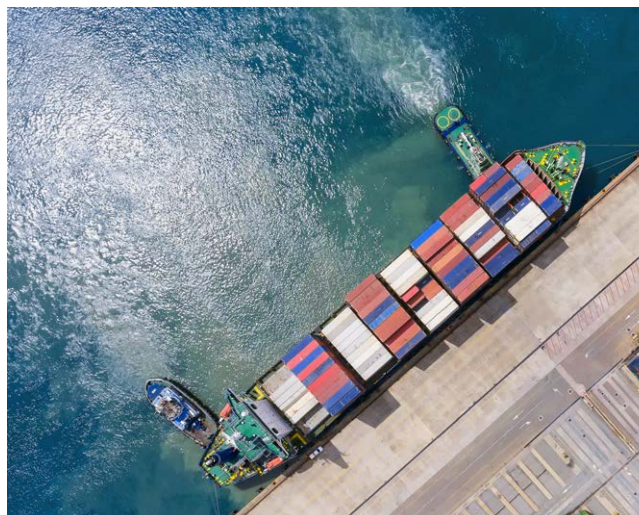
is being negotiated, but several issues remain unresolved. The Economist Intelligence Unit warned in its November Global Outlook that there remains a very high risk of the trade war splitting the global trade system between U.S. and Chinese spheres, and a moderate risk of it destabilizing the global financial system.⁵⁴

Meanwhile, plans for the United Kingdom to leave the European Union ("Brexit") have continued to hit snags. The agreement former Prime Minister Theresa May negotiated with Brussels was rejected three times by the UK Parliament. May's successor, Boris Johnson, negotiated a new deal with the European Union, but Parliament postponed a vote on it until implementing legislation is completed, forcing another delay.⁵⁵ After three unsuccessful attempts, Johnson

finally was able to convince Members of Parliament to accede to a general election, which will take place December 12.⁵⁶ As the deadlock in Westminster continues, evidence of harm to the British economy is accumulating. Several research studies indicate that Brexit-related uncertainty has already depressed UK investment, exports, and productivity growth.⁵⁷

Looking east, Japan and the Republic of Korea have entered into a trade war of their own. Amid ongoing tensions between the two countries, Japan announced in July that it would tighten controls over exports of three chemicals that are needed to produce semiconductor products. It then announced that Korea would be removed from its “white list” of trusted trade partners.⁵⁸ Korea, in turn, removed Japan from its own top tier of trusted trade partners.⁵⁹

More broadly, the Global Trade Alert database shows that the number of new policy interventions negatively affecting trade reached a record high in 2018. Discriminatory interventions have outnumbered liberalizing interventions every year since the database’s inception in 2009.⁶⁰ The dangers associated with new protectionist policies are elevated by the risk of a breakdown in the multilateral system for resolving trade disputes. As of this writing, the U.S. continues to block new appointments to the WTO’s Appellate Body. The terms of two of the remaining three judges will expire in December 2019, crippling the dispute settlement system if they are not replaced.⁶¹ Although interim solutions have been proposed, momentum has been weak due to concerns



that any move by other members of the body might push the Trump Administration to pull out of the WTO entirely.⁶²

In spite of the headline-grabbing bad news, there have also been important positive developments in trade policy. Several major trade agreements struck in 2018 entered into force during 2019. The largest of these is the EU-Japan Economic Partnership Agreement, which entered into force in February.⁶³ The African Continental Free Trade Agreement (AfCFTA) went into force in May 2019 after having met the threshold of half the members having signed. Since then, another five members have signed, bringing the total to 27.⁶⁴

Several other new trade agreements have also achieved major milestones. In June 2019, the European Union completed negotiations on a trade pact with Mercosur, 20 years to the day after the negotiations began, and the EU also signed a new trade deal with Viet Nam.⁶⁵ Mexico ratified the United States-Mexico-Canada Agreement (USMCA) in June, although this agreement (intended to succeed the North American Free Trade Agreement, NAFTA) still requires ratification by the U.S. Congress and the Canadian Parliament.

“The dangers associated with new protectionist policies are elevated by the risk of a breakdown in the multilateral system for resolving trade disputes.”

Additionally, in Asia, negotiations on the Regional Comprehensive Economic Partnership (RCEP) are nearing completion, with the aim, as of this writing, to complete the deal in 2020. The RCEP would link the 10 member countries of the Association of Southeast Asian Nations (ASEAN) with China, Japan, South Korea, Australia, and New Zealand.⁶⁶ Although India was originally among the countries slated to join the partnership, Indian Prime Minister Narendra Modi pulled out in early November of 2019. While this does substantially decrease the size of the proposed bloc, it may smooth the path to completion of the deal, and India will still have the option of joining at a future date.

2 CAPITAL

International capital flows tend to be volatile, and the capital pillar was the largest contributor to both the expansion in overall global connectedness in 2017 and its decline in 2018—indeed, it was the only pillar that declined. U.S. tax reforms, however, explain part of the 2018 decline, suggesting more positive fundamentals than the headline measures imply.

In this section, we look at foreign direct investment (FDI) and portfolio equity investment.⁶⁷ The distinction between the two is that FDI gives the investor (typically a multinational corporation) an effective 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. Since international investment creates an ongoing relationship between countries, we consider both the stock of investment accumulated over time and flows of new investment.

Sharp swings in portfolio equity flows have made them the primary driver of movements in the capital pillar in recent years. Worldwide portfolio equity inflows were at a post-crisis low of \$172 billion in 2016 before rebounding to a new record high of \$1.3 trillion in 2017. In 2018, they fell to \$402 billion.⁶⁸ It is important, however, not to read too much into such year-to-year fluctuations. Despite the gyrations in portfolio equity flows depth shown in **Figure 22** (top panel), portfolio equity stocks grew modestly as a percent of market capitalization in 2017 and 2018 (bottom panel).⁶⁹ Worldwide portfolio equity inward stocks increased from 24% of

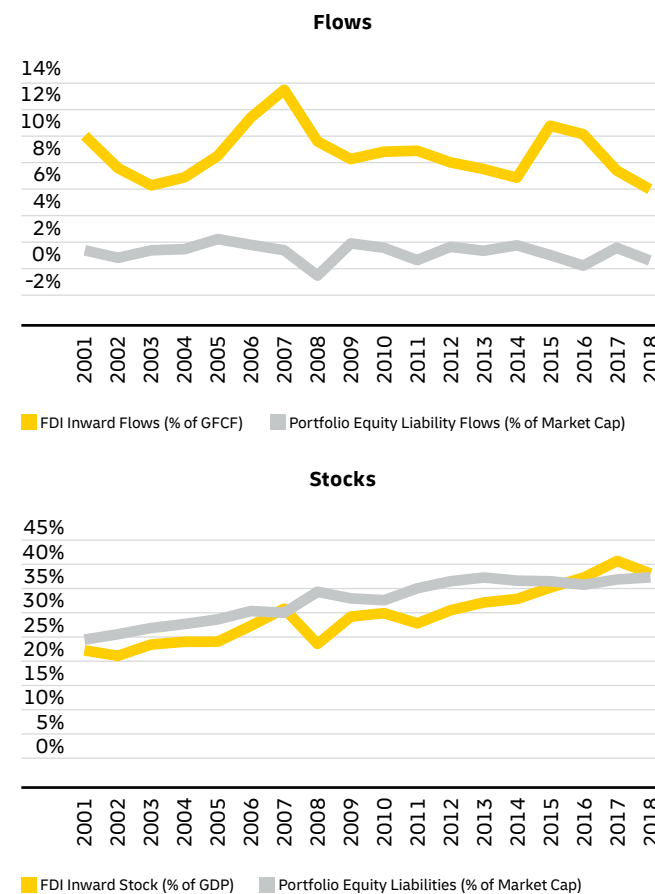
world market capitalization in 2001 to 37% in 2018. Most of this growth, however, took place before 2013.

Equity investors, particularly in major advanced economies, have become less “home biased” over time, opting for greater international diversification.⁷⁰ Given the proliferation of electronic trading, it is hardly a surprise that portfolio equity stocks have the highest breadth and traverse the second highest average distance (after students) of any of the flows covered in the DHL Global Connectedness Index. 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.

Turning from portfolio equity investment to FDI, the downward trend in FDI flows continued at a slower pace in 2018, dropping to 6% of gross fixed capital formation—the lowest level since 1996.⁷¹ The stock of FDI also fell, from 41% of GDP in 2017 to 38% in 2018, reversing an upward trend that began in 2012.

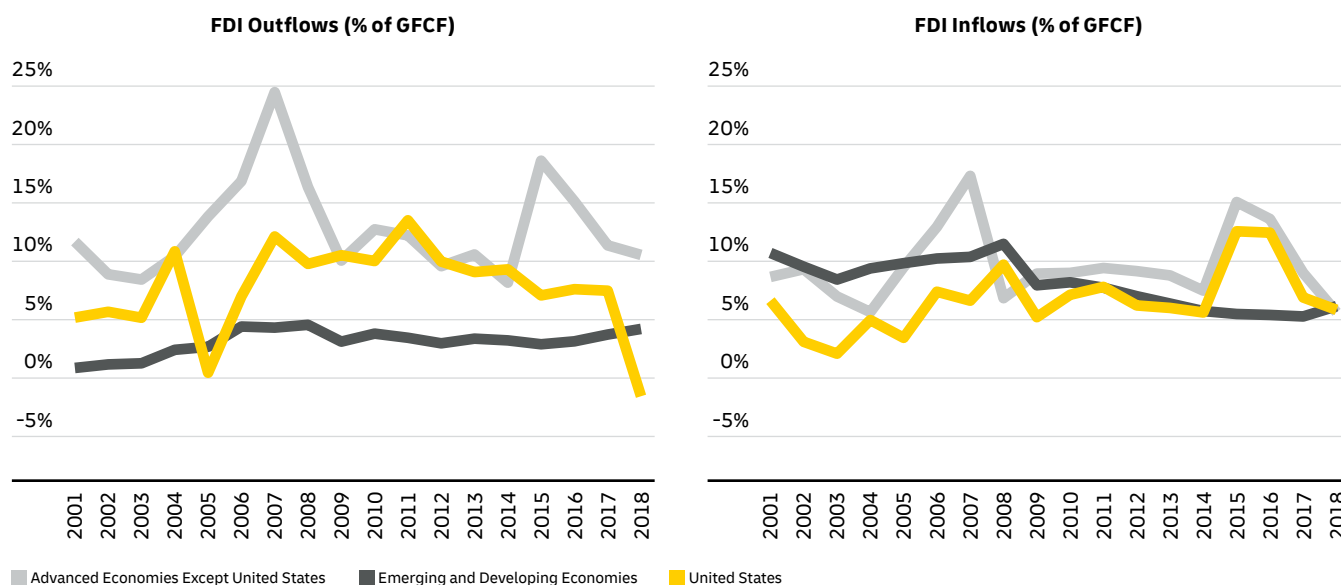
Changes in U.S. tax policy played a major role in the recent volatility of FDI flows, as highlighted in **Figure 23**. During 2015 and 2016, FDI flows were elevated due to U.S. corporate inversions and other M&A transactions that converted U.S. businesses into subsidiaries of firms based in countries with lower corporate tax rates.⁷² This wave of tax-motivated transactions ended when the U.S. Treasury announced a third crackdown in April 2016, contributing to a 41% drop in U.S. FDI inflows from 2016 to 2017. Thus, the 2017 drop in

FIGURE 22: CAPITAL TRENDS, 2001 – 2018



Capital flows declined in 2018, pushing down capital pillar depth and the DHL Global Connectedness Index as a whole. Inward FDI stocks also declined, while portfolio equity stocks increased modestly.

Data sources: UNCTAD World Investment Report, IMF World Economic Outlook Database, World Bank World Development Indicators

FIGURE 23: FDI FLOWS DEPTH TO/FROM ADVANCED ECONOMIES AND EMERGING ECONOMIES AND THE UNITED STATES, 2001 – 2018

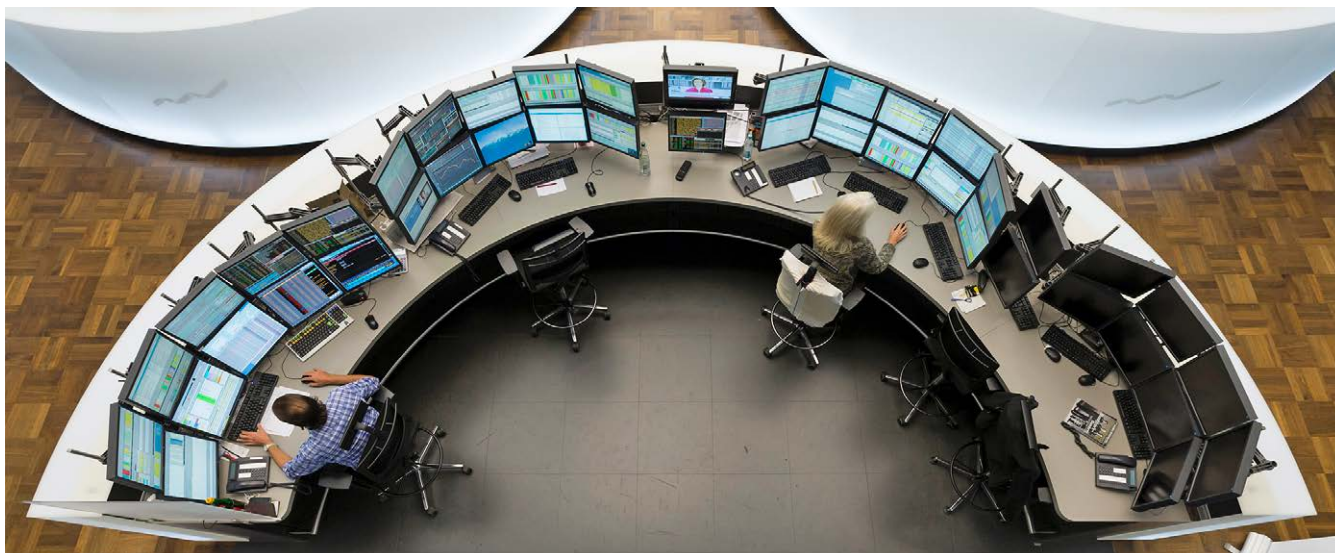
The downward trend in FDI flows in 2018 was driven by falling outward investment by the United States. Emerging and developing economies saw a slight uptick in both inflows and outflows of FDI during 2018.

Data source: UNCTAD World Investment Report, World Bank World Development Indicators

FDI flows reflected, in part, the end of a temporary spike rather than a simple decline relative to a formerly stable trend.

At the end of 2017, the U.S. Congress passed the Tax Cut and Jobs Act (TCJA), which shifted the U.S. from a global toward a territorial corporate tax system. Whereas in the past, U.S. companies were taxed on worldwide income as soon as it entered the country, the TCJA generally makes companies liable for taxation on only U.S. earnings (in line with most other countries' tax systems). In order to facilitate the transition, the act requires U.S. companies with foreign earnings held abroad to pay a reduced tax on those earnings, regardless of whether they are repatriated or not.⁷³ U.S. multinationals responded by repatriating \$665 billion of cash previously held abroad in 2018, as compared to \$155 billion in 2017. Before the tax reform, U.S. corporations were holding an estimated \$1 – 2.5 trillion of cash abroad.⁷⁴ Repatriation of retained earnings by U.S. companies results in negative FDI outflows for the U.S. and negative FDI inflows for other countries.⁷⁵ More broadly, the \$1.35 trillion decline in U.S. outward FDI stocks in 2018 was the largest contributor to the \$1.41 trillion decline in global outward FDI stocks.⁷⁶

Since these tax-driven fluctuations in the FDI measures do not reflect real changes in fundamental corporate investment patterns, it is important to note that other indicators suggest far more positive 2018 results. The value of announced greenfield FDI projects increased 41% in 2018, while the net value of cross-border M&A activity grew 18%.



“Public policy changes—and uncertainty about future policies—appear to be weighing on the growth of FDI flows. The share of policy changes in favor of increasing FDI flows has declined.”

Additionally, the foreign activities of multinational firms expanded along several metrics: their output (in value added terms) rose 8%, their assets grew 5%, and their sales and employment both increased 3%.⁷⁷ These data all reaffirm that there was no broad retreat from corporate globalization in 2018, despite the continued drop in FDI.

Looking forward, early indications point to a slow recovery in FDI flows. Data from UNCTAD show a 23% decline in the first half of 2019 as compared to the second half of 2018, although this remains 24% higher than in the first half of 2018.⁷⁸ UNCTAD's projections show only a modest recovery by the end of the year to between 5 and 10% growth for the full year of 2019.⁷⁹ While this would be a dramatic increase

for most types of flows, at this level of growth, global FDI flows for 2019 would remain below the average for the past decade. Additionally, greenfield FDI project announcements were down in the first six months of 2019.⁸⁰ Even without tax policy effects depressing FDI flows, a robust recovery does not yet appear to be underway.

Public policy changes more generally—and uncertainty about future policies—appear to be weighing on the growth of FDI flows. The majority of countries' changes to their investment policies continue to favor increasing FDI, but the share of pro-FDI policy changes has declined. According to UNCTAD, 55 economies introduced 112 measures affecting foreign investment in 2018, of which one-third imposed new

restrictions—the most in two decades. In addition, at least 22 major M&A deals were blocked for regulatory or political reasons.⁸¹

Many of the restrictions have cited national security risks in their justifications. European Union legislation on a coordinated investment screening framework came into force in April 2019.⁸² And even before recent legislative developments, heightened scrutiny of foreign investments on national security grounds appears to have already dampened FDI flows.⁸³

3 INFORMATION

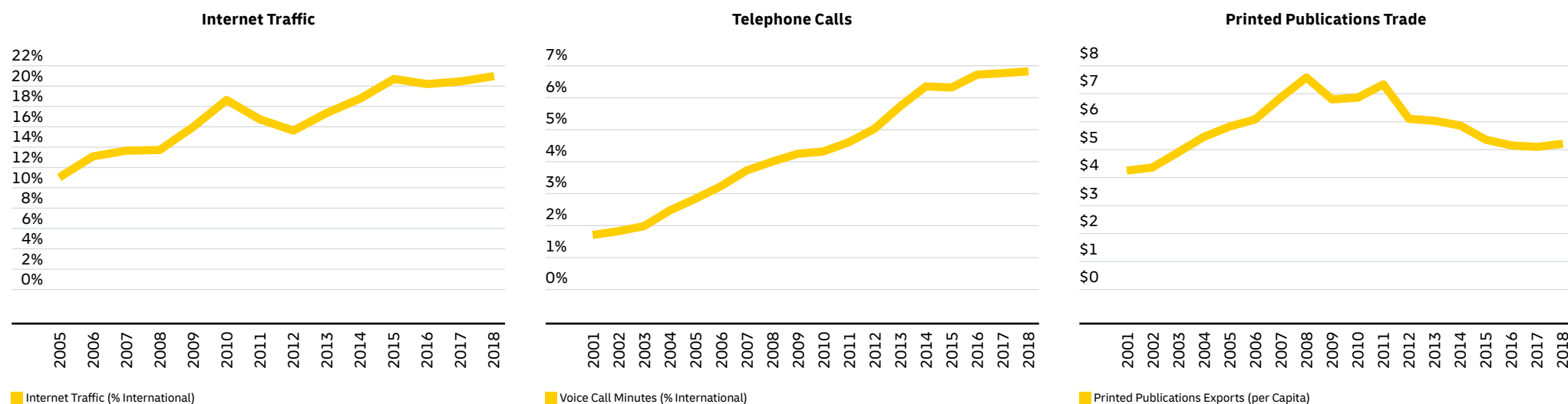
One of the leading perspectives on globalization's trajectory, given the slower growth of trade and capital flows since the financial crisis, is that globalization has gone digital, with information flows powering a new wave of market integration.⁸⁴ Indeed, the information pillar has shown the most growth since 2001—far more than trade, capital or people. International internet bandwidth is more than 500 times what it was in 2001, while the number of internet users is almost *eight* times what it was then.⁸⁵ Nevertheless, we are beginning to see signs that the globalization of information flows may have slowed in recent years.

Over the period from 2001 to 2014, the information pillar of the DHL Global Connectedness Index increased at an average pace of 4% per year, but from 2014 to 2018, this slowed to 1% (as shown in **Figure 6**). Although the pillar's growth almost flattened in 2011 and 2012 as internet traffic depth declined and printed publications exports per capita fell, the more recent flattening trend can be seen in all three components and has now continued for three years.

As shown in **Figure 24**, we estimate very roughly that the proportion of internet traffic crossing national borders has

risen from about 11% in 2005 (the earliest year for which we can estimate this metric) to 21% in 2018.⁸⁷ However, this metric had already reached 21% by 2015. The growth of both international and domestic traffic has slowed over time, but the international slowdown has been more dramatic. Between 2005 and 2010, international traffic was growing almost 50% faster than domestic, but both grew at a similar pace over the past three years.⁸⁸ Additionally, in 2018, international internet bandwidth grew at its lowest annual rate in at least 15 years.⁸⁹

FIGURE 24: INFORMATION TRENDS, 2001 – 2018⁸⁶



All of the information pillar components grew in 2018, although growth of internet traffic and telephone calls depth was slower than in many previous years. Data sources: TeleGeography, Cisco, Ovum, ITU, World Bank, UN Comtrade, UN DESA

While more than half of the world's population were internet users in 2018,⁹⁰ it is easy to forget that the internet is still used primarily for domestic communications. In fact, as internet access expands within a country, more domestic content becomes available, often giving users a more locally relevant alternative to international content. About 15% of friendships on Facebook cross national borders,⁹¹ 20% of trending videos on YouTube ranked among the top 10 videos in more than one country,⁹² and about 25% of Twitter followers are located in different countries from the people they follow.⁹³ A similar pattern shows up in e-commerce, which blends trade and information flows. While the proportion of online shoppers buying from foreign vendors surged, according to one study, from 15% in 2015 to 21% in 2017, cross-border sales still account for just 11–15% of all business-to-consumer (B2C) online sales.⁹⁴ Even in Europe, the world's most integrated cross-border marketplace, the cross-border share of online sales was only 23% in 2018.⁹⁵

One potential contributor to the slowing growth of international internet traffic is the proliferation of data localization requirements.⁹⁶ The European Centre for International Political Economy (ECIPE) has documented more than 100 cumulative policy restrictions on cross-border data flows as of November 2019.⁹⁷ According to a recent ECIPE study, “if countries lifted their restrictions on the cross-border flow of data, the imports of services would rise on average by five percent across all countries, with obvious benefits for local companies and consumers who could access cheaper and better online services from abroad.”⁹⁸

In many cases, it also makes economic sense for content providers to reduce the proportion of internet traffic that crosses borders. In 2017, 75% of IP traffic was video.⁹⁹ Video-on-demand services can improve efficiency by localizing data. Furthermore, since many of the undersea cables that carry signals across long distances are owned or leased by content providers,¹⁰⁰ localizing means using less of a provider's own capacity.

Turning to telephone calls as an indicator of direct person-to-person information flows, the expansion of international internet bandwidth has also supported a large increase in the depth of international telephone calls by dramatically reducing their cost. According to our own rough estimates, the international proportion of all call minutes (including calls over internet-based services) soared from 2% in 2001 to 6% in 2014, and continued rising more slowly to 7% in 2018.¹⁰¹

A major contributor to this growth has been the rise of calls placed via internet calling applications, which typically provide free calls to other users of the same application and low-cost calls to standard telephone numbers. According to TeleGeography, more international calls are now placed via applications such as Skype, WeChat, and WhatsApp than over the networks of all of the world's telecommunications carriers combined.¹⁰² Strong growth in the use of such applications is expected to continue.¹⁰³ While the international proportion of telephone call minutes has more than tripled since 2001, most people still have very little telephone contact with people in other countries. In 2018, the average

person around the world still spent just over three hours talking to people in other countries.

Limited depth is also evident on the final component of the information pillar, trade in printed publications.¹⁰⁴ There was only \$5.22 (USD) of such material exported per person in 2018. The depth of printed publications trade has generally been on a declining trend since the global financial crisis, although there was a very small uptick in 2018. With the rise of digital alternatives, trade in printed publications has become substantially less important to the overall globalization of information flows.

We should note that the changing landscape for international information flows imposes significant constraints on the precision with which this aspect of globalization can be measured. There are a panoply of forms of digital flows, most of which we cannot yet incorporate into the DHL Global Connectedness Index. Nonetheless, the measures we do have available at present suggest a need for some caution regarding expectations that digital flows will power a new wave of globalization moving forward. Digital technologies are transforming both domestic and international information flows, and the international component is moving closer to parallel with the domestic component rather than surging ahead of it.

4 PEOPLE

Flows of people can be short-term, medium-term, and long-term or permanent. In this report, we consider flows of tourists, university students, and migrants to get a balanced view of cross-border people movements. All three of these types of flows continue to intensify.

International tourist arrivals increased 5.4% in 2018—a slower rate than recorded in 2017, but nonetheless a fast pace—sending international tourist arrivals to a record high.¹⁰⁵ Business travelers are included in these statistics, although the number of people traveling abroad for leisure

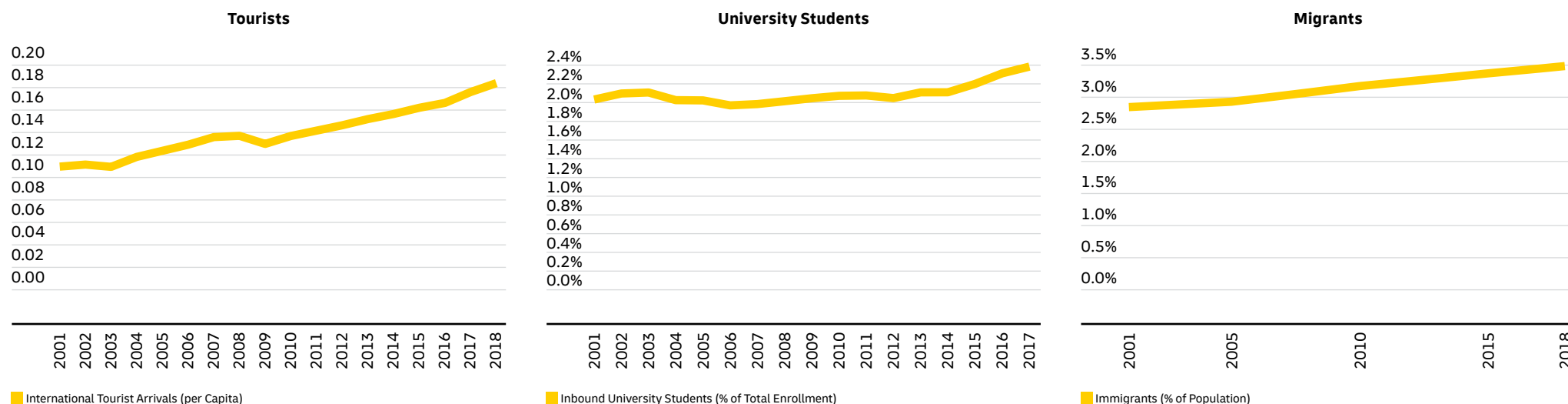
or to visit friends and family far outstrips the number traveling for business purposes.¹⁰⁶

Emerging market growth has expanded the population that can afford to travel abroad, and countries have loosened their visa policies to welcome more tourists. In 2008, 77% of the world's population, on average, would have been required to obtain a traditional visa before traveling to a foreign country.¹⁰⁷ By 2015, that proportion had fallen to 61%, and more recent data from alternative sources indicate that tourist visa requirements continue to decline. In 2018,

people from every country in the world were able to travel to more countries without a visa than they were able to do in 2017.¹⁰⁸

As a rough measure of the international proportion of tourism, data from a limited sample of countries indicate that about 16% of overnight tourists travelled to another country.¹⁰⁹ However, the precision of this estimate 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

FIGURE 25: PEOPLE TRENDS, 2001 – 2018



Tourist arrivals per capita grew significantly in 2018, continuing a long-term trend toward more international tourism. The most recent data also show growing international student and migrant populations.

Note: Migration data were only available for 2005, 2010, and 2015. Values for 2001 and 2018 are interpolated using data for 2000 and 2019. Data sources: UN World Tourism Organization, UN DESA, UNESCO Institute for Statistics



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 0.18 in 2018 (see **Figure 25**). These data imply that the average person around the world now travels outside his or her home country once every five years. And this metric is expected to continue rising, as international tourist arrivals are projected to outpace population growth. The United Nations World Tourism Organization forecasts that international tourist arrivals will grow at a pace of 3–4% in 2019.¹¹⁰ By contrast, the world's population is growing about 1% per year.

Enrollments of foreign university students provides a medium term measure of people flows. It includes only students enrolled in degree programs—not semester or year exchange programs—so it represents a commitment of generally 1–5 years living in a foreign country. While this metric had been declining prior to 2006 due, in part, to a large expansion of universities in China, it rose steadily from 2.0% in 2006 to 2.4% in 2017 (the most recent year for which data are available).

Other international education data, however, point to a potential deceleration as well as geographic shifts. The British Council predicts the number of international students worldwide to grow by only 1.7% annually from 2016 to 2027, as compared to 5.7% between 2000 and 2015, primarily due to the growth of high quality educational institutions in students' home countries but also due to visa restrictions and safety concerns.¹¹¹ Additionally, students are shifting where they study. For a long time, the U.S. has been the top destination for international students, followed by the UK. But policy changes and uncertainty have made these destinations less attractive.¹¹² In the U.S., new student enrollments were down for the second year running in 2018, apparently in part because of changes in visa policies.¹¹³

In addition, there is more competition, as universities elsewhere make efforts to attract more students. Australia and Canada have seen double-digit growth rates in international enrollments.¹¹⁴ Also, universities in many countries are adding programs in English, which increases attractiveness to foreign students who may not know the local language and

also allows local students to demonstrate their fluency.¹¹⁵ Furthermore, China is a rising force, having already surpassed the United Kingdom and United States as the top destination country for students from Africa.¹¹⁶

Immigration continues to be a very sensitive political issue in many countries, and it has been seen as a leading cause of the rise of populism.¹¹⁷ On a global basis, migration is on a rising trend, but a very modest one. Since migration is a long-term people flow, we measure it based on the number of people living abroad rather than how many people move in a given year. The proportion of people living outside of the countries where they were born has risen from 2.8% in 2001 to 3.4% in 2018. Both of those values, however, still round to 3%—the same level that global migration depth has approximated for more than a century!¹¹⁸ The modest global growth in international migration, however, masks significant increases that have taken place in some countries. In advanced economies, the share of immigrants in the population increased from 9% in 2001 to 13% in 2017. And in spite of political opposition, the upward trend seems set to continue. Estimates show that migration flows are up 2% in OECD countries in 2018 compared with a drop of 4% in 2017.¹¹⁹

SECTION V

CONCLUSION

The concluding section of this report highlights implications of the state and trajectory of globalization for countries and companies.

This report has tracked the evolution of global flows in the face of powerful headwinds. Globalization has not broadly gone into reverse, but uncertainty about its future comes at a substantial cost. Globalization's continued turbulence demands decisive—but measured—responses from leaders in the public and corporate spheres.

Prior editions of the DHL Global Connectedness Index have highlighted the potential for stronger links between countries to boost prosperity. Countries with deeper international connections tend to grow faster.¹²⁰ In the present context, however, recent policy analysis has focused on the flipside of globalization's untapped potential: the costs of deglobalization.

While global flows have not broadly gone into reverse, rising barriers to some kinds of flows—as well as uncertainty about future openness—are already starting to carry significant costs. The International Monetary Fund (IMF) estimates that U.S.-China trade tensions will, on a cumulative basis, subtract 0.8% from global economic output by 2020. In case 0.8% looks like a small number, note that the world economy is on track to grow only 3.0% in 2019, the slowest rate since the financial crisis a decade ago.¹²¹

It is also important to recognize that globalization is not a zero-sum game. Just as stronger connections between countries create shared benefits, rising barriers generate shared losses. Scaling back global flows would hurt both advanced and emerging economies, rather than benefiting one set of countries at the other's expense. A recent scenario



analysis, for example, indicates that reshoring production from emerging to advanced economies would harm households in both sets of countries to a similar extent.¹²²

Other research highlights particular harms that an unraveling of global value chains could cause for poorer countries. Participation in global value chains helps less developed countries boost productivity and reduce poverty, by opening up opportunities in areas where they can already be competitive and fostering firm-to-firm relationships.¹²³ This is especially important, because many developing countries continue to fall further behind the developed world economically. Almost one billion people live in developing countries where GDP per capita is forecasted to grow slower than in the world's advanced economies over the next five years.¹²⁴

As evidence of costs associated with rolling back international integration continues to mount, how should leaders respond? We suggest four ways the analysis in this report could help point the way toward a better future.

ADDRESS ROOT CAUSES OF ANTI-GLOBALIZATION ANGER

Societal concerns about globalization must be addressed decisively.¹²⁵ Measures in this report, however, indicate that most trade, capital, information, and people flows are still domestic rather than international. This implies that many of the pressing societal challenges fueling opposition to globalization actually require tough domestic policy compromises rather than reductions in cross-border flows.

For example, many people believe that globalization is a major cause of inequality. Globalization measures, however, reinforce the economic research showing that shifts in countries' income distributions are driven mainly by domestic policy and technology.¹²⁶ The U.S., for example, ranks first among large advanced economies on income inequality but last on imports as a percentage of GDP.¹²⁷ Given such a juxtaposition, reducing U.S. imports is unlikely to result in a much more equitable income distribution. As economist Kimberly Clausing has written, "global markets have many wonderful benefits, but they need to be accompanied by strong domestic policies to ensure that the benefits of international trade ... are felt by all."¹²⁸

Where globalization does have significant negative side effects, these must also be acknowledged and mitigated, where possible. For example, 90% of trade is by sea, and international sea freight generates roughly 3% of global CO₂ emissions.¹²⁹ While international shipping is a much smaller contributor to climate change than domestic transportation, it is important for international logistics providers to be transparent about environmental impacts and to work hard to mitigate them.¹³⁰

DON'T OVERREACT TO EXTREME PREDICTIONS OR RHETORIC

Since recent declines in global flows are still modest in historical perspective, decision-makers should take care not to overreact to the latest headlines. Recall, for example, that even after dramatic downgrades to trade growth forecasts, the proportion of output traded across borders is still expected to remain close to an all-time high.

In public policy, balanced responses to international threats can help temper tit-for-tat escalation. The resilience of most kinds of international flows also bolsters the case for shoring up the global and regional institutions that support them. In business, the playing field continues to shift, but there is no evidence of a mass retreat from corporate globalization. Companies with fundamentally sound global strategies can refine them to better suit the present context. Some may need to delegate more authority to country managers to become more responsive to local conditions, while others may benefit from investments in more agile supply chains.

Across both business and public policy, calibrated responses to real and potential shocks can help avoid making deglobalization a self-fulfilling prophecy. Decision-makers must consider a range of potential futures. Globalization has gone into reverse before, and this may happen again. But given the relatively modest changes to global flows so far, it would be a costly mistake to let overhyped rhetoric drive decisions that could contribute to a major reversal.

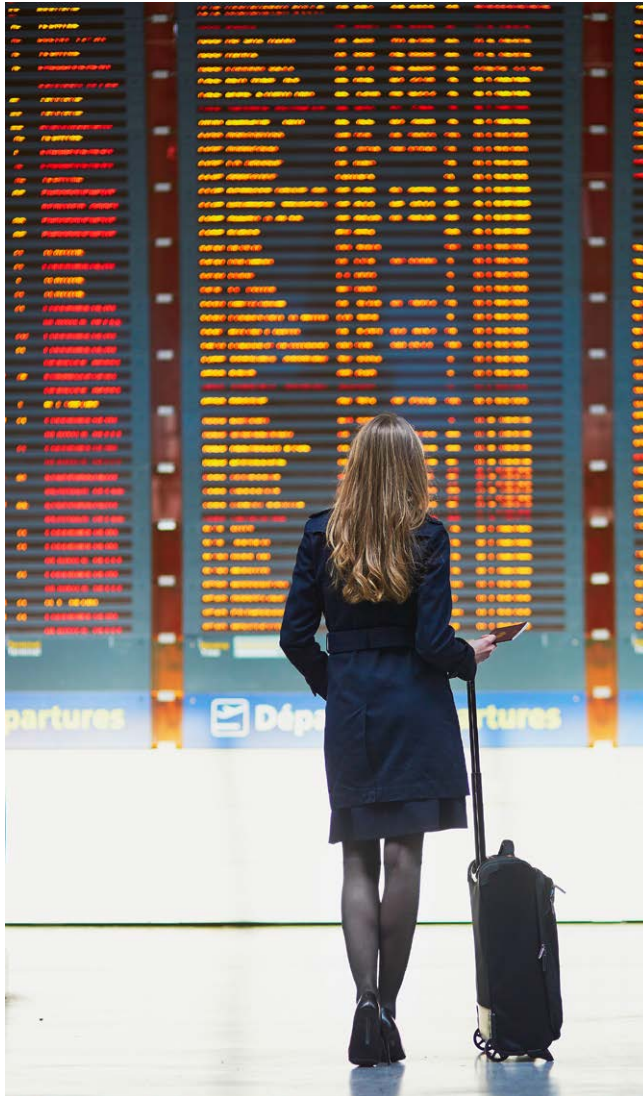
REINFORCE FUNDAMENTAL DRIVERS OF COMPETITIVENESS

The fact that the world is still less globalized than many presume highlights the value of redoubling efforts to shore up the fundamentals of corporate and national competitiveness. International business research going back decades highlights how companies face a "liability of foreignness" when they compete abroad. The central implication is that international success requires competitive advantages that are strong enough to overcome the penalties firms face away from home.¹³¹ When barriers to global business rise,



firms with stronger advantages can clear hurdles that require weaker firms to retreat.

The types of business advantages that can transcend borders are myriad, but there are some longstanding patterns. Firms with greater strengths in technology and marketing, in particular, tend to cross borders and distance more successfully.¹³² As such, business leaders should make sure that short-term responses to international market turbulence do not distract from basic investments in areas such as R&D and branding that are likely to underpin the long-run sustainability of a company's global strategy.



Prior research on the DHL Global Connectedness Index suggests that a similar pattern also applies at the country level. When countries improve the attractiveness of their domestic business environments, this can give an even larger boost to their trade and capital flows than cutting tariffs or easing regulations on foreign direct investment.¹³³

STRENGTHEN THE GLOBALIZATION DEBATE

Contests between open versus closed visions of the future seem to be eclipsing traditional left-right politics in many countries.¹³⁴ This does not mean, however, that public opinion is turning decisively against globalization. On a 2018 survey, 85% of respondents across 27 countries viewed trade as good for their country, and across 18 countries that host more than half of the world's immigrants, 56% held positive views about immigration.¹³⁵ In the United States, multiple surveys show increasing support for trade and immigration, often to record levels.¹³⁶

Public opinion about globalization, however, is complex, implying that we need a far more nuanced debate about it. Less than half of survey respondents in advanced economies believe trade creates jobs, increases wages, or reduces prices.¹³⁷ Moreover, surveys about immigration highlight stark divides within countries. The proportion of Americans who say immigration is the country's most important problem hit a new peak (27%) in 2019, but the share who want to maintain or increase levels of immigration is also near a record high (64%).¹³⁸ And there is a 30 percentage point or larger gap between left- and right-leaning respondents on

whether immigrants make their countries stronger in the U.S., France, the Netherlands, Sweden, and Germany.¹³⁹

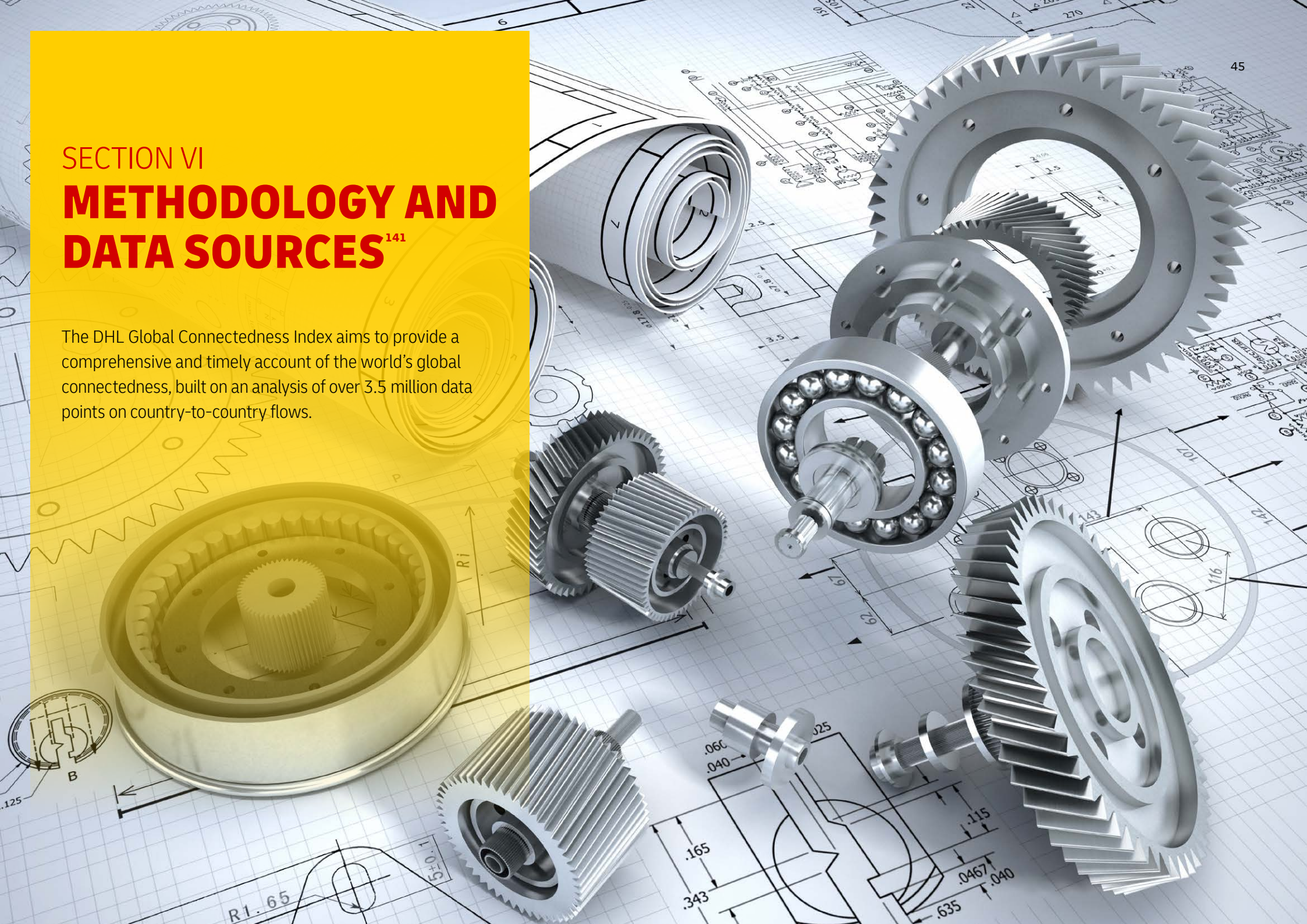
The nuances in public opinion about international flows suggest that it may be more productive to focus on specific policies that can garner widespread support rather than more abstract ideological debates. The distinct trajectories of different types of flows and wide variation in countries' levels of connectedness illustrate how policymakers do not have to adopt a "take it or leave it" approach to globalization. In what Pankaj Ghemawat has called a "semi-globalized" world, countries retain substantial flexibility to tailor their international engagement according to their own priorities.¹⁴⁰

We are all entitled to our own preferences about globalization. The DHL Global Connectedness Index can help strengthen policy debates by providing timely measures of the actual flows that connect countries. After all, we can only have a meaningful debate about whether to increase globalization or to pull back from it if we can agree on how much globalization we already have.

SECTION VI

METHODOLOGY AND DATA SOURCES¹⁴¹

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



1 CONCEPTS

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

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

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

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

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

TABLE 1: DEPTH METRICS BY COMPONENT

Pillar	Component	Domestic Comparison for Depth
1. Trade	1.1. Merchandise Trade	GDP
	1.2. Services Trade	GDP
2. Capital	2.1. Foreign Direct Investment (FDI) Stocks	GDP
	2.2. Foreign Direct Investment (FDI) Flows	Gross Fixed Capital Formation (GFCF)
	2.3. Portfolio Equity Stocks	Stock Market Capitalization
	2.4. Portfolio Equity Flows	Stock Market Capitalization
3. Information	3.1. International Internet Traffic	Internet Traffic
	3.2. International Telephone Call Minutes	Telephone Call Minutes
	3.3. Trade in Printed Publications (H.S. Code 49 covering printed books, newspapers, pictures, etc.)	Population
4. People	4.1. Tourists (departures and arrivals of overnight tourists)	Population
	4.2. International University Students	Tertiary Education Enrollment
	4.3. Migrants (foreign born population)	Population

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

2 DATA COLLECTION AND SOURCES

The DHL Global Connectedness Index is built primarily from internationally comparable data from multi-country sources, with additional data drawn from national statistics (see **Table 2**). Where possible, worldwide depth ratios are calculated using published estimates for the world, rather than being aggregated from individual countries' reported data. The main exceptions to this are portfolio equity stocks and printed publications trade. Worldwide breadth estimates are calculated by the authors using reporting country data on interactions with all partners. In cases where adequate data are not available from a reporting country but sufficient coverage¹⁴² can be achieved by using flows in the opposite direction as reported by partners, this method is used to calculate breadth.

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

TABLE 2: DATA SOURCES

Indicator	Depth (Size)	Depth (Scaling)	Breadth
1.1. Merchandise Trade	IMF Direction of Trade Statistics	IMF World Economic Outlook Database	IMF Direction of Trade Statistics, UN Comtrade database
1.2. Services Trade	World Bank World Development Indicators	IMF World Economic Outlook Database	–
2.1. FDI Stocks	UNCTAD World Investment Report	IMF World Economic Outlook Database	IMF CDIS, OECD, Eurostat, UNCTAD, and national statistical agencies and central banks
2.2. FDI Flows	UNCTAD World Investment Report	World Bank World Development Indicators, UNCTAD	OECD, Eurostat, UNCTAD, and national statistical agencies and central banks
2.3. Portfolio Equity Stocks	IMF Coordinated Portfolio Investment Survey	World Bank World Development Indicators	IMF Coordinated Portfolio Investment Survey
2.4. Portfolio Equity Flows	World Bank World Development Indicators	World Bank World Development Indicators	–
3.1. International Internet Traffic	TeleGeography Global Internet Geography	Cisco Visual Networking Index	–
3.2. Telephone Calls	TeleGeography Report and Database, Ovum OTT VoIP Forecast Report	TeleGeography, Ovum, ITU, World Bank	TeleGeography Report and Database
3.3. Printed Publications Trade	UN Comtrade database	UN DESA World Population Prospects	UN Comtrade database
4.1. Tourists	UN World Tourism Organization	UN DESA World Population Prospects	UN World Tourism Organization
4.2. University Students	UNESCO Institute for Statistics	UNESCO Institute for Statistics	UNESCO Institute for Statistics
4.3. Migrants	UN DESA International Migration database	UN DESA World Population Prospects	UN DESA International Migration database

3 AGGREGATION AND WEIGHTS

FIGURE 26: AGGREGATION OF THE DHL GLOBAL CONNECTEDNESS INDEX

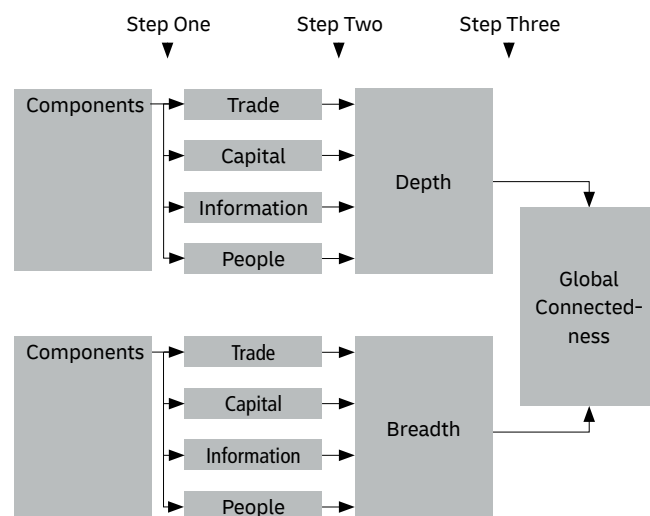


TABLE 3: WEIGHTS

Pillar (Weight % of Total)	Depth Component (Weight % of Pillar)	Breadth Component (Weight % of Pillar)
1. Trade (35%)	1.1 Merchandise Trade (75%)	1.1 Merchandise Trade (100%)
	1.2 Services Trade (25%)	–
2. Capital (35%)	2.1. FDI Stocks (25%)	2.1. FDI Stocks (25%)
	2.2. FDI Flows (25%)	2.2. FDI Flows (25%)
	2.3. Portfolio Equity Stocks (25%)	2.3. Portfolio Equity Stocks (50%)
	2.4. Portfolio Equity Flows (25%)	–
3. Information (15%)	3.1. International Internet Traffic (40%)	–
	3.2. Telephone Call Minutes (40%)	3.2. Telephone Call Minutes (67%)
	3.3. Trade in Printed Publications (20%)	3.3. Trade in Printed Publications (33%)
4. People (15%)	4.1. Tourists (33%)	4.1. Tourists (33%)
	4.2. University Students (33%)	4.2. University Students (33%)
	4.3. Migrants (33%)	4.3. Migrants (33%)

The overall index is built up from its constituent components via three steps, as illustrated in **Figure 26**. First, the individual components are aggregated into pillars, resulting in the computation of distinct pillars of the same type for depth and breadth. Then, overall depth and breadth scores are computed using the weighting scheme listed in **Table 3**. In step 3, these two dimensions of the analysis are averaged to produce the DHL Global Connectedness Index, applying equal weights to both.

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

NOTES

- 1 *The Economist*, "Globalisation is dead and we need to invent a new world order," June 18, 2019.
- 2 Shawn Donnan and Lauren Leatherby, "Globalization isn't dead, it's just evolving" *Bloomberg*, July 23, 2019.
- 3 See "How Global Connectedness is Measured in This Report" on Page 13.
- 4 The 2018 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 Chapter 3 of the 2018 DHL Global Connectedness Index report.
- 5 Figure 3 Data Sources and Notes: Calculated using quarterly data from the IMF, OECD, WTO, Eurostat, Bloomberg, World Federation of Exchanges, and various countries' national statistics. For each of the quarters shown, we collected data for as many countries as possible and calculated changes versus the previous quarter on each of the trade and capital depth metrics. For FDI flows, we used world-level data for the numerator. We then employed a changing sample of countries over time to estimate global changes on each metric in each quarter. In the most recent quarter reported, 2019 Q2, countries represented in the sample covered, on average, 89% percent of the global depth ratio denominator (GDP) for trade and 85% of the depth ratio denominators (GDP, gross fixed capital formation, and market capitalization) for capital. Earlier quarters had even higher coverage. Although we are pleased with this coverage level, it is important to note that recent data used as inputs to these calculations are often considered preliminary by the reporting agencies and subsequent revisions can result in substantial changes.
- 6 Such recent data, we should note, are often revised subsequently by the reporting agencies. Thus, these results should be treated as preliminary.
- 7 See Figures 20 and 21 in Section IV of this report.
- 8 Figure 4 Data Sources: Exports 1820: Angus Maddison, *Monitoring the World Economy 1820–1992* (Paris: OECD, 1995); exports 1870–1949: 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 1960–1979: World Bank World Development Indicators; exports 1980–2018: World Trade Organization, Statistics Database, and International Monetary Fund, *World Economic Outlook*; foreign direct investment (FDI) 1913–1985: United Nations Conference on Trade and Development (UNCTAD), *World Investment Report* 1994; FDI 1990–2018: UNCTAD, *World Investment Report* 2017, 2018, and 2019, and International Monetary Fund, *World Economic Outlook*. This historical analysis builds on Pankaj Ghemawat, "Semiglobalization and international business strategy," *Journal of International Business Strategy*, Volume 34, Issue 2, March 2003.
- 9 Pankaj Ghemawat, "Globalization in the age of Trump," *Harvard Business Review*, July–August 2017.
- 10 *The Economist*, "Globalisation: Turning Their Backs on the World," February 19, 2009; Roger C. Altman, "Globalization in Retreat: Further Geopolitical Effects of the Financial Crisis," *Foreign Affairs*, July/August 2009.
- 11 *The Economist*, "Globalisation has faltered: It is now being reshaped," January 24, 2019.
- 12 These developments and pertinent data sources are covered in Section IV of this report.
- 13 For in-depth analysis of these political shocks, refer to Pankaj Ghemawat, *The New Global Road Map: Enduring Strategies for Turbulent Times*, Harvard Business Review Press, 2018. The citations in the next two sentences were drawn from that publication.
- 14 Jim Tankersley, "Britain's Brexit just killed globalization as we know it," *Washington Post*, June 25, 2016.
- 15 Paul Mason, "Globalisation is dead and white supremacy has triumphed," *The Guardian*, November 9, 2016.
- 16 IMF, *World Economic Outlook*, October 2019.
- 17 Chad Bown, "U.S.-China trade war: The guns of August," *Trade and Investment Policy Watch*, Peterson Institute for International Economics, September 20, 2019.
- 18 Kevin Breuninger, "Trump says he's ordering American companies to immediately start looking for an alternative to China," *CNBC*, August 23, 2019.
- 19 Figure 8 Data Sources: Monthly trade data compiled from U.S. Census Bureau, General Administration of Customs of the People's Republic of China, and IMF DOTS. Dates compiled from *Reuters*, "Timeline: Key dates in the U.S.-China trade war," October 10, 2019; Chad Bown, "U.S.-China trade war: The guns of August," *Trade and Investment Policy Watch*, Peterson Institute for International Economics, September 20, 2019; Chad Bown and Melina Kolb, "Trump's trade war timeline: An up-to-date guide," *Trade and Investment Policy Watch*, Peterson Institute for International Economics, September 20, 2019; *Bloomberg News*, "U.S.-China trade war timeline: What's happened since May 2019," October 10, 2019.

- 20 All trade statistics reported in this subsection are based on “gross” trade values, i.e., without adjusting for foreign content embedded in exports. Such an adjustment would reduce exports as a percentage of its GDP, as discussed in Section IV. Additionally all of the quarterly statistics reported in the remainder of this subsection have been seasonally adjusted.
- 21 The 11th five-year plan stated, “First, we will promote development by relying on the expansion of domestic demand, take the expansion of domestic demand, especially consumption, as a major driving force, and transform economic growth from being driven by investment and export to being driven by consumption, investment, domestic and foreign demand combined in a balanced manner. This transformation is targeted at solving the problem that China’s economic growth has relied on investment and export excessively and domestic consumption does not play its due role.” See “The 11th Five-Year Plan: targets, paths and policy orientation,” National Development and Reform Commission, People’s Republic of China, March 23, 2006.
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- 23 Neil Irwin, “Globalization’s backlash is here, at just the wrong time,” *New York Times*, March 23, 2018.
- 24 Many economists view trade deficits as influenced primarily by macro-economic factors rather than tariff policy. See for example Paul Krugman, “Trump’s Trade Quagmire (Wonkish),” *New York Times*, August 3, 2019.
- 25 Alessandro Nicita, “Trade and trade diversion effects of United States tariffs on China,” UNCTAD Research Paper No. 37, November 2019.
- 26 Includes goods and services. World Bank, *World Development Indicators*, 2019.
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- 28 From an international relations perspective, refer to Joergen Oerstroem Moeller, “From globalization to regionalization,” *YaleGlobal*, October 30, 2018. From an international trade and value chains perspective, refer to Susan Lund, James Manyika, Jonathan Woetzel, Jacques Bughin, Mekala Krishnan, Jeongmin Seong, and Mac Muir, *Globalization in transition: The future of trade and value chains*, McKinsey Global Institute, January 2019.
- 29 See, for example, the Lund et al. report cited in the preceding endnote and *The Economist*, “Globalisation has faltered: It is now being reshaped,” January 24, 2019. Note that predictions that trade will become more regionalized also draw support from business surveys. On a 2017 survey conducted by the Economist Intelligence Unit, 49% of respondents said their companies expected their supply chains to “shorten and become more simple” over the next five years, whereas only 33% expected they would “lengthen and become more complex.” See Economist Intelligence Unit, *Rebooting Supply Chains: Shorter, Smarter and More Sustainable?* May 2017.
- 30 Figure 11 Data Sources and Notes: Data extracted from the IMF Direction of Trade Statistics and UN Comtrade databases. The “triad regions” are based on the regions classified in the 2018 DHL Global Connectedness Index (see Appendix B, Table B.5), with East Asia & the Pacific and South & Central Asia classified as Asia; North America and South & Central America & the Caribbean classified as the Americas; and Europe, the Middle East & North Africa, and Sub-Saharan Africa classified as EMEA. Continents follow the standard customary definitions, with Turkey classified as part of Asia and Russia classified as part of Europe due to the difficulties in disaggregating those countries’ international trade. The WTO regions follow the categories described in “WTO Statistical data sets—Metadata” available at <http://stat.wto.org/StatisticalProgram/WSDBStatProgramTechNotes.aspx>. Although it is not made explicit in the document, it is assumed that South Sudan should be classified as part of Africa. The UN regions are based on the United Nations Statistics Division’s publication “Standard Country or Area Codes for Statistical Use” originally published as Series M, No. 49; the current version is available at <https://unstats.un.org/unsd/methodology/m49/>. Note that results differ slightly between Figures 11 and 12 because Figure 11 uses the combined IMF DOTS and UN Comtrade dataset employed in the GCI itself (with the GCI breadth coverage restriction described in Endnote 142 applied), whereas the longer-run analysis in Figure 12 uses only IMF DOTS trade data. In Figure 11, the intra-regional share of trade using the WTO classification rises from 51% to 53% between 2012 and 2016, as compared to an increase from 51% to 54% in Figure 12.
- 31 Some other region classifications, including the one detailed in Table B.5 of the 2018 DHL Global Connectedness Index report, also showed an increase in trade regionalization from 2012–2016, but the WTO regions showed a much larger increase, reinforcing the sense that region classification choices have a strong influence on the results.
- 32 The average distance measure employed here is the average distance over which countries trade goods, weighted based on the value of the goods traded. Distances are measured “as the crow flies” (great circle distances), using the population-weighted distances between major cities in each country as reported by CEPII (See Thierry Mayer and Soledad Zignago, “Notes on CEPII’s distances measures: The GeoDist database,” *CEPII Working Paper No. 2011-25*, December 2011).
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- 34 Figure 14 Data Sources: IMF, World Bank World Development Indicators, UNCTAD, TeleGeography, Ovum, ITU, UN DESA, UNESCO Institute for Statistics, UN World Tourism Organization. The data on foreign students refers to 2017, as 2018 data were not available at the time of printing.
- 35 To provide a consistent comparison with global output (GDP), trade here is measured in value-added terms (i.e., without double-counting goods that cross borders more than once in multi-country value chains). Gross exports of goods and services sum to 30% of GDP. The distinction between the two types of trade depth measures is discussed in the trade subsection of Section IV of this report.
- 36 This analysis, based on data from the OECD’s Trade in Value Added (TiVA) database, classifies the “construction” and “electricity, gas, water supply, sewerage, waste and remediation services” industries as goods-producing. If these industries are treated as part of the service sector, the proportion of foreign value added in goods rises to 35%.
- 37 Galina Hale and Bart Hobijn, “The U.S. content of ‘Made in China,’” *FRBSF Economic Letter*, Federal Reserve Bank of San Francisco, August 7, 2011. More recent research reaffirms this pattern, as reported in Galina Hale, Bart Hobijn, Fernanda Nechio, and Doris Wilson, “How much do we spend on imports?” *FRBSF Economic Letter*, Federal Reserve Bank of San Francisco, January 7, 2019.
- 38 The concentration of international flows among top partner countries is even more striking if the analysis is conducted country-by-country rather than using aggregate global flows, as we did in Figure 2. For an average country, almost 40% of international flows involve just one partner country and 70% of flows involve just five partner countries.
- 39 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.
- 40 Weighted average based on pillar and component weights described in Section VI.

- 41 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, 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'économie* 46(4), November 2013.
- 42 The implications of this phenomenon for the globalization debate are discussed in Pankaj Ghemawat, *World 3.0: Global Prosperity and How to Achieve It*, Harvard Business Review Press, 2011. Ghemawat refers to the widespread pattern of overestimation of levels of globalization as "globaloney," a term coined by the American politician Clare Booth Luce.
- 43 Online survey of managers conducted between March 21 and April 6, 2017. The surveys were completed by at least 1,000 respondents in each country. Respondents all held decision-maker or director/manager roles in companies with at least 100 employees.
- 44 Pre-course survey of students enrolled in Pankaj Ghemawat's MOOC (massive open online course) "Globalization of Business Enterprise" on the Coursera platform; Survey of 1720 members of the U.S. general public conducted for Pankaj Ghemawat via the SurveyMonkey platform.
- 45 Based on data from UNCTAD *World Investment Report 2018* and International Labor Organization *Key Indicators of the Labor Market*.
- 46 Pankaj Ghemawat, *The New Global Road Map: Enduring Strategies for Turbulent Times*, Harvard Business Review Press, 2018.
- 47 Ibid.
- 48 Ibid.
- 49 WTO Press Release, "Global trade growth loses momentum as trade tensions persist," April 2, 2019.
- 50 UNCTAD, *Investment Trends Monitor* Issue 32, October 2019.
- 51 GDP statistics are also produced in value added terms.
- 52 The May 2019 *OECD Economic Outlook* forecast shows goods and services trade volume growing at 2.1% and real GDP growing at 3.2% in 2019. By contrast, the June 2019 World Bank *Global Economic Prospects* shows both growing at 2.6%, although it is worth mentioning that the IMF also showed roughly the same levels in their April 2019 release. Other sources that focus on goods rather than combined goods and services were similarly dour. The WTO projected 1.2% growth in merchandise trade volume in 2019, compared to 2.3% real GDP growth in its October 2019 press release. In its November 2019 *Global Outlook*, the Economist Intelligence Unit projected trade in goods would grow by 1.5% and real GDP at market exchange rates would grow 2.3%. In its October *World Economic Prospects Monthly*, Oxford Economics projected world trade growth of 0.6% and real GDP growth of 2.5%.
- 53 IMF, *World Economic Outlook*, October 2019.
- 54 Economist Intelligence Unit, *Global Outlook*, Country Forecast, November 2019.
- 55 BBC, "Brexit: All you need to know about the UK leaving the EU," October 29, 2019.
- 56 Rob Picheta, "Everything you need to know about the UK general election on December 12," *CNN*, October 31, 2019.
- 57 See, for example, Meredith A Crowley, Oliver Exton, Lu Han, "Renegotiation of Trade Agreements and Firm Exporting Decisions: Evidence from the Impact of Brexit on UK Exports," *CEPR Discussion Paper* 13446, January 2019; Nicholas Bloom, Philip Bunn, Scarlet Chen, Paul Mizen, Pawel Smietanka, and Gregory Thwaites, "The impact of Brexit on UK Firms," *NBER Working Paper* 26218, September 2019; Arno Hantzsche and Garry Young, "Prospects for the UK Economy," *National Institute Economic Review*, October 29, 2019.
- 58 Catherine Kim, "The escalating trade war between South Korea and Japan, explained," *Vox*, August 9, 2019.
- 59 Heekyong Yang, "South Korea removes Japan from fast-track trade 'white list,'" *Reuters*, September 17, 2019; *Yonhap News Agency*, "S. Korea to remove Japan from trusted trade partner status in Sept.," September 1, 2019.
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- 62 Megan Cassella, "Morning Trade: Breaking down the path forward for the USMCA," *Politico*, October 22, 2019.
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- 65 European Commission, "Joint press statement by EU Trade Commissioner Cecilia Malmström and Minister of Industry and Trade Tran Tuan Anh on the occasion of the signing of the Free Trade Agreement and the Investment Protection Agreement between Viet Nam and the EU," June 29, 2019.
- 66 Suttinee Yuvejwattana, Bibhudatta Pradhan, and Santosh Kumar, "India Exits China-Backed Trade Deal 15 Nations Plan to Sign," *Bloomberg*, November 4, 2019.
- 67 The DHL Global Connectedness Index excludes most forms of international debt capital. The motivation for this design choice relates to use of the index at the country level, where higher levels of connectedness are generally viewed as beneficial for countries. Given the dangers that high levels of foreign indebtedness can pose to countries' economies, we did not want foreign debt to elevate countries' standings on the index.
- 68 World Bank, *World Development Indicators*, 2019.
- 69 Both portfolio equity stocks and market capitalization grew in 2017 and declined in 2018, but the growth in portfolio equity stock was greater than the growth in market capitalization in 2017, while the decline in portfolio equity stock was smaller than the decline in market capitalization in 2018, thus resulting in an increase in the ratio in both years.
- 70 For discussion of the equity "home bias" puzzle in international economics and data comparing trends in advanced versus emerging economies, refer to Nicolas Coeurdacier and Hélène Rey, "Home bias in open economy financial macroeconomics," *Journal of Economic Literature* 51, No. 1, March 2013.
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- 72 UNCTAD, *World Investment Report 2017* and *World Investment Report 2018*. For a more detailed explanation of how U.S. firms used offshore accounting to avoid taxation and the effects on reported FDI transactions, see Brad W. Setser, "\$500 Billion in dividends out of the double Irish with a Dutch twist (with a bit of help from Bermuda)," *Follow the Money*, Council on Foreign Relations, August 12, 2019.

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- 77** UNCTAD, *World Investment Report 2019*.
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- 84** See, for example, James Manyika, Susan Lund, Jacques Bughin, Jonathan Woetzel, Kalin Stamenov, and Dhruv Dhingra, *Digital Globalization: The New Era of Global Flows*, McKinsey Global Institute, February 2016; Arindam Bhattacharya, Dinesh Khanna, Christoph Schweizer, and Aparna Bijapurkar, "Going beyond the rhetoric," *The New Globalization*, BCG Henderson Institute, April 25, 2017; Susan Lund and Laura Tyson, "Globalization is not in retreat: Digital technology and the future of trade," *Foreign Affairs*, May/June 2018; Christian Ketels, Arindam Bhattacharya, and Liyana Satar, "Global Trade Goes Digital," *The New Globalization*, BCG Henderson Institute, August 12, 2019.
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- 87** Rough estimate based on data from Cisco Visual Networking Index and Tele-Geography. The values reported in the text include all IP traffic (fixed internet, managed IP, and mobile data) in the denominator of the depth ratio. If the denominator is restricted to fixed internet traffic only the international share rises to 14% in 2005 and 31% in 2018.
- 88** International and domestic internet traffic growth calculated based on data from Telegeography and Cisco.
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- 90** ITU Global and Regional ICT Estimates.
- 91** Estimates vary somewhat across studies. See, for example, Maurice H. Yearwood, Amy Cuddy, Nishtha Lamba, Wu Youyou, Ilmo van der Lowe, Paul K. Piff, Charles Gronin, Pete Fleming, Emiliana Simon-Thomas, Dacher Keltner, and Aleksandr Spectre, "On wealth and the diversity of friendships: High social class people around the world have fewer international friends," *Personality and Individual Differences* 87, December 2015 and Johan Ugander, Brian Karrer, Lars Backstrom, and Cameron Marlow, "The Anatomy of the Facebook Social Graph," *arXiv:1111.4503 [cs.SI]*, November 2011.
- 92** Edward L. Platt, Rahul Bhargava, and Ethan Zuckerman, "The International Affiliation Network of YouTube Trends," *Ninth International AAAI Conference on Web and Social Media*, Oxford, UK, May 26–29, 2015.
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- 95** Ecommerce News, "23% of ecommerce in Europe is cross-border," March 14, 2019.
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- 101** 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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- 120** The relationship between country-level DHL Global Connectedness Index results and countries’ economic growth rates was analyzed in Chapter 4 of the *DHL Global Connectedness Index 2011*. For additional evidence based on other measures of globalization, refer to Niklas Potrafke, “The Evidence on Globalization,” *The World Economy*, Volume 8 Issue 3, 2015.
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- 142** Coverage is deemed to be sufficiently complete when data on flows between a given reporter and all partner countries sum to between 80% and 110% of the reported total for the world.

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The DHL Global Connectedness Index

This report provides a compact, global-level update of our established, biennial DHL Global Connectedness Index (GCI). The last full GCI report—the DHL Global Connectedness Index 2018—was released one year ago. That publication analyzes the development of trade, capital, information, and people flows not only for the world as a whole but also for individual countries and regions. It ranks and profiles 169 countries and territories, encompassing 99% of the world's GDP, and it provides a complete explanation of the DHL Global Connectedness Index methodology. The next full edition of the DHL Global Connectedness Index will be released in late 2020.

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