

# DISTINCTIVE FEATURES OF THE DHL GLOBAL CONNECTEDNESS INDEX

The DHL Global Connectedness Index is not the only publication to regularly track levels of globalization and to rank countries on this basis. Three other established globalization indexes have been updated since the beginning of 2016: the *KOF Globalization Index* (developed by the KOF Swiss Economic Institute), the *McKinsey Global Institute Country Connectedness Index*, and the *Bertelsmann Stiftung Globalization Index* (developed in conjunction with Prognos, and based closely on the 2016 KOF methodology).<sup>1</sup> The following points highlight features of the DHL Global Connectedness Index that distinguish it from the others:

## Unique Global Trends Analysis

In addition to ranking countries based on their levels of globalization, the DHL Global Connectedness Index measures global connectedness at the world level. Among other current globalization indexes, only the KOF Globalization Index reports results aggregated up to the world level. However, that index's world scores are just simple averages of its country-level scores. As such, the KOF index global trends are affected by the normalization of its country-level data and primarily reflect changes in smaller countries' levels of globalization.

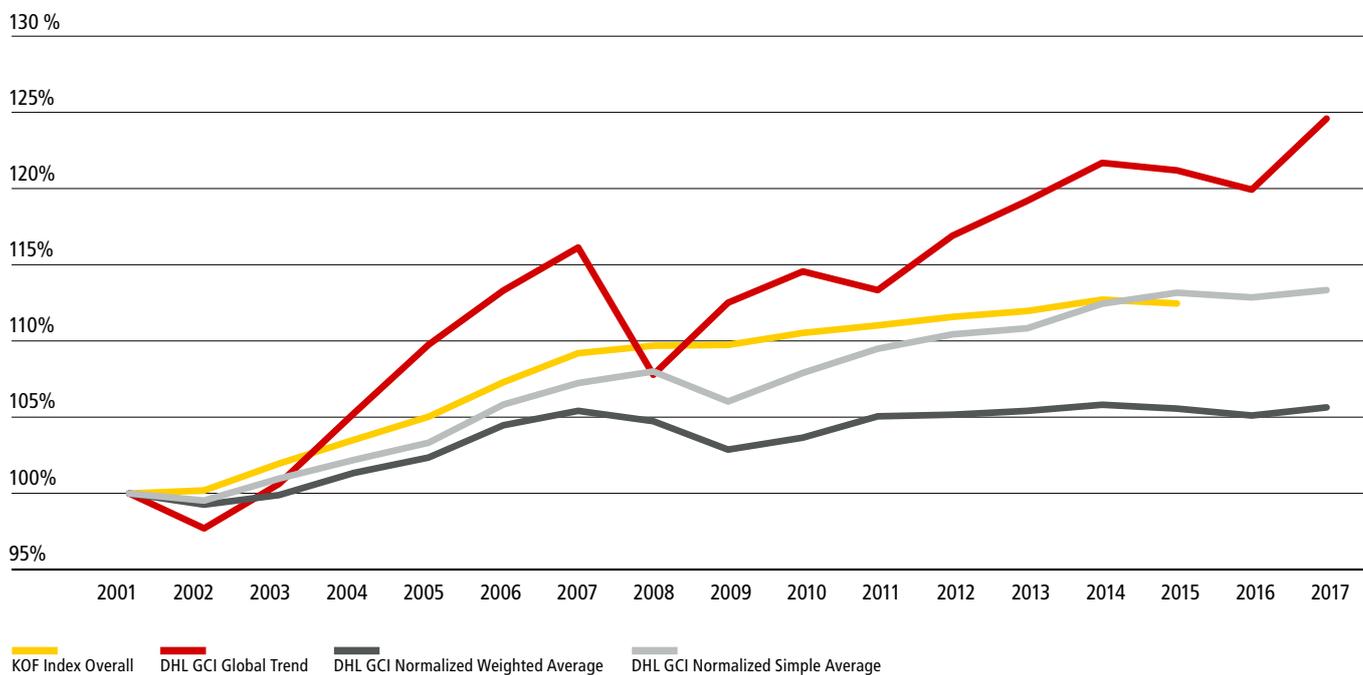
By using normalized country data, the KOF index's global trends capture whether average countries' levels of globalization are rising or falling but *not* the actual magnitude of the changes. This is because the KOF index, like the DHL Global Connectedness Index at the country level, converts countries' component measures to percentile scores (percentiles normalization).<sup>2</sup> The effects of this distinction are greatest when new records are being set on a particular metric. When an underlying metric reaches a new peak, its normalized score becomes a value just one increment higher than the previous peak, but it does not reflect whether the increase was large or small.

The DHL Global Connectedness Index global trends, by contrast, compare actual values on each component metric to their values in the baseline year, preserving the magnitudes of the underlying changes. Thus, we are able to see, for example, that the depth (intensity) of international information flows has nearly tripled since 2001. We do, however, retain percentiles normalization in our country-level trend charts in Part II. This is because percentiles normalization is important at the country level to reduce the sensitivity of countries' scores and ranks to outliers in the underlying data.<sup>3</sup>

Another important distinction is that the DHL Global Connectedness Index global trends are computed based on global measures rather than simple averages across countries.<sup>4</sup> To illustrate how these can differ, consider immigration depth. The simple average of the 2017 data on immigrants as a proportion of countries' populations is 13%. But measured globally, just 3.4% of the world's population live outside the countries where they were born. The reason, of course, is that there are many small countries where the proportion of immigrants is higher than it is globally. Both types of metrics are useful, but for different purposes. Therefore, we focus Chapter 1 on global metrics so that our global results do not disproportionately reflect patterns in small countries. Then, we separately employ country-level metrics and simple averages across them (to analyze regions) in Chapter 2.

**Figure 3.3** contrasts the KOF index global trends versus the DHL Global Connectedness Index (GCI) global trends (as reported in Chapter 1), as well as two alternative versions of the GCI trends computed using normalized country-level data. One normalized alternative, like the KOF index, uses simple averages, and the other uses weighted averages to more closely parallel the global metrics we normally employ. The GCI global trend shows the largest increase in globalization because the alternatives, due to percentiles normalization, all fail to capture

FIGURE 3.3 //  
**KOF INDEX VERSUS ALTERNATIVE METHODS TO COMPUTE GCI GLOBAL TRENDS**



the magnitudes of the changes in the underlying metrics. And the distinction between global metrics (weighted averages) versus simple averages also matters. The simple average version of the analysis misses how the rising share of activity in less connected emerging economies has depressed the growth of global connectedness, as discussed in Chapter 1.

Another distinction between the KOF index trend and even the normalized simple average version of the DHL Global Connectedness Index trend is that the KOF index indicates a continuous increase in the world level of globalization from 2001 through 2014. By contrast, all three versions of the DHL Global Connectedness Index trends show a significant decline during the global financial crisis, which was widely regarded at the time as globalization's largest reversal in decades.<sup>5</sup> To understand why the indexes report such different trends even when using comparable normalization and aggregation methods, we need to examine differences in the aspects of globalization they measure, as discussed in the next section.

#### Focus on Actual International Flows

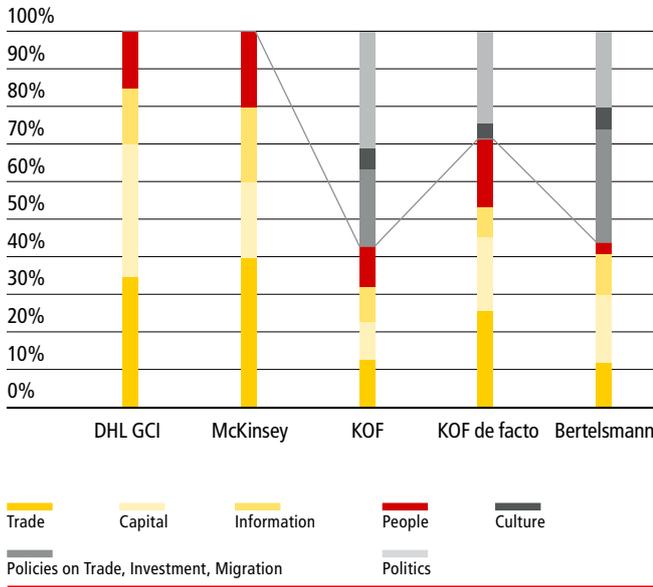
The DHL Global Connectedness Index pioneered the computation of a globalization index with a strict focus on measures of actual flows between countries rather than their presumed enablers or impacts. This design

choice was subsequently adopted by McKinsey,<sup>6</sup> and the KOF index moved closer to our index in this respect in 2018 by providing separate “de facto” and “de jure” measures of globalization.<sup>7</sup> The new KOF de facto index *does* show a small decline during the global financial crisis.<sup>8</sup>

We chose to focus the DHL Global Connectedness Index on actual international flows both to make it more sensitive to changes in such flows and to boost its value in policy analysis. Separate measures of presumed causes and effects are required to evaluate how the former actually relate to the latter. The 2011 and 2012 editions of this report feature such policy analysis. Among the most interesting findings is that policies designed to improve countries' business environments can sometimes do even more to deepen their levels of connectedness than policies that focus specifically on easing international interactions.

The Bertelsmann index, by contrast, devotes about half of its weight to technological and policy enablers of globalization (along with politics), as the KOF index did before its 2018 edition.<sup>9</sup> Additionally, some of the metrics included in that index—and in KOF's new de jure index—seem to better measure modernization or Westernization than globalization. For example, these indexes include indicators of access to televisions,

**FIGURE 3.4 // COMPARISON ACROSS GLOBALIZATION INDEXES: WEIGHTS ASSIGNED TO ASPECTS OF GLOBALIZATION MEASURED (MATCHING DHL GCI PILLARS WHERE POSSIBLE)**



telephones, and the internet. Our research indicates that all of those technologies are used primarily for domestic rather than international communication.<sup>10</sup>

Furthermore, the new KOF de jure index has introduced gender parity, expenditure on education, and civil freedom as indicators of cultural globalization. While these are important measures of societal progress, higher values on them do not necessarily imply more globalization since they are not intrinsically international. Additionally, both the KOF and Bertelsmann indexes continue to include the number of McDonald’s restaurants and IKEA stores as component measures, even though the authors of the KOF index have acknowledged critiques that the use of these indicators essentially defines cultural globalization as dispersion of Western culture.

**Globalization vs. Internationalization**

Other globalization indexes, to the extent they measure actual interactions rather than their presumed enablers and impacts, concentrate almost entirely on the depth (intensity) of international flows.<sup>11</sup> The fact that breadth (extensity) has such limited emphasis in other indexes is particularly noteworthy since the developer of the original KOF index has co-authored an article recognizing that, “an important criticism of many indices...is that, strictly speaking, they measure internationalization and

regionalization rather than globalization.”<sup>12</sup> The DHL Global Connectedness Index is the only index that comprehensively addresses this critique by measuring both depth and breadth.

The new methodology for the KOF index inserts a single breadth measure: trade partner diversification as measured by the Herfindahl-Hirschman concentration index for trade in goods.<sup>13</sup> While this does address breadth in a limited way, it does not take into account the global distributions of the flows, just their dispersion.<sup>14</sup>

McKinsey’s index also looks beyond depth. However, rather than complementing depth with breadth, it combines “flow intensity [depth] with each country’s share of the global total to offer a more accurate perspective on its significance in world flows.”<sup>15</sup> Although the “significance” of a country’s international activities beyond its own borders is interesting, we view this as quite distinct from a country’s actual level of globalization (shares in global flows themselves being a function of depth and country size). Thus, combining these into a single index seems—at least to us—arbitrary, at best.<sup>16</sup>

The inclusion of breadth does greatly expand the amount of data required to calculate the index: between all possible country pairs rather than only between each country and the rest of the world. This drives the total number of data points used to calculate this edition of the DHL Global Connectedness Index over the 17-year period covered up to more than 3 million. But once compiled, it enables a range of analyses that go well beyond only the calculation of breadth scores: the average distances traversed by international flows covered in Chapter 1, levels of regionalization discussed in Chapter 2, maps depicting countries international flows in the country profiles in Part II, and so on.

**Importance-Based Weighting Scheme**

The differences in weighting schemes across globalization indexes are striking, as shown in Figure 3.4, which reflects our own categorization of what the other indexes measure rather than their own categories. Weights that other indexes assign to topics that are also covered by the DHL Global Connectedness Index are shown below the lines that connect the bars on the chart, and topics that other indexes include but we do not appear above those lines.

Both Bertelsmann and KOF assign weights based on principal-component analysis to ensure maximum variation,

which has theoretical appeal in that it removes human judgment from the process. However, it can generate weights that do not reflect the importance users—particularly those focused on economic and business policies—might attach to different aspects of globalization. For example, the 2018 KOF index assigns a larger weight to services trade than it does to merchandise trade, even though global merchandise trade was 3.5 times larger than services trade in 2017. The McKinsey index, on the other hand, uses a simple average across components, which treats each component as equally important.

The DHL Global Connectedness Index, in contrast, assigns weights based on the authors' judgment about the relative importance of the pillars and components, as described earlier in this chapter. While this method is necessarily subjective, it does overcome some of the concerns raised here about the methods employed by other indexes.

#### **Directional Flows and Stocks**

The DHL Global Connectedness Index also provides, wherever sufficient data are available, parallel treatment of outbound and inbound flows between countries, enabling meaningful comparisons of the

directionality of each country's connectedness. This permits distinction between an economy such as Taiwan (China), where outbound flows and stocks are much deeper than inbound, and Palau, where the opposite pattern prevails. Other indexes typically use aggregated outward and inward measures as their fundamental building blocks, precluding such comparisons. The importance of this distinction is highlighted, for example, by the very different light in which countries' trade policy officials tend to view exports and imports.

#### **Timeliest Reporting**

Ambiguity about where globalization is headed increases the value of timely reporting of measures of globalization. The DHL Global Connectedness Index is released with a one-year lag since the end of the most recent year measured. The KOF index, which is published more consistently and frequently than the others, was last released with a two-year lag. The most recent McKinsey Index was published with a 15-month lag; its March 2016 edition reported a 2014 connectedness index. The timeliness of the Bertelsmann index varies across components. Its economic data were last published with an 18-month lag, but its other components (drawn from the KOF index) were significantly older.

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# NOTES

- 1 In past editions of this report, we have also discussed the *Ernst & Young Globalization Index* (developed in cooperation with the Economist Intelligence Unit) and the *Maastricht Globalization Index*, but these are not covered in this edition because they have not been updated since 2012 and 2014, respectively.
- 2 More specifically, both indexes employ panel normalization using percentiles such that values on each metric are converted to their percentiles along the distribution of that metric across all countries over all of the years covered on the index.
- 3 At the global level, outliers are much less of a concern because global metrics are naturally much less volatile than country level metrics.
- 4 If global measures are available directly from our data sources, we use those in our calculations. Otherwise, we construct global measures by calculating weighted averages across countries. For depth, the weights are the denominators of the depth ratios, and for breadth, they are the flow values themselves.
- 5 The February 19, 2009 issue of *The Economist* proclaimed that “the integration of the world economy is in retreat on almost every front,” and highlighted drop-offs in trade, capital, and people flows. The same article also noted a change in popular rhetoric about globalization, stating that “the economic meltdown has popularized a new term: deglobalization.” Former US deputy treasury secretary Roger C. Altman addressed increased roles of national governments in regulation and protectionism in his July/August 2009 *Foreign Affairs* article entitled “Globalization in Retreat.” And Jean Pisani-Ferry and Indhira Santos wrote in the March 2009 edition of the IMF’s *Finance & Development* magazine of an “end (for now) of a rapid expansion of globalization,” pointing to public participation in the private sector, financial fragmentation, and increased tariffs.
- 6 The focus on actual interactions is one of several respects in which the McKinsey index adopted a design similar to the DHL Global Connectedness Index. See, in particular, p. 124 of McKinsey Global Institute, “Digital Globalization: The New Era of Global Flows,” March 2016.
- 7 Savina Gygli, Florian Haelg, and Jan-Egbert Sturm, “The KOF Globalisation Index – Revisited,” KOF Working Papers No. 439, ETH Zurich, February 2018.
- 8 Additionally, both the overall KOF index as well as its de facto index report declines from 2014 to 2015.
- 9 Pankaj Ghemawat and Steven A. Altman, “Defining and Measuring Globalization,” in Pankaj Ghemawat, *The Laws of Globalization*, Cambridge University Press, 2016.
- 10 As reported in Chapter 1, approximately 7% of voice traffic and 26% of internet traffic cross national borders. Data on television news points in the same direction, with international news averaging only about one-quarter of total coverage, as reported in Pankaj Ghemawat, *The New Global Road Map*, Harvard Business Review Press, 2018 (Figure 1-4).
- 11 For a thorough analysis of how the GCI depth and breadth pillars correlate with other globalization indexes, see Pankaj Ghemawat and Steven A. Altman, “Defining and Measuring Globalization,” in Pankaj Ghemawat, *The Laws of Globalization*, Cambridge University Press, 2016.
- 12 Axel Dreher, Noel Gaston, Pim Martens, and Lotte Van Boxem, “Measuring Globalization – Opening the Black Box. A Critical Analysis of Globalization Indices,” *Journal of Globalization Studies* 1(1), May 2010, pp. 179, 181.
- 13 One might also argue that there is a type of breadth measure in the number of embassies and the number of partners in investment treaties; however, these focus on policy enablers rather than actual flows.
- 14 Recall from earlier in this chapter that our breadth metric compares the distributions of countries’ flows to the distributions of the rest of the world’s flows of the same type in the opposite direction.
- 15 McKinsey Global Institute, “Digital Globalization: The New Era of Global Flows,” March 2016, p. 56.
- 16 McKinsey argues in the methodological appendix of its 2016 edition that intensity measures “artificially boost small countries,” prompting the inclusion of countries’ shares in world flows to “correct” for this (p. 125). Kam Ki Tang and Amy Wagner clarify in the context of trade that “if the purpose is to measure trade intensity or trade dependency, then the [trade intensity index] will be an appropriate measure. However, if the purpose is to measure trade openness, it has a limitation of being biased against large economies.” (Kam Ki Tang and Amy Wagner, “Measuring Globalization Using Weighted Network Indexes.” 31st General Conference of the International Association for Research in Income and Wealth, St. Gallen, Switzerland, August 22–28, 2010.) Since our aim in the DHL Global Connectedness Index is to measure the actual level of globalization rather than openness to globalization, we stand by our use of intensity (depth).