2015 KOF Index of Globalization

The KOF Index of Globalization was introduced in 2002 (Dreher, published in 2006) and is updated and described in detail in Dreher, Gaston and Martens (2008). The overall index covers the economic, social and political dimensions of globalization. Following Clark (2000), Norris (2000) and Keohane and Nye (2000), it defines globalization to be the process of creating networks of connections among actors at multi-continental distances, mediated through a variety of flows including people, information and ideas, capital and goods. Globalization is conceptualized as a process that erodes national boundaries, integrates national economies, cultures, technologies and governance and produces complex relations of mutual interdependence.

More specifically, the three dimensions of the KOF index are defined as:

- *economic globalization*, characterized as long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges;
- *political globalization*, characterized by a diffusion of government policies; and
- *social globalization*, expressed as the spread of ideas, information, images and people.

The 2015 index introduces an updated version of the original index, employing more recent data than has been available previously.

Economic Globalization

Broadly speaking, economic globalization has two dimensions. First, actual economic flows are usually taken to be measures of globalization. Second, the previous literature employs proxies for restrictions to trade and capital. Consequently, two indices are constructed that include individual components suggested as proxies for globalization in the previous literature.

Actual Flows: The sub-index on actual economic flows includes data on trade, FDI and portfolio investment. Data on trade are provided by the World Bank (2014), stocks of FDI (normalized by GDP) are provided by UNCTAD STAT (2014). Portfolio investment is derived from the IMF's International Financial Statistics (October 2014). More specifically, trade is the sum of a country's exports and imports and portfolio investment is the sum of a country's stock of assets and liabilities (all normalized by GDP).

While these variables are straightforward, income payments to foreign nationals and capital are included to proxy for the extent that a country employs foreign people and capital in its production processes.

Restrictions: The second index refers to restrictions on trade and capital using hidden import barriers, mean tariff rates, taxes on international trade (as a share of current revenue) and an index of capital controls. Given a certain level of trade, a country with higher revenues from tariffs is less globalized. To proxy restrictions of the capital account, an index based on data by Gwartney et al. (2014) is employed. This index is based on the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions and includes 13 different types of capital controls. The index is constructed by subtracting the number of restrictions from 13 and multiplying the result by 10. The indices on mean tariff rates and hidden import barriers are also derived from Gwartney et al. (2014). Mean tariff rates originate from various sources. Gwartney et al. allocated a rating of 10 to countries that do not impose any tariffs. As the mean tariff rate increases, countries are assigned lower ratings. The rating will decline toward zero as the mean tariff rate approaches 50 percent (which is usually not exceeded by most countries among their sample). The original source for hidden import barriers, finally, is the World Economic Forum's Global Competitiveness Report (various issues).

Social Globalization

The KOF index classifies social globalization in three categories. The first covers personal contacts, the second includes data on information flows and the third measures cultural proximity.

Personal Contacts: This index is meant to capture direct interaction among people living in different countries. It includes international telecom traffic (traffic in minutes per person) and the degree of tourism (incoming and outgoing) a country's population is exposed to. Government and workers' transfers received and paid (in percent of GDP) measure whether and to what extent countries interact, while the stock of foreign population is included to capture existing interactions with people from other countries. The number of international letters sent and received also measure direct interaction among people living in different countries. Telecom traffic is provided by the International Telecommunication Union (2013), while the number of letters is taken from the Universal Postal Union's Postal Statistics Database. The remaining three variables are from the World Bank (2014).

Information flows: While personal contact data are meant to capture measurable interactions among people from different countries, the sub-index on information flows is meant to measure the potential flow of ideas and images. It includes the number of internet users (per 100 people), the share of households with a television set, and international newspapers traded (in percent of GDP). All these variables to some extent proxy people's potential for receiving news from other countries – they thus contribute to the global spread of ideas. The variables in this sub-index derive from the World Bank (2014), International Telecommunication Union (2013), the UNESCO (various years), and the United Nations Commodity Trade Statistics Database (2014).

Cultural Proximity: Cultural proximity is arguably the dimension of globalization most difficult to grasp. Dreher (2006) suggests the number of English songs in national hit lists or movies shown in national cinemas that originated in Hollywood. However, these data lack for the majority of countries in our sample. Instead, we thus use imported and exported books (relative to GDP), as suggested in Kluver and Fu (2004). Traded books proxy the extent to which beliefs and values move across national borders, taken from the UNESCO (various years), and the United Nations Commodity Trade Statistics Database (2014).

According to Saich (2000, p.209) moreover, cultural globalization mostly refers to the domination of U.S. cultural products. Arguably, the United States is the trend-setter in much of the global socio-cultural realm (see Rosendorf, 2000, p.111). As an additional proxy for cultural proximity we thus include the number of McDonald's restaurants located in a country. For many people, the global spread of McDonald's became a synonym for globalization itself. In a similar vein, we also use the number of Ikea per country.

Political Globalization

To proxy the degree of political globalization we employ the number of embassies and high commissions in a country and, the number of international organizations to which the country is a member and the number of UN peace missions a country participated in. In addition, we include the number of treaties signed between two or more states since 1945. These data are taken from the Europa World Yearbook (various years), the CIA World Factbook (various years), the UN Department of Peacekeeping Operations, and the United Nations Treaties Collection.

Method of Calculation

In constructing the indices of globalization, each of the variables introduced above is transformed to an index on a scale of one to hundred, where hundred is the maximum value for a specific variable over the 1970-2012 period and one is the minimum value. Higher values denote greater globalization. The data are transformed according to the percentiles of the original distribution. The weights for calculating the sub-indices are determined with the help of principal components analysis for the entire sample of countries and years. The analysis partitions the variance of the variables used in each sub-group. The weights are then determined in a way that maximizes the variation of the resulting principal component, so that the indices capture the variation as fully as possible. The same procedure is applied to the sub-indices in order to derive the overall index of globalization.

Data are calculated on a yearly basis. However, not all data are available for all countries and all years. In calculating the indices, all variables are linearly interpolated before applying the weighting procedure. Instead of linear extrapolation, missing values at the border of the sample are substituted by the latest data available. When data are missing over the entire sample period, the weights are readjusted to correct for this. When observations with value zero do not represent missing data, they enter the index with weight zero. Data for sub-indices and the overall index of globalization are not calculated, if they rely on a small range of variables in a specific year and country. Observations for the index are reported as missing if more than 40 percent of the underlying data are missing or at least two out of the three sub-indices cannot be calculated. The indices on economic, social and political globalization as well as the overall index are calculated employing the weighted individual data series instead of using the aggregated lower-level globalization indices. This has the advantage that data enter the higher levels of the index even if the value of a sub-index is not reported due to missing data.

References

Central Intelligence Agency (various years), World Factbook, https://www.cia.gov/library/publications/the-world-factbook/.

Clark, William C., 2000, Environmental Globalization, in: Joseph S. Nye and John D. Donahue (eds.), *Governance in a Globalizing World*, Brookings Institution Press, Washington, D.C.: 86-108.

Dreher, Axel, 2006, Does Globalization Affect Growth? Evidence from a new Index of Globalization, *Applied Economics* 38, 10: 1091-1110.

Dreher, Axel; Noel Gaston and Pim Martens, 2008, *Measuring Globalization - Gauging its Consequence*, New York: Springer.

Europa World Yearbook, various years, Routledge.

Gwartney, James D.; Joshua C. Hall and Robert Lawson, 2014, 2014 Economic Freedom Dataset, published in Economic Freedom of the World: 2014 Annual Report, Publisher: Economic Freedom Network, http://www.freetheworld.com/2014/

International Monetary Fund, 2014, International Financial Statistics Indicators, CD-Rom, October, Washington, DC.

International Telecommunication Union, 2013, World Telecommunication/ICT Indicators database.

Keohane, Robert O. and Joseph S. Nye, 2000, Introduction, in: Joseph S. Nye and John D. Donahue (eds.), *Governance in a Globalizing World*, Brookings Institution Press, Washington, D.C.: 1-44.

Kluver, Randy and Wayne Fu, 2004, Measuring cultural globalization, Nanyang Technological University, Singapore, mimeo.

Norris, Pippa, 2000, Global Governance and Cosmopolitan Citizens, in: Joseph S. Nye and John D. Donahue (eds.), *Governance in a Globalizing World*, Brookings Institution Press, Washington, D.C.: 155-177.

Rosendorf, Neal M., 2000, Social and Cultural Globalization: Concepts, History, and America's Role, in: Joseph S. Nye and John D. Donahue (eds.), *Governance in a Globalizing World*, Brookings Institution Press, Washington, D.C.: 109-134.

Saich, Tony, 2000, Globalization, Governance, and the Authoritarian State: China, in: Joseph S. Nye and John D. Donahue (eds.), *Governance in a Globalizing World*, Brookings Institution Press, Washington, D.C.: 208-228.

UNCTAD, 2014, UNCTADstat, http://unctadstat.unctad.org.

UNESCO, various years, Statistical Yearbook.

Universal Postal Union, Postal Statistics data base, http://www.upu.int.

United Nations Commodity Trade Statistics Database, 2013, http://comtrade.un.org/.

United Nations Department of Peacekeeping Operations, http://www.un.org/Depts/dpko/dpko/contributors/.

United Nations Treaties Collection, http://treaties.un.org.

World Bank, 2007, 2011, 2013, 2014 World Development Indicators, Washington, DC.