Data Observer

Florian Haelg*

The KOF Globalisation Index – A Multidimensional Approach to Globalisation

https://doi.org/10.1515/jbnst-2019-0045

1 Introduction

Globalisation is an omnipresent topic in today's world. To examine causes and consequences of globalisation, scholars have relied on single indicators, such as trade and foreign direct investment, as measures for globalisation for a long time. This approach, however, falls short of the multifaceted concept of globalisation that encompasses much more than openness to trade and capital flows. Globalisation is also represented, for example, in citizens of different countries exchanging ideas and information, or governments working together to tackle political problems of global reach. In the 2000s several composite indicators, combining different variables that represent different aspects of globalisation, have been proposed. The KOF Globalisation Index (KOFGI) emerged as the most widely used and cited globalisation index.

The KOFGI is a composite index that measures globalisation along the economic, social and political dimension for almost every country in the world on a scale of 1 (least) to 100 (most globalised). Today, the index spans from 1970 to 2016. Each year the data is updated and an additional year added. The original index was introduced by Dreher (2006) and updated by Dreher et al. (2008). Recently, the index was completely overhauled and additional features and new variables included. Gygli et al. (2019) document the revised index and present an application. The revised KOFGI distinguishes between de facto and de jure measures for each of the different measures of globalisation. While de facto globalisation measures actual international flows and activities (such as trade in goods and services), de jure globalisation measures policies and conditions (such as tariffs) that, in principle, affect flows and activities. Within the economic dimension of globalisation, the revised KOFGI now distinguishes between trade and financial globalisation. Furthermore, it introduces time-varying weighting of the

^{*}Corresponding author: Florian Haelg, KOF Swiss Economic Institute, ETH Zurich, Leonhardstrasse 21, Zurich, Switzerland, E-mail: haelg@kof.ethz.ch https://orcid.org/0000-0002-7141-0483

underlying variables, allowing the underlying relationship to slowly change over time. Overall, the index is based on 43 different variables that are aggregated to the different dimensions and the overall index. Publishing in total 27 different indices, users can chose the level of the aggregation most relevant for the respective purpose.

2 A first look at the index

As measured by the KOFGI, the most globalised countries in the world are located in Western Europe and North America, with Switzerland, the Netherlands and Belgium ranking at the top (see Figure 1). The least globalised countries are located in Africa and Asia.

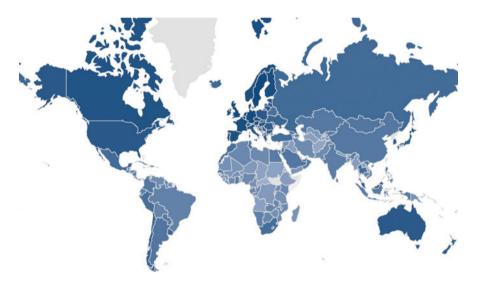


Figure 1: Worldwide level of globalisation in the year 2016.

Note: Dark-blue shaded areas indicate higher levels of globalisation. Light-blue shaded areas indicate lower levels of globalisation. Blank areas indicate missing data.

Globalisation has been on the rise worldwide since the 1970s, receiving a particular boost after the end of the Cold War. The level of worldwide globalisation increased rapidly between 1990 and 2007. However, the financial crisis and the subsequent Great Recession have slowed down its development and globalisation has flatten out (see Figure 2, upper left panel). Economic

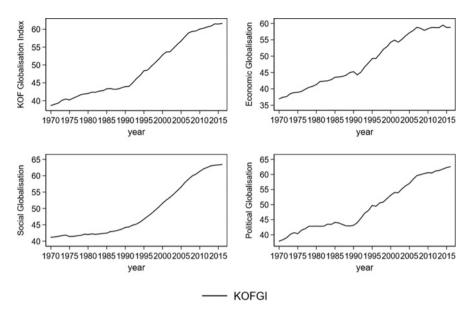


Figure 2: Globalisation over time.

globalisation even stagnated (upper right panel). Although financial globalisation continued to progress, trade integration declined somewhat at the same time. Social globalisation increased only slightly (lower left), while political globalisation increased the most (lower right).

More recently, protectionist policies have been on the rise. In 2018, the United States re-introduced tariffs and initiated tariff wars. The US president intimidated his Western allies at the G7 and NATO summits - giving rise to the question of whether new political alliances are likely to be established. Citizens in the United Kingdom voted to leave the European Union (Brexit). It is conceivable that a new era of de-globalisation has begun, that will eventually manifest itself in the index.

3 Calculation of the KOFGI

The KOFGI is calculated on a yearly basis from 1970 to 2016. It is based on 43 different variables collected from secondary sources. Missing observations are linearly interpolated. Table 1 presents all variables that enter the different subdimensions of the index. The index for de facto trade globalisation, for example, is based on the variables trade in goods (in % of GDP), trade in services (in % of GDP) and trade partner diversity. De jure trade globalisation, on the other hand, is

Table 1: Structure of the KOF Globalisation Index.

Globalisation Index, de facto	Weights	Globalisation Index, de jure	Weights
Economic Globalisation, de facto	33.3	Economic Globalisation, de jure	33.3
Trade Globalisation, de facto	50.0	Trade Globalisation, de jure	50.0
Trade in goods	38.8	Trade regulations	26.8
Trade in services	44.7	Trade taxes	24.4
Trade partner diversity	16.5	Tariffs	25.6
		Trade agreements	23.2
Financial Globalisation, de facto	50.0	Financial Globalisation, de jure	50.0
Foreign direct investment	26.7	Investment restrictions	33.3
Portfolio investment	16.5	Capital account openness	38.5
International debt	27.6	International Investment Agreements	28.2
International reserves	2.1		
International income payments	27.1		
Social Globalisation, de facto	33.3	Social Globalisation, de jure	33.3
Interpersonal Globalisation, de facto	33.3	Interpersonal Globalisation, de jure	33.3
International voice traffic	20.8	Telephone subscriptions	39.9
Transfers	21.9	Freedom to visit	32.7
International tourism	21.0	International airports	27.4
International students	19.1		
Migration	17.2		
Informational Globalisation, de facto	33.3	Informational Globalisation, de jure	33.3
Used internet bandwidth	37.2	Television access	36.8
International patents	28.3	Internet access	42.6
High technology exports	34.5	Press freedom	20.6
Cultural Globalisation, de facto	33.3	Cultural Globalisation, de jure	33.3
Trade in cultural goods	28.1	Gender parity	24.7
Trade in personal services	24.6	Human capital	41.4
International trademarks	9.7	Civil liberties	33.9
McDonald's restaurant	21.6		
IKEA stores	16.0		
Political Globalisation, de facto	33.3	Political Globalisation, de jure	33.3
Embassies	36.5	International organisations	36.2
UN peace keeping missions	25.7	International treaties	33.4
International NGOs	37.8	Treaty partner diversity	30.4

Notes: Weights in percent for the year 2016 Weights for the individual variables are time variant. Overall indices for each aggregation level are calculated by the average of the respective de facto and de jure indices.

calculated using variables for the prevalence of trade regulations, trade tax revenues, average tariff rates and the number of trade agreements concluded.

The first step in calculating the index includes the normalisation of the data: Each variable is transformed to an index scaled from one to one hundred, where 100 is assigned to that value of a specific variable representing the highest level of globalisation over the whole sample of countries and the entire time. It is the analogue to a transformation of the series according to the percentiles of its original distribution. The resulting data behave well in terms of sensitivity to outliers, which is a clear advantage over the original series.

The second step involves performing principal components analysis on a 10-year rolling window of data to determine the time varying weights for the individual variables entering the sub-indices. Principal components analysis partitions the variance of the variables used in each sub-group and the weights are determined in a way that maximizes the variation of the resulting principal component. We calculate the weights using the entire sample of countries at the same time. With the time-varying weights for the variables, the weighting procedure has the possibility to adapt to changes in the relevance of certain variables to capture globalisation over time.

While the weights of individual variables are allowed to change over years, the weights of the sub-indices are held fixed over the time horizon. The subindices themselves are aggregated to higher ranked indices using equal weights. Economic globalisation is composed of trade globalisation and financial globalisation, of which each gets a weight of 50 percent. Social globalisation consists of interpersonal, informational and cultural globalisation, each of which contributes one third. Economic, social and political globalisation are aggregated to the total index using equal weights. These aggregation steps are performed for the de facto and de jure dimensions individually. The overall KOF Globalisation Index is then calculated as the average of the de facto and the de jure indices.

Once the weights are determined, the aggregation consists of adding up individual weighted variables instead of using the aggregated lower-level indices. This has the advantage that variables enter the higher levels of the index even if the value of a sub-index is not reported due to missing data. Observations of indices are reported as missing if more than 50 % of the observations of the underlying variables are missing or at least two out of three sub-indices cannot be calculated.

4 Studies that uses the KOFGI

The KOFGI is widely used in the economic literature. Potrafke (2015) surveys the literature that uses the older version of the index. He cites over 100 empirical papers and concludes that globalisation has spurred economic growth, promoted gender equality and improved human rights, while it did not erode the size of the government and welfare state activities, did not have any significant effect on labour market interactions, and hardly influenced market deregulation (Potrafke 2015). The KOFGI is also regularly cited in media articles and the popular press.

5 Data access

The KOFGI can be accessed on the website of the KOF Swiss Economic Institute (www.kof.ethz.ch/globalisation). The index is updated on a yearly basis. Different data formats are provided. The website includes additional information on the construction of the index and the selected variables including their data sources. It presents further results such as country rankings and figures. The index can be downloaded freely for non-commercial purposes.

References

Dreher, A. (2006), Does Globalization Affect Growth? Evidence from a New Index of Globalization. Applied Economics 38 (10): 1091–1110.

Dreher, A., N. Gaston, P. Martens (2008), Measuring Globalisation – Gauging Its Consequences. New York, Springer.

Gygli, S., F. Haelg, N. Potrafke, J.-E. Sturm (2019), The KOF Globalisation Index – Revisited. Review of International Organizations, forthcoming.

Potrafke, N. (2015), The Evidence on Globalisation. World Economy 38 (3): 509-552.