

Working Paper

**UNIVERSAL APPLICABILITY OF THE KOF INDEX OF
GLOBALISATION?
EVIDENCE FROM BRICS NATIONS**

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**April 2022
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Universal Applicability of the KOF Index of Globalisation? Evidence from BRICS Nations

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Abstract

The KOF Index of Globalisation, a composite indicator of the level of globalisation in various countries, is widely accepted by researchers and policymakers as a tool for measuring globalisation. This index integrates economic, social and political dimensions of globalisation into one index and has vast coverage in terms of both geography and time period. However, the index suffers from several shortcomings that question its credibility and universal applicability across geographies. The paper discusses these shortcomings in reference to the performance of the BRICS nations on this index. We find that the low performance of BRICS on the economic and social dimensions can be attributed to the discrepancies in the methodology of index construction. The methodology adopted by the index is such that it favours a certain group of countries and cultures. This study provides suggestions for improving the index and also indicates further research to find solutions to the shortcomings of KOF Globalisation Index so as to measure globalisation to its fullest accuracy across countries.

Keywords: Globalisation, KOF Index of Globalisation, BRICS, Multi-Dimensional Indices, Regionalisation

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1. Introduction

Globalisation is a multidimensional phenomenon that refers to the process of growing interaction and interdependence between economies, populations, and cultures across large distances. It is the most powerful force affecting the modern world. Since it affects every sphere of life viz. wealth, cultural habits, freedom, health, etc., the phenomenon is becoming increasingly important for analysts and policymakers who aim to measure the magnitude and intensity of globalisation. Assessment of globalisation is a complex task because there is no universally accepted technique for measuring globalisation. Various researchers have developed several techniques to measure this phenomenon.

The objective of this paper is to discuss one such technique that measures globalisation across economic, social and political dimension, the KOF Index of Globalisation. The index measures the degree of globalisation across countries based on a variety of indicators. It is most widely known and used but is also very controversial. We evaluate the index's accuracy and credibility as a universal measure of globalisation by taking evidence from the BRICS nations. In BRICS countries, the globalisation process is very significant over the years. The growing economic might of BRICS countries, their significance as one of the main driving forces of global economic development, their population, and abundant natural resources form the foundation of their influence on the international world. However, the countries rank low on the KOF index. The measured level of globalisation often depends on the assessment methodology. Hence, this paper aims to analyse the ranking of these countries in light of inherent deficiencies of the index. This research is fundamental for the index's Publishing Agency as several shortcomings of the index have been examined. The research would help the Agency to rectify these shortcomings to make the index an appropriate measure of globalisation across countries. The research is also directed towards researchers and analysts who want to develop new and better globalisation measurement techniques.

The paper is structured as follows. Section two discusses globalisation as a multifaceted concept and analyses various techniques to measure globalisation and also discusses criteria to compare these techniques. Section three focuses on the KOF Index of Globalisation and analyse the performance of BRICS nations on the 2020 index. Section four evaluates the extent of actual globalisation in BRICS countries. This is followed by a discussion in Section five of various shortcomings of the index which have adversely impacted the ranking of BRICS countries. Section six concludes by providing suggestions to the Publishing Agency, researchers and index compilers which if implemented shall enhance the reliability of this globalisation index.

2. Globalisation and Its Measurement

2.1 Globalisation a Multifaceted Concept

Globalisation results from the growing interconnectedness and interdependence of people and countries. It comprises of two elements viz. the opening of international borders to promote the exchange of goods, services, people and, ideas and the changes in institutions and policies at national and international levels that facilitate or promote such flows.

It is something more than an economic phenomenon manifesting itself on a global scale. Along with economic, cross-national connections are created in the political, cultural, social and, environmental domains. These are referred to as the five dimensions of globalisation.

Economic globalisation refers to the unification of countries resulting from goods and services trade across international borders, the flow of international capital and, the wide and rapid spread of technologies. It results in the expansion of domestic markets and their integration with the international world. Economic globalisation occurs through the establishment of Multinational corporations (MNCs). The MNCs organize production at the global level and allocate the resources following the principle of profit maximisation. Within economic globalisation, the globalisation of the financial sector has become the most influential aspect of it. Since the 1970s, the cross-border flow of capital has been rapidly expanding. Political globalisation measures the degree of a country's political integration through diplomatic relations with the rest of the world and participation in peace missions and international relations in general. Cultural globalisation results from the cultural integration of countries. It refers to the growing and deepening of contact between people and their cultures, their ideas, their values, their ways of life across countries. Cultural globalisation can be categorized into three models viz. cultural homogenisation, cultural heterogenisation and, cultural glocalisation. Cultural homogenisation exists when one dominant culture is spread to other cultures. By contrast, the second model, cultural heterogenisation, posits that cultural globalisation has led to a rise in the preservation of local cultures, mainly as a reaction against subsumption by a dominant culture. Lastly, the cultural glocalisation model is an amalgamation of homogeneous and heterogeneous models. According to this, cultural globalisation is a two-way process in which cultures in contact shape and reshape each other directly and indirectly. Social globalisation refers to the spread of ideas, information, images and, people across countries. The environment is the fifth dimension of globalisation that focuses on the environmental problems which result from the rapid growth of globalisation driven by economic forces and materialistic aims. Social movement activists have defined ozone depletion, global warming, and acid rain as international problems that require international solutions.

2.2 Globalisation Measurement Techniques

Considering the complex nature of globalisation and its various dimensions, there does not exist any standard rule for its measurement. Hence, several techniques are applied to measure the phenomenon. The choice of the method adopted depends on what aspect or dimension of globalisation does the researcher wants to explore.

Globalisation can be measured by both qualitative and quantitative methods. Out of the two, quantitative indices are widely used and can be categorized as single indicator, single-dimension indexes, and multi-dimensional indexes. Table 1 briefly explores each of the above-mentioned categories.

Globalisation being a multi-faceted and multidimensional phenomenon is very complicated and difficult to analyse hence, it cannot be captured by a single indicator. It is best measured through the use of multi-dimensional indices. Such indices are composite and extensive in nature. They aggregate the multidimensional aspects of globalisation into a single measure. The next section summarises the various multi-dimensional indices which have been used by researchers to measure globalisation.

2.2.1 Multi-Dimensional Indices

In what follows, we discuss seven multi-dimensional globalisation indices. While these indices differ in the number of countries analysed, years covered, the number of indicators, and weighing schemes utilized, each of them combines data on a country by country basis into one aggregate index to measure globalisation. The A.T. Kearney/ Foreign Policy (KFP) Index of Globalisation was one of the first globalisation indices, launched in 2001 and continued till 2006. The index quantified the level of personal contact across national borders by combining data of international travel, international phone calls, cross border remittances, and other transfers. It assessed the growing number of users of the World Wide Web along with its number of

internet hosts and secure servers through which they communicate, find information, and conduct business transactions. The index also measured economic integration. It tracked the movement of goods and services by examining the changing share of international trade in each country's economy, and it measured the permeability of national borders through the convergence of domestic and international prices. The index also tracked the movements of money by tabulating inward- and outward-directed foreign investment portfolio capital flows, as well as income payments and receipts. The MGI index uses seven groups of variables viz. technology and environment, social and cultural, global trade and finance, global politics, and organized violence to cover all dimensions of globalisation. This is the only index that captures the environmental dimension of globalisation. It also includes geographical characteristics of countries in the adjustment of countries. The KOF Index of Globalisation measures globalisation along the economic, social, and political dimensions for almost every country in the world on a scale of one (least) to 100 (most globalised). The index spans from 1970-2020. The original index was composed by Dreher in 2006 and later updated by Dreher et al. in 2008. The revised index distinguished between de facto and de jure globalisation measures. Under the economic dimension, the index considers trade and financial globalisation separately. Furthermore, it has also introduced time-varying weights and has increased the total number of variables from 23-43. WRMC G index includes mostly economic factors to measure globalisation. The Centre for the Study of Globalisation and Regionalisation (CSGR) at the University of Warwick produced the CSGR Globalisation Index for the years 1982–2004, measuring the economic, social, and political dimension of globalisation using 16 variables and determining the weights by the means of principal components. Under this index, the variables measuring openness are adjusted for country-specific characteristics viz. land area, whether a country is landlocked or not, and its initial population size. This feature distinguishes the index from the others. It therefore measures the level of globalisation for a country to its full potential. NGI measures globalisation for 70 countries and covers a period between 1995-2005 with the help of 21 variables and is divided into three spheres namely economic, political and social spheres. Geographical distances between the countries are incorporated into the index. It applies principal component analysis to form sub-indices following the statistical features of the variable structure. G Index introduced by Randolph in 2001 measures the depth, breadth, and richness of the interdependence between the national and the global economy. The index weighs the economic globalisation dimension the maximum.

2.2.2 Evaluation of Multi-Dimensional Indices

To identify the most accurate and widely applicable index, several researchers have provided a comprehensive set of criteria to facilitate comparison between different multi-dimensional indices. This paper reviews two of such criteria one proposed by Samimi, Lim, & Buang in the research paper 'Globalisation Measurement: Notes on Common Globalisation Indexes' (2011) and another by Dreher, Gaston, Martens, and Boxem in the research paper 'Measuring Globalisation – Opening the Black Box. A Critical Analysis of Globalisation Indices' (2008).

2.2.2.1 Criteria by Samimi, Lim, and Buang (2011)

The authors have categorized the criterion into three viz. structural criterion, dimensions of globalisation, and coverage criterion. The structural criterion assesses the indices based on several indicators, whether negligible weights are assigned to variables, geographical adjustment, and environment. Dimensions of globalisation criterion assess that which sphere of globalisation viz. economic, social, political globalisation is measured by the index and lastly coverage criteria assess the index on the period that the index is calculated and the number of countries it has taken in its analysis. If an index fulfills all the above-stated criteria then it is considered to be the most accurate. Table 2 provides a comparison of globalisation indices based on the above-mentioned criteria.

2.2.2.2 Criteria of Index Suitability by Dreher, Gaston, Martens, and Boxem (2008)

This criterion evaluates the indexes based on four categories viz. relevance, robustness, added value, and transparency. The relevance criterion is concerned with whether the index is really measuring globalisation and not internationalisation. Robustness is concerned with the reliability of the measurement under adverse circumstances, how sensitive to extreme values, and year-to-year variations in the index. Added values judges whether the index helps us to understand globalisation better than we could by just looking at its components, and transparency criterion helps others to judge how valuable the index is for their purposes, whether the index is based on readily available data and literature, is reproducible, and whether the underlying assumptions are made explicit. Table 3 presents the comparison of various indexes based on the discussed criteria.

2.2.3 Analysis

From tables 2 and 3 it can be inferred that out of all the indices discussed, the KOF Index of Globalisation is the most suitable measure of globalisation. The main advantage of the index is that it is the most comprehensive index. It measures globalisation based on three dimensions viz. economic, social and political globalisation. These three dimensions make it possible for researchers to closely trace the process through which globalisation influences people's attitudes. It measures social and political dimension of globalisation more comprehensively in comparison to other indices. Through the distinction between de facto and de jure, the index evaluates the level of trade and movement of foreign capital along with measuring restrictions on them. Another advantage of the index is its wide coverage of countries around the world in terms of both geography and the time period. There is also transparency in the publication of its methodology and data. The index is widely used in the economic literature and is regularly cited in media articles and the popular press. All these characteristics make the KOF index the most favored among the rest and it also captures the globalisation phenomenon in the most holistic way. The next section focuses specifically on the KOF Index of Globalisation published in the year 2020. It discusses the methodology adopted for the construction of the index and highlights the main results of country rankings.

3. KOF Index of Globalisation - 2020

The KOF Index of Globalisation is an index of the degree of globalisation developed by the KOF Swiss Economic Institute at ETH, Zurich. The index combines different underlying variables that measure different aspects of globalisation into one index. It is calculated as de facto and de jure based on three principal criteria: economic, social, and political. Economic globalisation is sub-divided into trade and financial globalisation while social globalisation is sub-divided into interpersonal, informational, and cultural globalisation. It was first published in 2002 and covers the period from 1970-2018. The latest index is available for 2020 which provides information for the year 2018 and ranking for 203 economies.

3.1 Structure of the Index

The index is based on 43 individual variables, which are aggregated to a de facto and de jure index of five sub-dimensions (trade, financial, interpersonal, informational, and cultural globalisation), three dimensions (economic, social, and political globalisation), and one total index. The overall index is calculated as an average of the de facto and de jure index. The structure of the 2020 index is described in table 4.

3.2 Methodology Adopted

The KOF Index of Globalisation is calculated yearly from 1970-2018. However, not all data are available for all countries and years. Missing values within the series are imputed using linear interpolation. Missing values at the beginning or the end of a series are substituted by the closest observation available.

Furthermore, for normalisation, the index has used the procedure called panel normalisation where the variables are transformed to an index with a scale from one to 100, where 100 is assigned to the maximum value of a specific variable over the whole sample of countries and the entire population of the time. The resulting data is well behaved in terms of the sensitivity of outliers.

Weights are designed using principal component analysis on a 10-year rolling window of data to determine time-varying weights for the individual variables. The weights are calculated using the entire sample of countries at the same time. With the adoption of time-varying weights, the weighting procedure can now adapt to changes in the relevance of certain variables to capture globalisation over time.

The weights of individual variables change over time but the weights of sub-dimensions are held fixed over time. The sub-dimension themselves are aggregated to higher-ranked dimensions 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 personal contact, information flows, and cultural proximity where each contributes one-third. Equal weights are again used to aggregate economic, social and political globalisation to the globalisation index. The overall KOF Globalisation Index is calculated as the average of the de facto and the de jure Globalisation Index.

3.3 Main Results of the KOF Index of Globalisation - 2020

This section presents and interprets the results of the global ranking. The analysis and discussion shall concentrate on two groups of countries that are of interest to this paper viz. the top three performers in the overall globalisation index and the BRICS countries. All comparisons shall be made concerning these two groups.

3.3.1 Analysis of the Global Rankings

Out of the 203 ranked countries, Switzerland is the most globalised followed by Netherlands and Belgium respectively in the globalisation index, overall. Table 5 highlights the top 10 performers in the overall globalisation index along with the scores received by them under de facto and de jure components.

From table 5, it can be inferred that there exists a strong European presence in all the top 10 positions of the index. Also, small developed economies constitute a major share of this group with the UK, Germany, and France being the only large economies. Table 6 highlights the performance of BRICS nations on the index.

From table 6, it can be summarised that Russia is the top performer among the BRICS nations while India is the least.

Apart from studying the performance of the two groups of countries on the overall globalisation index, it is also imperative to analyse how each of them is performing on components that form the overall globalisation index viz. the three individual dimensions - economic, social, and political and de facto and de jure globalisation. This would further help in drawing meaningful conclusions from the analysis.

Figure 1 reflects to what extent the scores for the three dimensions vary across the selected group of countries.

From figure 1, it can be noted that out of the three dimensions greater variability in performance between the top three performers and the BRICS nations is observed for economic and social dimensions while the less significant difference is observed between the two groups of countries for the political dimension of globalisation.

Figure 2 represents the performance of the two groups on the de jure and de facto globalisation index.

In terms of both de facto and de jure globalisation, a significant difference is observed in the performance of the two groups. Also, for BRICS nations the performance on de facto is lower than de jure expect for South Africa.

Hence, from figures 1 and 2, it can be summarised that the low performance of BRICS nations in economic and social dimensions along with low achievement in the overall de facto and de jure components is the reason for their low global ranking.

3.3.2 Discussion and Interpretation

By publishing ranking, the index seems to be implying that those at the top are “better” than those at the bottom which does not seem to be a true reflection of the reality. The index is most widely accorded but is also very controversial.

From the analysis, it has been observed that small countries such as Switzerland, Netherlands, and, Belgium etc. dominate the ranking, which generates a bias in the geographic world. Larger economies are relatively less globalised with KOF measures. The index also seems to favor European economies as all the top-performing economies belong to Europe.

The growing economic might of BRICS countries, their significance as one of the main driving forces of global economic development, their significant population, and abundant natural resources form the foundation of their influence on the international world. These economies represent the very idea of globalisation to a lot of people, yet they have been ranked low. Surprisingly, the emerging economies like China and India occupy places at the bottom of the BRICS ranking and find themselves approximately in the middle of the overall globalisation ranking. These are large developing economies and it seems rather erroneous to place them so low on the global ranking.

The low ranking of the BRICS nations is not attributed to their dismal performance at the global level but as a result of certain limitations faced by the index which question its credibility and does not make it a universally applicable index to measure globalisation, keeping all the countries at the same platform.

The next section explains the low ranks of BRICS nations in light of the shortcomings suffered by the KOF Index of Globalisation. Special attention shall be given to the variables placed under economic and social dimensions since these are the components of the overall globalisation index where the BRICS nations have not performed quite well according to the methodology adopted by the index.

4. Evaluating Extent of Actual Globalisation in BRICS Countries

BRICS is a group of five major emerging national economies comprising the Federative Republic of Brazil, the Russian Federation, the Republic of India, the People ’s Republic of China and, the Republic of South Africa formed to expand multilateral cooperation. This section discusses the presence of BRICS in the global world. Table 7 presents a brief description of the countries.

In the past 20 years, the economies of Brazil, India, and China have experienced economic success and have progressed very quickly from the status of developing countries to that of emerging economies. This success is attributed to their growing integration in the international markets. An analysis of 2018 trade data reveals that China is the largest merchandise exporter in the world. In terms of merchandise imports, it is the second-largest world importer followed by India, Russian Federation, Brazil, and South Africa at 15th, 22th, 28th, and 39th positions respectivelyⁱⁱ. China is the world's largest energy consumer. The country imports between 16 percent and 18 percent of its total energy consumption. Services accounted for about

54 percent of India's GDP in 2018-2019ⁱⁱⁱ. Services are a key component of overall export competitiveness in Brazil and remain the main contributor to its GVA (73.3 percent in 2016) and job creation^{iv}. The nations have put several measures to facilitate international trade.

Brazil, Russia, India, and China have become a destination for many foreign investors and industrial companies which were first attracted by the availability of raw material and low-cost labour. The production and distribution activities have been shared between the parent companies in developed countries and subsidiaries in emerging countries particularly India and China. India continued to liberalise its policies on FDI, further permitting FDI up to 100 percent without the need for prior government approval in an expanded list of agricultural activities, defense, broadcasting carriage services, telecommunications services, and business-to-business electronic commerce, insurance intermediaries, and airports, other air services, and non-scheduled air transport services. The services sector of India is the largest recipient of FDI. China is one of the world's largest recipient of FDI. The sectors to receive investment flows are manufacturing, real estate, leasing and business services, and wholesale and retail trade. Along with this China is a significant overseas investor. The sectors which have revived investment from China are leasing and business services, banking, manufacturing, and wholesale and retail trade^v. Brazil remains open to and encourages inward FDI. South Africa is the most diversified and technologically advanced country in Africa having a large services sector open to foreign investment.

One more major sign of globalisation is that while these countries continue to welcome western investment, they have become international investors. Companies originating in BRICS have become more international. China accounts for a significant share of the world's largest companies. Local entrepreneurs have started businesses in India, China, and Brazil and some have started to export, even becoming major world competitors. According to the Global Fortune 500 ranking, the number of companies from these countries are growing every year. For China, the numbers have increased from 109 in 2017, 111 in 2018, and 119 in 2019 to 124 in 2020. Brazil had seven companies on the list for the year 2018 and one more was added in 2019. India and Russia have a total of seven and four companies respectively in the Fortune 500 ranking for the year 2020^{vi}. Table 8 lists the top 100 Global Fortune 500 companies which have originated in the BRICS.

From the viewpoint of the political dimension of globalisation, BRICS diplomatic relations with the rest of the world can be witnessed through its participation in various international organizations. The countries are influential members of leading organizations and agencies, including the UN, the G20, the Non-Aligned Movement, and the Group of 77. They are also members of various regional associations. The Russian Federation is a member of the Commonwealth of Independent States, the Collective Security Treaty Organization, and the Eurasian Economic Union. Russia and China are members of the Shanghai Cooperation Organization and the Asia Pacific Economic Cooperation. India is a part of the South Asian Association for Regional Cooperation. Brazil is a part of the MERCOSUR, Union of South American Nations, and the Community of Latin American and Caribbean States. South Africa is a part of the Southern African Development Community and the African Union.

In terms of cultural globalisation, Indians have traveled far and wide; and have left their cultural footprints wherever they went. Sanskrit/ Buddhist texts have been translated into different languages. A large number of monasteries and temples have been built in all those countries where Indian culture and religion reached. Buddhism is a living religion in countries like Burma, Thailand, Sri Lanka, and Cambodia. During 2015-20, India has taken several initiatives to expand tourism in the country. The initiatives included the diversification of tourism-related products and markets, enhanced facilities (e.g. e-visa), and better air connectivity. Financial support is granted by the Central Government to develop tourism-related infrastructure and products, and for marketing. For South Africa, tourism is a key foreign exchange earner.

China too has had a serious cultural impact on the rest of the world. Chinese art has become widely desired. Its cuisine has become increasingly global, with exotic spices and teas captivating the European market. Brazil has had many of world-renowned literary figures whose cumulative writings are regarded by many to be very rich because of their variety of ethnic and regional themes. Érico Veríssimo a Brazilian writer's tales of southern Brazil have been translated into many languages. Along with this the country's most prestigious art exhibition the International Biennial of Sao Paulo (established in 1951) regularly attracts participants from more than 50 countries. Ballet is a popular notable art form that originated in Russia and is popular all around the world. Apart from this Russian literature also has a worldwide impact.

Against the above background, it is evident that BRICS has emerged as a powerful force in the global economy. BRICS's level of globalisation is not only limited to the economic sphere but spreads across political and social dimensions of globalisation as well. These economies represent a powerful force of development and are expected to have an impact on the development dimension of globalisation.

With a large number of countries participating in the global world, there have been rising concerns related to globalisation and how it is impacting various aspects of life. All the dimensions of globalisation have both direct and indirect effects on social, technical, and political changes all over the world. Considering the way globalisation is affecting us, it has become imperative to measure the phenomenon not only to study its effects but also to manage it. Several techniques have been proposed by various researchers to measure globalisation. These techniques have been discussed in the next section.

5. Critical Review of the KOF Index of Globalisation in Light of the BRICS Rankings

The index is based on 43 individual variables. The choice of variables is such that collectively they measure both the elements of globalisation viz. movement of goods, services, finance, ideas, and people on one hand and changes in institutions and policies at national and international levels that facilitate or promote such flows on the other. However, it has been observed that the BRICS countries are getting penalized in the global ranking because of the inherent discrepancies in the methodology of index construction.

Some of the variables chosen by the index are not a true reflection of measuring the extent of globalisation. It has been observed that the index seems to put regionalisation and globalisation on the same footing and has adopted a normalisation procedure that is penalizing larger economies (in terms of population and GDP). The index exhibits bias towards certain cultures or groups of countries. The underlying variables used by the index suffers from discrepancies that question the index's credibility and accuracy as a measure of globalisation across economies. The process through which weights are assigned faces a few drawbacks the most obvious being that the combined index gives equal weightage to economic, political, and social dimensions. All sub-dimensions are also given equal weights disregarding the number of variables under them and their importance in the measurement of globalisation which seems rather arbitrary. This section aims to discuss all such variables in light of BRICS economies.

5.1. Regionalisation versus Globalisation: The Effect of Geographical Distances

One reason which can explain the low ranks of the BRICS can be attributed to the negligence of the index to acknowledge the difference between regionalisation and globalisation. The index is mistaking regionalisation for globalisation. Regionalisation is defined as the concentration of international trade to neighbouring countries whereas globalisation is a broader concept and involves the interaction of countries across larger distances. There is a fine difference between these two definitions. To distinguish between these two phenomena, geographical distances between the interacting parties have to be accounted for which the index fails to recognize.

The variables under economic globalisation, de facto (trade in goods and trade in services) and the variables under social globalisation, de facto (trade in cultural goods, trade in personal services, and exports of high tech goods) consist of very traditional variables that measure openness and do not distinguish between the trade with countries outside the region and trade with neighbours. Assigning high weights to these variables reflects a bias towards the European countries.

To validate the issue, this section analyses and compares the trade profiles of the two groups of countries i.e. the top three performers and the BRICS. Table 9 and 10 presents top merchandise and commercial services trade partners for these 8 economies. The share of each trading partner in the total trade is given in the brackets.

From table 9 it can be gathered that more than 50 percent of merchandise and services trade of the top three performers viz. Switzerland, Netherlands, and Belgium are restricted to the European Union (EU) area. To mark this high degree of interconnectedness of EU members as globalisation is erroneous, as by measuring in this way the index is actually measuring regional integration and not globalisation. Hence, the very high ranking of small European economies is more a reflection of their close linkages with other European countries and less is attributed to their trade connections with the rest of the world.

An analysis of the main trading partners of the BRICS does not reflect such high levels of regionalisation. The data reveals that the main export and import merchandise trade partners for South Africa are not from the African continent. EU, China, and the United States are the major trade partners for South Africa, Brazil's major trade partners are located at larger distances like in Asia, Europe, and North America. Argentina is the only major trade partner in the same continent but its share is less in comparison to other main trade partners of Brazil. Although the main trading partners of India and China include countries from the Asian continent but their share in the trade is significantly low in comparison to the significantly high shares of the EU as the main merchandise and services trade partner for Switzerland, Netherlands, and Belgium. India and China trade more with the United States and European Union rather than their immediate neighbours.

Hence, the very high ranking of European economies is more a reflection of their close linkages with other European countries and less is attributed to their trade connections with the rest of the world. BRICS on the other hand although more globalised in terms of the distance between the trade partners are ranked much lower than these economies.

5.2 Normalisation of Variables

In a cross country comparison, the data should always be normalised or standardized to bring all the variables into proportion with one another to gain meaningful insights from the analysis. The index normalizes its underlying variables by using either population or GDP.

Out of 43 variables, 23 are normalised. Table 11 lists the normalised variables along with their definitions and weights. All the economic globalisation (financial and trade globalisation) related variables viz. trade in goods, trade in services, foreign direct investment, portfolio investment, international debt, international reserves, international income payments are normalised using GDP whereas the non-economic globalisation (social, cultural and political globalisation) variables including trade in cultural goods are normalised using population. However, the index has not provided any statistical explanation for the use of two different types of normalizing variables for various underlying variables in the index.

Although both the normalizing variables are widely used they both suffer from the disadvantage of size bias. By taking GDP as a reference point, trade to GDP ratio will incorporate a specific size bias as small

countries typically show higher trade volumes relative to GDP than large economies as smaller countries have lower GDP though in absolute terms they have lower trade volumes than larger economies. As a consequence, strong domestic economies that happen to be major players in international trade (like the USA, Japan, China, and Germany to name a few), find themselves at the lower end of any country ranking composed of trade to GDP ratio. Similarly, less populated economies typically show higher trade volumes relative to population than densely populated economies.

This can be validated by analyzing the performance of the two groups of countries viz. top three performers and the BRICS. Tables 12 and 13 reflects how the selected countries are placed according to their GDP and population size.

From table 12 and 13 it can be inferred that BRICS has a larger size in terms of both GDP and population in comparison to the top-performing nations. Hence, another reason for their low global ranking is the normalisation process adopted since the value of the variables are negatively affected by the GDP and population size. This is validated in table 14 where the absolute and relative values of the variable 'trade in goods' are calculated for the selected countries.

From the above table, it can be inferred that out of the 6 countries, Belgium has scored the maximum in relative terms i.e. trade in goods as a percentage of GDP but analyses of countries in absolute terms shows that China has scored the maximum. Also, India, Russian Federation, and China have higher absolute values in comparison to Switzerland but Switzerland has higher relative value.

A similar analysis is done for the variable telephone subscriptions which is normalised using population.

From table 15 it can be inferred that although India, China, and Brazil have higher value of the variable when measured in absolute terms, however, when measured in relation to population these variables score lower than the top 3 performers.

The same issues arise for other variables as well for example the variable 'UN Peace Keeping Missions' is defined as personnel contributing to UN peacekeeping missions as a percentage of the population. India is one of the major personnel contributors to the UN peacekeeping operations however, despite this fact India still ranks lower on this variable because of the incorrect definition of the variable which takes population as a normalizing variable.

From the above discussions, it is evident that the index is penalizing the BRICS countries for their large size in terms of GDP and population. The countries are performing better than the top performers in absolute terms but when normalised, the sheer size of these economies is pulling them down in the global ranking. Hence, the influence of the country size on globalisation outcomes is a major reason for the low ranking of BRICS nations. Along with this, assignment of high weights to these variables is further acting as a disadvantage for BRICS countries.

5.3 Less Emphasis on Twin Objectives of Internal and External Balance

BRICS nations are all developing economies except for Russian Federation^{vii}. The developing economies strive simultaneously for internal and external balance. To achieve internal balance the country has to keep domestic activity to its close potential and to achieve external balance it has to ensure the sustainability of any current account deficit. Ensuring a simultaneous balance between the two is critical to the sustainability of any equilibrium and its economy.

However, the index fails to pay attention to the importance of maintaining this balance as it includes certain variables that act against the government policies which aim to protect its domestic market. These include

trade taxes, and tariffs. According to the index's methodology, lower values of trade taxes and tariffs would suggest a better ranking in the index. But to achieve this might be a difficult task for developing countries like BRICS which have immense domestic potential.

India relies on trade policy instruments viz. export and import restrictions, tariff, licensing, export taxes and, minimum import prices. These are used to protect the economy from domestic price fluctuations, manage domestic supply and demand requirements, and ensure efficient utilization and conservation of natural resources. In the Indian context, Customs Tariffs are used less as a tool for revenue mobilization and more as a measure to provide a level playing field to the domestic industries. The policy is directed towards the twin goals of 'Make in India' and 'Atma Nirbhar Bharat'. The tariff structure has been so calibrated as to achieve furtherance of economic activity and employment generation in the domestic market. Special emphasis has been given to the growth of MSMEs who are contributing immensely to employment generation. Also, in comparison to unweighted, Weighted Customs duty/ tariff rates in India are quite low considering large quantities of imports are at 'nil' or lower than MFN/preferential rates. However, the index takes an unweighted mean tariff rate, which does not show the true picture of tariff application by a country.

Apart from India, tariffs also remain one of Brazil's main trade policy instrument. Its domestic sectors viz. clothing, textiles, and transport equipment benefit from the activity's highest tariff protection (35 percent)^{viii}.

Given this, the index that gives higher ranking to jurisdictions having lower tariffs or lower trade taxes, overlooking other critical aspects may not be a suitable indicator to measure globalisation for BRICS countries. Assignment of high weights to the concerned variables is negatively impacting the ranks of these economies on the global index.

5.4 Choice of Underlying Variables and Biasness

Out of the 43 variables chosen by the index to measure the extent of globalisation across countries, two variables viz. McDonald's restaurants and IKEA stores under cultural globalisation, de facto sub-dimension show a bias towards a particular culture or a set of countries which does not make them accurate variables to calculate the position of BRICS in terms of globalisation.

5.4.1 McDonald's Restaurants

The KOF index has been criticized for measuring westernization rather than globalisation. The variable McDonald's restaurant defines modern cultural globalisation largely as the dispersion of American values and highlights the domination of U.S. cultural products. The variable follows a particular individual value concept and hence is not an appropriate globalisation indicator because of its bias to a particular culture by being too much focused on western cultural peculiarities and its global spread.

Another crucial component that is not taken into due consideration is the direction of globalisation, which is a two-way process. BRICS nations are globalised economies, not only McDonald's restaurants are found across these countries but Indian and Chinese restaurants are also operating at a global level. Some of these are listed in table 16.

Moreover, out of all the BRICS nations, 65 percent^{ix} of the total population of India is living in rural areas where the outreach of food joints like McDonald's is minimal, calculating the cultural globalisation of such a country based on the number of burger joints to its total number of the population can't be termed to be an accurate pointer to measure the cultural globalisation of that country.

5.4.2 IKEA Stores

The variable IKEA stores was added to the index to relax the focus on the American value due to the inclusion of the McDonald's restaurant under cultural globalisation, de facto. However, even this variable suffers from the disadvantage of the individual value concept.

IKEA belongs to a multinational group of Swedish origin situated in the Netherlands that designs and sells ready-to-assemble furniture, kitchen appliances and, home accessories, among other useful goods and occasionally home services. Just like McDonald's even IKEA is a reflection of western countries being trendsetters in the cultural realm. The calculation of the globalisation score of a country based on the establishment of the number of IKEA stores in that country would lead to the globalisation of a very specific western market in the world, instead of cultural globalisation in general.

IKEA has 422 stores worldwide in more than 50 countries^x. It enjoys a dominant position in its industry however, the index has not provided any explanation as to why it has chosen this particular industry and not any other industry to measure cultural proximity. A close analysis of another industry viz. apparel industry and its dominant player reflects that in comparison to IKEA the dominant players of other industries have a more global presence since they are located in more number of countries. This has been illustrated in table 17.

From tables 17 and 18 it can be inferred that in comparison to IKEA, H&M has a more global outreach with more stores located in a larger number of international markets. IKEA is not very popular in BRICS countries. In 2018 India had only one IKEA store while H&M had 39 Stores. Also in China, the number of operational H&M stores is more than IKEA stores.

Hence, Mc Donald's Restaurants and IKEA stores can be a deciding factor for countries like USA, the same cannot be considered as an appropriate indicator for measuring the cultural development for others. The BRICS countries are at a disadvantage when the cultural proximity is measured in terms of the two discussed variables and could have performed better if more global variables were chosen.

5.5 Examination of Weights

The index performs principal component analysis on a 10-year rolling window of data to determine time-varying weights for the individual underlying variables. The process through which the weights are assigned suffers from a few drawbacks the most obvious being that the combined index gives equal weightage to economic, political, and social dimensions. Also, all the sub-dimensions are given equal weights disregarding the number of variables under them and their importance in the measurement of globalisation which seems rather arbitrary. Hence, there is no objective way of assigning weights. International patents and international trademarks are two such underlying variables for whom the weights attached are not in sync with the importance they hold as an indicator that measures the extent of globalisation of a country.

5.5.1 International Patents

International patent filing is considered as one of the most important variables in assessing the extent of globalisation of a country as increase in patent filing in a country depicts the increase in innovations and technical advancement of that country and building confidence among the investors towards ease of doing/operating business in that country. However, the index has weighted this variable the lowest among all the variables under Informational Globalisation, de facto as presented in table 19. Assigning high weights to the variable Used Internet Bandwidth reflects that the index is giving more importance to the possibility of information exchange through the internet rather than international patents which don't seem to be appropriate.

The low weightage assigned to such an important indicator of globalisation acts as a disadvantage for the BRICS. The patent office in BRICS countries has seen a considerable increase in the number of filing of patent applications by the non-residents. In Brazil the patent filing by non-residents has increased from 19,877 in 2018 to 19,932 in 2019. In India it has increased from 33,766 in 2018 to 34,173 in 2019. China has witnessed an increase in patents filed by non-residents from 148,187 in 2018 to 157, 093 and South Africa has experienced an increase from 6,258 in 2018 to 6,347 in 2019.

Patent filing in a country by non-residents is a clear indication of the country's development globally however this is not being reflected in the index because of errors in the weightage assigning methodology.

5.5.2 International Trademarks

The variable international trademarks suffer from a similar discrepancy as international patents. The increase in the trademark filing directly outlines the cultural advancement of a country in trade and commerce. Filing of the trademark application directly depicts the increase in trade, commerce and creativity in a country, filing by non-residents sets an example how the non-residents have accepted the country as a place of doing business, and how the country's consumers are buying global brands as to prompt brand protection in India. However, the variable has still been weighed the lowest among all the variables under the cultural globalisation, de facto sub-dimension as presented in table 20. The index regards McDonald's restaurants and IKEA stores as much stronger variables in deciding the overall globalisation of a country irrespective of the fact that they represent a particular individual value concept and are biased towards a particular culture and group of countries. Therefore, the way the weights are allocated among various variables under cultural globalisation, de facto cannot be considered accurate.

The low weightage assigned to such an important indicator of globalisation in a country acts as a disadvantage for BRICS since advancement. The trademark laws in the BRICS countries has increased the trademark filing applications by a considerate number. In Brazil the international trademark filing by non-residents has increased from 28,356 in 2018 to 31,258 in 2019. In Russian Federation it has increased from 59,629 in 2018 to 60,249 in 2019. India has witnessed and increase in trademarks filed by non-residents from 44,908 in 2018 to 45,467 in 2019 and China has experienced an increase from 238,161 in 2018 to 250,624 in 2019.

5.6 Issue of Double Counting

Some of the variables chosen by the index are overlapping each other. KOF index has double-counted the same type of goods/ services under two different variable heads. Trade in cultural goods and trade in high tech goods are a subset of overall trade in goods. Also, trade in personal service is a subset of overall trade in services.

The problem of double counting might favor those economies which trade larger quantities of the goods/ services that have been included twice in the index and might result in an overestimation of their performance in comparison to the countries which are not doing so well on these variables. This can be explained through an example by analyzing the values of trade in goods and exports of high-tech goods of Netherlands, Brazil, Russian Federation, India and South Africa as presented in table 21.

From the above table it can be observed that Netherlands has higher value of both trade in goods and exports of high-tech goods. Netherlands is one of the top exporters of high-tech goods whereas, the BRICS countries except China are not performing as well as Netherlands on the concerned variables. Since, exports of high-tech goods is a sub-set of trade in goods variables its value has already been included in calculating trade in goods. Therefore, by introducing this variable again under cultural globalisation, de facto

Netherlands is getting an additional advantage in comparison to BRICS countries which might have an adverse impact on their scoring and ultimately the rankings.

6. Conclusion, Suggestions and Scope of Further Research

The KOF Index of Globalisation was formulated to contribute to the already existing literature to quantify the globalisation process and to improve the construction methodology of globalisation indices in such a way that would foster further research on sources and consequences of globalisation. A precise and accurate index of globalisation will not only be of great value to the researchers but also the policymakers.

This paper has identified a range of shortcomings suffered by the index that limits its applicability to various countries of the world with a special focus on the BRICS nations. The paper intends to provide certain suggestions to the Publishing Agency, index compilers, and researchers which if paid attention to might make the index a more reliable and dependable measure of globalisation.

Controlling for geographical distances between the trade partners shall help to some extent in separating regionalisation from globalisation. It is suggested that some of the variable definitions should be revised by weighing the bilateral relationships with geographical distance. For example, the index has defined trade in goods as export and import of goods (as percent of GDP). It is recommended to restate the definition as the sum of bilateral trade volumes multiplied by the geographic distance between respective countries. The change in methodology shall emphasize less on trade with neighbouring countries and shall measure globalisation in its true sense.

The normalisation process adopted by the index is favoring countries with smaller GDP and population size. GDP and population vary across countries and using them as the normalizing variables is not a reflection of the true reality in the global world. This discrepancy can be avoided by isolating the country-specific characteristics while conducting a cross country analysis. This will ensure that all the countries are placed on the same footing. It is suggested that the variable definitions should be revised by replacing the normalizing variables that differ from one country to another with world pointers. For example, UN peace keeping missions defined by KOF as personnel contributed to U.N. Security Council Missions (percent of population) can be rephrased as personnel contributed to UN Security Council Missions (percent of total personnel deployed in UN Security Council Missions).

To overcome the disadvantage of being bias towards a particular culture or a set of countries it is recommended to take into consideration a more global variable having a large global presence all over the world while calculating the Index instead of country-specific pointers. The dominance of one particular culture on the index can be reduced by measuring cultural globalisation as a two-way process.

The combined index gives equal weightage to all the dimensions and sub-dimensions which seems to be rather arbitrary. A re-examination of index construction methodology is suggested. Upon a thorough observation of all the variables under the index and examining their linkages to globalisation, it is suggested that a re-allocation of weights should be considered under two sub-dimensions under social globalisation, de facto viz. informational globalisation, de facto and cultural globalisation de facto. Under informational globalisation, de facto since international patent filing is considered as one of the most important variables in assessing the extent of globalisation of a country, a reduction in weight assigned to the variable used internet bandwidth is suggested and compensate the excess weight to international patents. Similarly, under cultural globalisation, de facto, an increase in trademark filing directly outlines the cultural development of a country while variables like McDonald's restaurants and Ikea stores show a bias towards western culture. Therefore it is suggested that weights assigned to McDonald's restaurants and Ikea should be reduced and the excess weight should be compensated to international trademarks variable.

With respect to the issue of double counting, since the variables trade in services and trade in personal services & trade in goods, trade in cultural goods and trade in high tech goods measures two different aspects of globalisation viz. economic and social therefore it is not logical to remove the variable which is a sub-component of a bigger variable to avoid the issue of double counting. However, to lessen the disadvantage suffered by other countries who might not be doing so well on both the variables, a reduction in weights assigned to these variables is suggested.

The paper has highlighted several issues related to the KOF Globalisation Index and provided suggestions to overcome these shortcomings. If these suggestions to improve the methodology of index construction are given due consideration, not only the global ranks of BRICS economies would improve on the index but a change in rankings for other countries shall be witnessed as well. Some of the solutions for dealing with discrepancies associated with the index have been provided in this paper. However, further research is imperative to come up with more elaborate solutions to tackle such issues if one really wants to measure globalisation in all respects.

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Tables

Table 1: Classification of Quantitative Globalisation Measures

| S. No. | Type of Measure | Definition | Example |
|--------|-------------------------|--|---|
| 1 | Single Indicator | <p>The indicator focuses on one aspect of globalisation and can be calculated by using one or two variables.</p> <p>A disadvantage faced by this measure is that it does not thoroughly reveal the level of the globalisation process and needs a more detailed analysis.</p> | <p>Single variable index: exports, imports</p> <p>Index of two variables: export to GDP ratio, import to GDP ratio</p> |
| 2 | Single-Dimension Index | <p>The index is usually aggregated by using several indicators.</p> <p>It reflects the scope of the globalisation dimension selected viz. economic and political size of globalisation</p> | <p>Globalisation of trade: openness, the average tariff rate</p> <p>Globalisation of finance: IMF Restriction Index, Chinn ITO Index, Foreign Direct Investment, Foreign Assets and Debt</p> |
| 3 | Multi-Dimensional Index | <p>The index is a synthetic parameter of globalisation to reflect globalisation to the fullest.</p> <p>The index is composed of various main globalisation dimensions selected by the index compiler. The dimensions are aggregated.</p> <p>Each of the dimensions is assigned with a specific index proportion based on the attitude of the index compiler towards the significance of the dimension.</p> | <p>Kearney/ Foreign Policy (KFP) Index of Globalisation</p> <p>KOF Index of Globalisation</p> <p>CSGR Globalisation Index</p> <p>Maastricht Globalisation Index (MGI)</p> <p>New Globalisation Index (NGI)</p> <p>G-Index</p> |

Table 2: Comparison of Globalisation Indexes

| Index | | KFP | KOF | CSGR | MGI | NGI | G Index | |
|----------------------------------|------------------------|---------------------------|-----------|-----------|-----------|-----------|---------|-----|
| Criteria | Year | 1971-2005 | 1970-2008 | 1982-2004 | 2000-2008 | 1995-2005 | 2001 | |
| | Number of countries | 62 | 158 | 62 | 117 | 70 | 185 | |
| | Number of indicators | 12 | 25 | 16 | 11 | 22 | 6 | |
| | Economic Globalisation | Foreign capital | No | Yes | Yes | Yes | Yes | Yes |
| | | Direct foreign investment | Yes | Yes | Yes | Yes | Yes | Yes |
| | | Trade Flows | Yes | Yes | Yes | Yes | Yes | Yes |
| Restriction on capital and trade | | Yes | Yes | Yes | Yes | Yes | Yes | |

| | | | | | | | | |
|--|---|---------------------------------|-----|-----|-----|---------|-----|-----|
| | Social Globalisation | Culture | No | Yes | No | No | Yes | No |
| | | Information and contacts | Yes | Yes | Yes | Yes | Yes | Yes |
| | Political dimension | | Yes | Yes | Yes | No | No | No |
| | Insignificant values of indicators | | Yes | No | Yes | Similar | No | No |
| | Geographic control | | No | No | Yes | Yes | Yes | No |
| | Environment | | No | No | No | Yes | No | No |

Source: Samimi, Lim & Buang, *Globalisation Measurement: Notes on Common Globalisation Indices*, 2011

Table 3: Criteria for Good Composite Index

| Category | Sub-Category | WMRC Randolph 2001) | ATK (A.T. Kearney/ Foreign Policy 2007) | MGI (Martens and Raza 2009) | KOF (Dreher 2006) |
|--------------------|--|--|---|--|---|
| Relevance | Definition of globalisation used | Very narrow, only economic | Medium | Very broad | Very broad |
| | Differentiation of globalisation from internationalisation | No differentiation | No differentiation | No differentiation | No differentiation |
| | Type of change measured | Extensity, intensity | Extensity, intensity | Extensity, intensity | Extensity, intensity |
| | Geographical adjustment | No | No | Yes | No |
| | Coverage | 185 countries | 72 countries | 117 countries | 122 countries |
| | Correlation with economic development | Low | High | High | High |
| Robustness | Sensitivity to extreme values | Method not published | High (cross-panel normalisation) | Low | Low |
| | Sensitivity to year-to-year data variations | Very high (exclusive use of strongly fluctuating indicators) | High (some indicators with lower fluctuation) | Low (indicators with high fluctuations are averaged) | High (some indicators with lower fluctuation) |
| | Method for determining weights | A priori, with normative discussion | A priori, with normative discussion | Equal weights | Principal components analysis |
| | Weight distortion | Method not published | Some distortion | No distortion | Some distortion |
| Added Value | Correlation with own components | High | Low | Some | Some |

| | | | | | |
|---------------------|------------------------------|---------------|---------------|----------|----------|
| | Correlation among components | Not published | Not published | Moderate | Moderate |
| Transparency | Transparency of methodology | Moderate | High | High | High |
| | Data published | Partially | Yes | Yes | Yes |

Source: Dreher, Gaston, Martens, Boxem, *Measuring Globalisation – Opening the Black Box. A critical Analysis of Globalisation Indexes*, 2010

Table 4: Structure of the KOF Index of Globalisation, 2020

| Globalisation Index, de facto | Weights | Globalisation Index, de jure | Weights |
|--|----------------|---|----------------|
| Economic Globalisation, de facto | 33.3 | Economic Globalisation, de jure | 33.3 |
| <i>Trade Globalisation, de facto</i> | 50.0 | <i>Trade Globalisation, de jure</i> | 50.0 |
| Trade in Goods | 37.1 | Trade Regulations | 26.2 |
| Trade in Services | 43.4 | Trade Taxes | 27.9 |
| Trade Partner Diversity | 19.5 | Tariffs | 27.5 |
| | | Trade Agreements | 18.4 |
| <i>Financial Globalisation, de facto</i> | 50.0 | <i>Financial Globalisation, de jure</i> | 50.0 |
| Foreign Direct Investment | 26.4 | Investment Restrictions | 30.6 |
| Portfolio Investment | 16.8 | Capital Account Openness | 39.0 |
| International Debt | 28.1 | International Investment Agreements | 30.4 |
| International Reserves | 1.3 | | |
| International Income Payments | 27.3 | | |
| Social Globalisation, De Facto | 33.3 | Social Globalisation, De Jure | 33.3 |
| <i>Interpersonal Globalisation, de facto</i> | 33.3 | <i>Interpersonal Globalisation, de jure</i> | 33.3 |
| International Voice Traffic | 20.5 | Telephone Subscriptions | 39.4 |
| Transfers | 22.0 | Freedom to Visit | 32.3 |
| International Tourism | 21.5 | International Airports | 28.4 |
| International Students | 18.9 | | |
| Migration | 17.1 | | |
| <i>Informational Globalisation, de facto</i> | 33.3 | <i>Informational Globalisation, de jure</i> | 33.3 |
| Used Internet Bandwidth | 41.4 | Television Access | 37.5 |
| International Patents | 29.2 | Internet Access | 42.6 |
| High Technology Exports | 29.4 | Press Freedom | 19.9 |
| <i>Cultural Globalisation, de facto</i> | 33.3 | <i>Cultural Globalisation, de jure</i> | 33.3 |
| Trade in Cultural Goods | 28.6 | Gender Parity | 23.1 |
| Trade in Personal Services | 24.7 | Human Capital | 41.6 |
| International Trademarks | 8.2 | Civil Liberty | 35.2 |
| McDonald's Restaurants | 21.9 | | |
| IKEA Stores | 16.5 | | |
| Political Globalisation, de facto | 33.3 | Political Globalisation, de jure | 33.3 |
| Embassies | 37.1 | International Organizations | 36.5 |
| UN Peace Keeping Missions | 24.7 | International Treaties | 32.6 |
| International NGOs | 38.2 | Treaty Partner Diversity | 30.9 |

Source: 2020 Globalisation Index: Structure, Variables, and Weights

Table 5: KOF Index of Globalisation 2020 Rankings and Scores: Top 10 Performers

| Rank (Globalisation Index, Overall) | Country | Score | | |
|---|----------------|---------------------------------|----------------------------------|---------------------------------|
| | | Globalisation Index, overall | Globalisation Index, de facto | Globalisation Index, de jure |
| 1 | Switzerland | 90.79 | 90.81 | 90.78 |
| 2 | Netherlands | 90.68 | 90.01 | 91.35 |
| 3 | Belgium | 90.46 | 89.96 | 91.00 |
| 4 | Sweden | 89.44 | 86.40 | 92.48 |
| 5 | United Kingdom | 89.39 | 86.08 | 92.70 |
| 6 | Germany | 88.83 | 87.00 | 90.66 |
| 7 | Austria | 88.56 | 87.15 | 89.97 |
| 8 | Denmark | 87.96 | 86.18 | 89.75 |
| 9 | Finland | 87.70 | 83.69 | 91.62 |
| 10 | France | 87.69 | 84.75 | 90.64 |

Source: 2020 KOF Globalisation Index, Rankings for the Year 2018

Table 6: KOF Index of Globalisation 2020 Rankings and Scores: BRICS Countries

| Rank (Globalisation Index, Overall) | Country | Scores | | |
|---|--------------|---------------------------------|----------------------------------|---------------------------------|
| | | Globalisation Index, overall | Globalisation Index, de facto | Globalisation Index, de jure |
| 49 | Russia | 71.94 | 70.80 | 73.08 |
| 60 | South Africa | 70.51 | 71.58 | 69.44 |
| 80 | Brazil | 64.49 | 59.79 | 69.19 |
| 82 | China | 64.28 | 62.59 | 65.97 |
| 90 | India | 62.23 | 59.90 | 64.57 |

Source: 2020 KOF Globalisation Index, Rankings for the Year 2018

Table 7: Summary of BRICS Countries (in Millions)

| Country | Population | Total GDP (Current US\$) | Per Capita GDP (Current US\$) | Exports (Current US\$) | Imports (Current US\$) |
|--------------------|------------|--------------------------------|--|------------------------------|------------------------------|
| Brazil | 209.47 | 1885482.53 | 0.009 | 280742.69 | 273547 |
| Russian Federation | 144.48 | 1669583.09 | 0.011 | 509503.24 | 344207.02 |
| India | 1352.62 | 2713165.06 | 0.002 | 538635.20 | 639013.26 |
| China | 1392.73 | 13894817.55 | 0.010 | 2655591.92 | 254884.79 |
| South Africa | 57.78 | 368288.93 | 0.006 | 110144.48 | 108878.18 |

Source: WDI, World Bank, 2018

Table 8: List of Top 100 Global Fortune 500 Companies Originated in BRICS

| Global Rank | Company | Country of Origin | Revenue (\$Millions) |
|----------------|---|-------------------|-------------------------|
| 2 | State Grid | China | 348903 |
| 3 | Sinopec Group | China | 326953 |
| 4 | China National Petroleum | China | 326008 |
| 23 | China State Construction Engineering | China | 156071 |
| 26 | Industrial and Commercial Bank of China | China | 153021 |
| 29 | Ping An Insurance | China | 144197 |
| 31 | China Construction Bank | China | 138594 |
| 36 | SAIC Motor | China | 128819 |

| | | | |
|----|-----------------------------------|--------|--------|
| 40 | Agricultural Bank of China | China | 122366 |
| 42 | China Life Insurance | China | 120224 |
| 46 | Bank of China | China | 115423 |
| 49 | Gazprom | Russia | 111983 |
| 53 | China Mobile Communications | China | 110159 |
| 56 | China Railway Engineering Group | China | 102767 |
| 58 | China Railway Construction | China | 100855 |
| 63 | Lukoil | Russia | 93897 |
| 65 | Dongfeng Motor | China | 93294 |
| 72 | Huawei Investment & Holding | China | 89311 |
| 73 | Petrobras | Brazil | 88827 |
| 86 | China Resources | China | 82184 |
| 87 | China National Offshore Oil | China | 81482 |
| 91 | China Communications Construction | China | 79417 |
| 96 | Pacific Construction Group | China | 77205 |
| 98 | Sinochem Group | China | 76765 |

Source: Global Fortune 500, 2018

Table 9: Analysis of Trade Profiles of Top 3 performers

| Merchandise Trade | | |
|-------------------------------------|--|---|
| Country | Trade Partner by Main Destination, % (2018) | Trade Partner by Main Origin, % (2018) |
| Switzerland | European Union (44.4) United States of America (13.2) China (9.7) India (5.7) Hong Kong, China (5.2) Other (21.8) | European Union (62.4) United States of America (7.6) China (5.3) United Arab Emirates (3.7) Japan (1.7) Other (19.3) |
| Netherlands | European Union (70.4) United States of America (4.4) China (2.5) Turkey (1.3) Switzerland (1.3) Other (20.1) | European Union (55) China (9) United States of America (7.7) Russian Federation (3.4) Japan (1.9) Other (23) |
| Belgium | European Union (72.8) United States of America (5.2) India (2) China (1.8) Switzerland (1.3) Other (17) | European Union (64.5) United States of America (6.9) China (4) Russian Federation (2.6) Japan (2.4) Other (19.6) |
| Trade in Commercial Services | | |
| | Trade Partner by Main Destination, % (2018) | Trade Partner by Main Origin, % (2018) |
| Switzerland | NA | NA |
| Netherlands | European Union (60.6) United States of America (8.1) Switzerland (3.7) Canada (1.9) Japan (1.3) Other (24.5) | European Union (49.7) United States of America (10.5) Switzerland (4.8) China (1.8) India (1.8) Other (31.5) |

| | | |
|---------|--|--|
| Belgium | European Union (69.3) United States of America (9.4) Switzerland (6.7) Japan (1.3) China (1.2) Other (12.1) | European Union (74.9) United States of America (8.5) Switzerland (3.3) China (1) Japan (0.9) Other (11.3) |
|---------|--|--|

Source: Trade Profile 2019, WTO

Table 10: Analysis of Trade Profiles of BRICS Countries

| Merchandise Trade | | |
|-------------------------------------|---|---|
| Country | Trade Partner by Main Destination, % (2018) | Trade Partner by Main Origin, % (2018) |
| Brazil | China (21.8) European Union (16) United States of America (12.5) Argentina (8.1) Japan (2.4) Other (39.2) | European Union (21.2) China (18.1) United States of America (16.6) Argentina (6.2) Korea, Republic of (3.5) Other (34.3) |
| Russian Federation | European Union (45.5) China (12.4) Belarus (5.1) Turkey (4.7) Korea, Republic of (4) Other (28.3) | European Union (37.1) China (21.8) Belarus (5.4) United States of America (5.3) Japan (3.7) Other (26.8) |
| India | European Union (17.8) United States of America (16) United Arab Emirates (8.9) China (5.1) Hong Kong, China (4.1) Other (48.1) | China (14.6) European Union (10.2) United States of America (6.3) Saudi Arabia, Kingdom of (5.6) United Arab Emirates (5.2) Other (58.1) |
| China | United States of America (19) European Union (16.5) Hong Kong, China (12.3) Japan (6.1) Korea, Republic of (4.6) Other (41.5) | European Union (13.3) Korea, Republic of (9.7) Japan (9) Chinese Taipei (8.5) United States of America (8.4) Other (51.1) |
| South Africa | European Union (21.7) China (9.8) United States of America (7.5) Japan (4.7) India (4.7) Other (51.5) | European Union (30.8) China (18.3) United States of America (6.6) India (4.7) Saudi Arabia, Kingdom of (4.6) Other (35) |
| Trade in Commercial Services | | |
| | Trade Partner by Main Destination, % (2018) | Trade Partner by Main Origin, % (2018) |
| Brazil | NA | NA |
| Russia | European Union (39.4) Switzerland (6.9) United States of America (6.3) | European Union (48) Turkey (5.6) United States of America (4.7) |

| | | |
|--------------|---|--|
| | China (4.2) Kazakhstan (3.5) Other (39.8) | Switzerland (3.4) China (2.7) Other (35.6) |
| India | NA | NA |
| China | Hong Kong, China (28.8) European Union (17) United States of America (15) Japan (5.5) Singapore (5.5) Other (28.2) | Hong Kong, China (19.6) United States of America (19.3) European Union (16.9) Japan (6.6) Canada (5.8) Other (31.8) |
| South Africa | NA | NA |

Source: Trade Profile 2019, WTO

Table 11: List of Normalised Variables

| Variable | Variable Definition | Weights |
|-------------------------------|--|---------|
| Trade in goods | Exports and imports of goods (% of GDP) | 37.1 |
| Trade in services | Exports and imports of services (% of GDP) | 43.4 |
| Foreign Direct Investment | Sum of stocks of assets and liabilities of foreign direct investments (% of GDP) | 26.4 |
| Portfolio investment | Sum of stocks of assets and liabilities of international equity portfolio investments (% of GDP) | 16.8 |
| International debt | Sum of inward and outward stocks of international portfolio debt securities and international bank loans and deposits (% of GDP) | 28.1 |
| International reserves | Includes foreign exchange (excluding gold), SDR holdings, and reserve position in the IMF (% of GDP) | 1.3 |
| International income payments | Sum of capital and labour income to foreign nationals and from abroad (% of GDP) | 27.3 |
| International voice traffic | International incoming and outgoing fixed and mobile telephone traffic in minutes (% of population) | 20.5 |
| Transfers | Secondary income paid and received. Gross inflows and outflows of goods, services, income, or financial items without a quid pro quo (% of population) | 22.0 |
| International tourism | Arrivals and departures of international tourists (% of population) | 21.5 |
| International students | Inbound and outbound number of tertiary students (% of population) | 18.9 |
| Migration | Number of foreign or foreign-born residents (% of population) | 17.1 |
| Telephone subscriptions | Fixed telephone and mobile subscriptions (% of population) | 39.4 |
| International airports | Number of airports that offers at least one international flight connection (% of population) | 28.4 |
| Used internet bandwidth | Total used capacity of international internet bandwidth in bits per second (% of population) | 41.4 |
| International patents | Patent applications by non-residents filed through the Patent Cooperation Treaty procedure or with a national patent office (% of population) | 29.2 |
| High technology exports | Exports of high R&D intensity products in current US\$ (% of population). | 29.4 |
| Internet access | Individuals using the internet (% of population) | 42.6 |
| Trade in cultural goods | Exports and imports of cultural goods defined as in UNESCO (2009) (% of population) | 28.6 |

| | | |
|----------------------------|---|------|
| Trade in personal services | Exports and imports of personal, cultural and recreational services (% of population) | 24.7 |
| McDonald's restaurant | Number of McDonald's restaurants (% of population) | 21.9 |
| IKEA stores | Number of IKEA stores (% of population) | 16.5 |
| UN peacekeeping missions | Personnel contributed to U.N. Security Council Missions (% of population) | 24.7 |

Source: 2020 KOF Globalisation Index: Variables Description

Table 12: Ranking of Top 3 Performers and BRICS Based on GDP (in Millions)

| Rank | Country | GDP (Current US\$) |
|------|--------------------|--------------------|
| 1 | China | 13894817.55 |
| 2 | India | 2713165.06 |
| 3 | Brazil | 1885482.53 |
| 4 | Russian Federation | 1669583.09 |
| 5 | Netherlands | 914043.44 |
| 6 | Switzerland | 705140.62 |
| 7 | Belgium | 543734.37 |
| 8 | South Africa | 368288.94 |

Source: WDI, World Bank; 2018

Table 13: Ranking of Top 3 Performers and BRICS Based on Population (in Millions)

| Rank | Country | Population |
|------|--------------------|------------|
| 1 | China | 1392.73 |
| 2 | India | 1352.62 |
| 3 | Brazil | 209.47 |
| 4 | Russian Federation | 144.48 |
| 5 | South Africa | 57.789 |
| 6 | Netherlands | 17.23 |
| 7 | Belgium | 11.43 |
| 8 | Switzerland | 8.51 |

Source: WDI, World Bank; 2018

Table 14: Comparison of Absolute and Relative Values for the Variable Trade in Goods

| | Trade in Goods (sum of imports and exports in millions) | GDP (in millions) | Trade in Goods (% of GDP) |
|--------------------|---|-------------------|---------------------------|
| Switzerland | 620384.93 | 705140.62 | 87.98 |
| Netherlands | 1060520.71 | 914043.44 | 116.03 |
| Belgium | 654814.63 | 543734.37 | 120.43 |
| China | 4454812.09 | 13894817.55 | 32.06 |
| Russian Federation | 692771.53 | 1669583.09 | 41.49 |
| India | 850865.36 | 2713165.06 | 31.36 |

Source: Authors own calculation

Table 15: Comparison of Absolute and Relative Values for the Variable Telephone Subscriptions

| | Telephone Subscription (in millions) | Population (in millions) | Telephone Subscription (% of population) |
|-------------|--------------------------------------|--------------------------|--|
| Switzerland | 14.40 | 8.51 | 169.15 |
| Netherlands | 27.1 | 17.23 | 157.28 |
| Belgium | 15.98 | 11.43 | 139.83 |

| | | | |
|--------|---------|---------|--------|
| India | 1197.89 | 1352.62 | 88.56 |
| China | 1823.40 | 1392.73 | 130.92 |
| Brazil | 245.35 | 209.47 | 117.13 |

Source: Authors own calculation

Table 16: BRICS Originated Restaurants around the World

| Name of the Restaurant | Industry | Country | Global Presence | No. of Restaurants |
|-------------------------------------|----------|---------|-----------------|--------------------|
| Sarvana Bhanwana ^{xi} | Food | India | 25 | 110 |
| Café Coffe Day ^{xii} | Food | India | 3 | - |
| Punjab Grill ^{xiii} | Food | India | 4 | - |
| Barbeque Nation ^{xiv} | Food | India | 4 | 145 |
| Kailash Parbat ^{xv} | Food | India | 9 | 38 |
| Little Sheep Hot Pot ^{xvi} | Food | China | 10 | 300 |

Table 17: Inter-Industry Comparison of Global Presence

| Industry | Dominant Player | Global Presence - No. of Countries (2018) | Global Presence – No. of Stores (2018) |
|--------------------------|---|---|--|
| Home Furnishing Industry | IKEA | 50 | 422 |
| Apparel Industry | Hennes & Mauritz AB ^{xvii} (H&M) | 71 | 4433 |

Source: IKEA, H&M

Table 18: Presence of IKEA and H&M Stores in BRICS Nations

| | Number of IKEA Stores | Number of H&M Stores (2018) ¹ |
|--------------------|-----------------------|--|
| Brazil | NA | - |
| Russian Federation | NA | 130 |
| India | 1 | 39 |
| China | 35 ^{xviii} | 530 |
| South Africa | NA | 23 |

* Values are for 2021, NA: Not Available

Table 19: Weights Assigned to Variables under Informational Globalisation, de facto

| Dimension | Sub-Dimension | Variable Name | Weightage |
|--------------------------------|-----------------------------|------------------------------|-------------|
| Social Globalisation, de facto | Informational Globalisation | Used internet bandwidth | 41.4 |
| | | International patents | 29.2 |
| | | High technology exports | 29.4 |

Source: 2020 Globalisation Index: Structure, Variables, and Weights

Table 20: Weights Assigned to Variables under Cultural Globalisation, de facto

| Dimension | Sub-Dimension | Variable Name | Weightage |
|--------------------------------|------------------------|---------------------------------|------------|
| Social Globalisation, de facto | Cultural Globalisation | Trade in cultural goods | 28.6 |
| | | Trade in personal services | 24.7 |
| | | International trademarks | 8.2 |
| | | McDonald's restaurant | 21.9 |

| | | | |
|--|--|-------------|------|
| | | IKEA stores | 16.5 |
|--|--|-------------|------|

Source: 2020 Globalisation Index: Structure, Variables, and Weights

Table 21: Values of Trade in Goods and Exports of High-Tech Goods for Netherlands, Brazil, Russia, India and South Africa (in Millions)

| Country | Ranks | Trade in Goods (sum of exports and imports) | Exports of High-Tech Goods |
|--------------------|-------|---|----------------------------|
| Netherlands | 2 | 1060520.7 | 85690.57 |
| Brazil | 80 | 426026.8 | 11096.28 |
| Russian Federation | 49 | 692771.5 | 10183.01 |
| India | 90 | 20273.09 | 20273.09 |
| South Africa | 60 | 186506.6 | 2097.57 |

Source: WDI World Bank, 2018

Figures

Figure 1: Performance of Countries on Overall Economic, Social and Political Dimensions

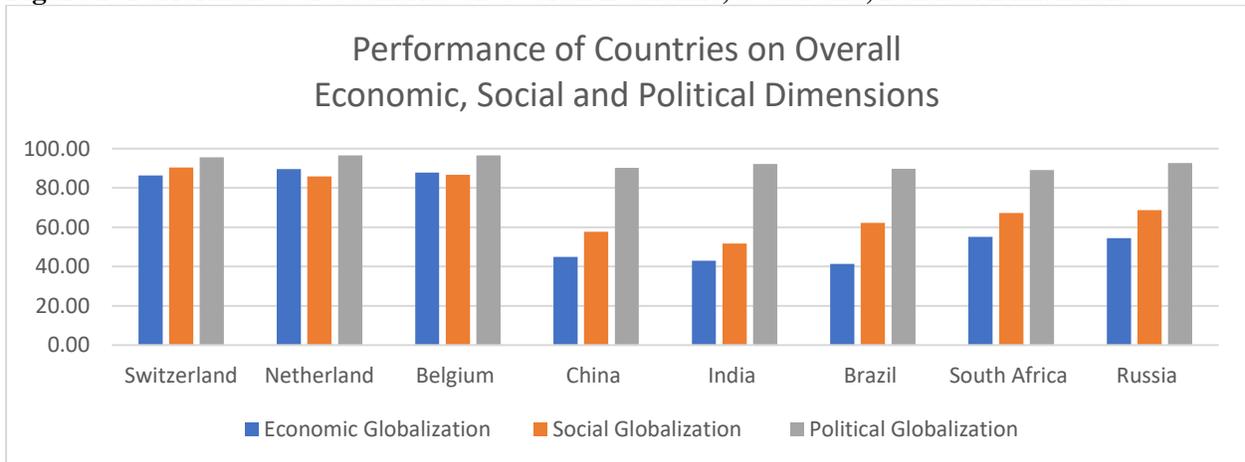
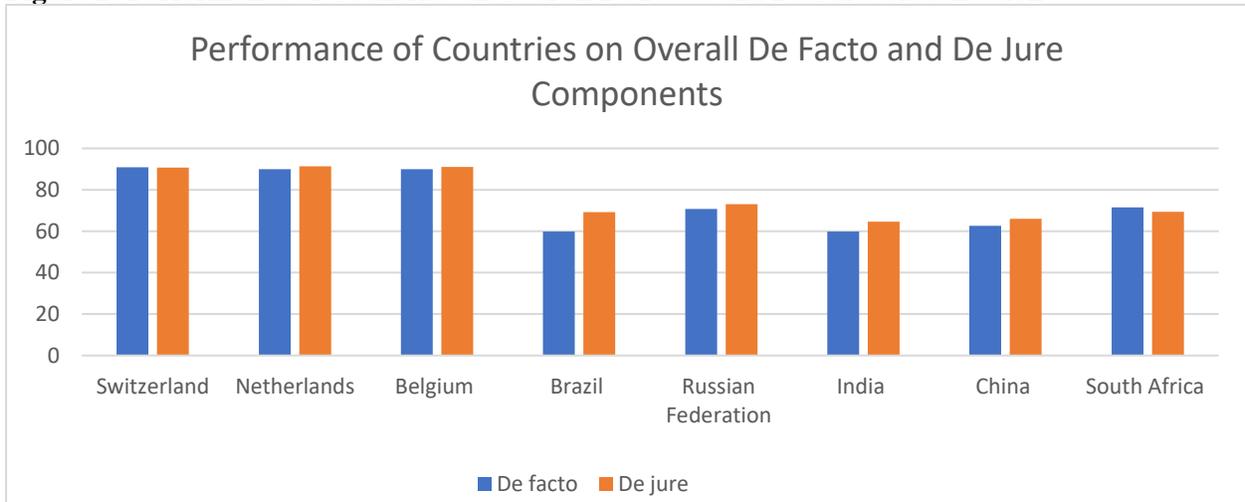


Figure 2: Performance of Countries on Overall De Facto and De Jure Globalisation



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ⁱⁱ <https://wits.worldbank.org/>

ⁱⁱⁱ https://www.wto.org/english/tratop_e/tpr_e/s375_sum_e.pdf

^{iv} https://www.wto.org/english/tratop_e/tpr_e/s375_sum_e.pdf

^v https://www.wto.org/english/tratop_e/tpr_e/s403_sum_e.pdf

^{vi} <https://fortune.com/global500/2020/search/>

^{vii} https://www.un.org/development/desa/dpad/wp-content/uploads/sites/45/WESP2018_Annex.pdf

^{viii} https://www.wto.org/english/tratop_e/tpr_e/s358_sum_e.pdf

^{ix} <https://fortune.com/global500/2020/search/>

^x https://www.wto.org/english/tratop_e/tpr_e/s358_sum_e.pdf

^{xi} <https://saravanabhavan.com/branches>

^{xii} <https://www.cafecoffeeday.com/about-us>

^{xiii} <https://www.punjabgrill.in/story-legacy-punjab-grill/>

^{xiv} <https://www.barbequenation.com/about-us>

^{xv} <https://www.kailashparbatgroup.com/locations>

^{xvi} <https://thefranchisetalk.com/success-story/the-exceptional-little-sheep-hot-pot/>

^{xvii} <https://about.hm.com/content/dam/hmgroup/groupsite/documents/masterlanguage/Annual%20Report/Annual%20Report%202018.pdf>

^{xviii} <https://www.ikea.cn/cn/en/stores/>