How to Measure Globalisation?
A New Globalisation Index (NGI)

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Abstract:

In this article, a new composite globalisation index will be presented. With its 21 variables, it accounts for the multidimensionality of this phenomenon instead of relying purely on economic indicators. As compared to other existing globalisation indices, three major innovations are introduced in this New Globalisation Index (NGI). Firstly, five variables that have until now not been used in globalisation indices enter the calculations. Secondly, geographical distances between countries are incorporated into the index in the trade variable, so as to account for the distinction between globalisation and regional integration. A final innovation is a methodological one, which concerns the use of a statistical method (principal component analysis) to form subindices according to the statistical features of the variable structure. A control for country size is employed for significantly affected variables, as was done in some other globalisation indices before. The final index contains 70 countries and covers a period between 1995 and 2005.

CONTENTS

1. Introduction 3
2. Definition of Globalisation 4
3. The Choice of Indicators for the New Globalisation Index 5
4. The Effect of Geographical Distance 9
5. Other Adjustments of the Data 12
6. Construction of Factors and Weights 14
7. Main Results 17
   7.1. Changes over Time 25
   7.2. Comparing with Results of Other Globalisation Indices 27
8. Conclusions and Further Issues 30
9. References 32

FIGURES

Figure 1: Contribution of individual dimensions to total globalisation score for selected countries 19
Figure 2: Globalisation over time – Bulgaria, Romania, Croatia and Turkey 26

TABLES

Table 1: List of variables in the New Globalisation Index 6
Table 2: Difference in rankings for 'trade in goods' variable with and without distance-weights 10
Table 3: Regression results of the adjustment for country size 13
Table 4: Dimensions and Weights 16
Table 5: New Globalisation Index 2005 rankings and scores 18
Table 6: Top 10 (rankings, 2005) 20
Table 7: Big developed countries (rankings, 2005) 22
Table 8: "New Europe" (rankings, 2005) 23
Table 9: BRICSAM countries (rankings, 2005) 25
Table 10: Comparison of the NGI and KOF Index Rankings(R) 28

1. Introduction

There are not many expressions as controversial as globalisation, as it combines many contradictory issues under a single concept. It can be ‘good’ and ‘bad’ at the same time. It stands for growing power of multinationals in every corner of the world as well as for the worldwide spreading of knowledge and human rights. With the many faces it has, it affects every sphere of life – wealth, freedom, cultural habits, health… All around the world, it changes tastes of food, influences art, puts new products on market shelves. In this way, it has become a key topic in many discussions, both in coffeehouses and in university institutes.

The goal of this paper is not to add more fire to the controversial discussion on the consequences of globalisation. Instead, its purpose is to measure the extent and the relative speed of globalisation, in order to provide some insights about the process of globalisation itself in quantitative terms. Quantifying globalisation is a tricky task, taking into account its complexity and multidimensionality. It is nevertheless worth a try, as such a measure could contribute greatly to the whole globalisation debate. Not only would an index of globalization deepen the understanding of the concept and give an impression of its extent and relative position of countries, but also enable further research of the links between globalisation and other phenomena such as poverty, development, economic growth, etc.

The construction of the New Globalisation Index (NGI) in this paper builds on existing literature on globalisation indices and presents a couple of new suggestions for the methodology. One of them is the introduction of five new variables that have until now not been used in other published globalisation indices. The new variables make use of existing

information relevant for globalisation to add some new aspects to the measure. Secondly, a parameter that accounts for geographical distances between countries is introduced to the index, so as to address the problem of distinction between globalisation and regionalisation. Traditional measures of globalisation are mostly measures of openness, such as the ratio of international trade to GDP, which do not distinguish between interaction with distant countries and relations to neighbouring countries. Regional integration should, however, not be mistaken for globalisation. In order to distinguish between these two phenomena, geographical distances between interacting parties have to be accounted for. A suggestion on how to do this in a globalisation index will be showcased on the example of international trade in goods. A final innovation involves the construction of dimensions of the index according to the pattern structure of the variable set based on the statistical characteristic of the data. A statistical method (principal component analysis) will be employed to identify dimensions according to which the variables will be grouped into subindices of the overall globalisation index. Coupled with the theoretical basis that the variable selection is based on, this step will produce dimensions that are both statistically plausible and conceptually relevant.

2. Definition of Globalisation

A desirable starting point for any measurement is a clear idea of the concept that is to be measured. In a world where everybody seems to have an opinion on globalisation, it may come as a surprise that one clear and commonly accepted definition for it does not exist. While some would say the economic globalisation is the motor behind the whole process, others may counter them by naming the cultural or political aspect as the most important one. Caselli (2006) mentions three ‘dimensions’ of globalisation mainly accepted in contemporary

theory, namely *economic*, *political* and *cultural*, which may be further divided into subdimensions. A definition of globalisation should reflect this multidimensionality. Also, the fact that globalisation really does enfold the whole globe needs to be stressed, as this is the distinguishing factor between globalisation and other forms of international openness of countries. Exactly the intensity of contact in so many spheres with such intensity at such large distances is the main feature of what we call globalisation today. Owing to it, policymakers, investors and consumers can concentrate finding certain desired products, information or people, without being constrained by their remoteness. This means that the decision between going to the other side of the world and to a neighbouring country may with time and globalisation progress depend increasingly on features other than distance, as the latter becomes easier surmountable and therefore less relevant. Keeping in mind the relevant points from this short discussion, the following definition seems to me suitable at this stage:

> ***Globalisation is a process of growing interaction and interdependence between economies, societies and nations across large distances.***

3. The Choice of Indicators for the New Globalisation Index

Composite indicators usually measure "*multidimensional concepts which cannot be captured by a single indicator*" (JRC/OECD, 2008, p. 13). Thus, as the expression implies, a composite indicator is composed of more individual indicators, each capturing 'a part of the picture'. A proper set of indicators is fundamental for the relevance of the final composite index. For the NGI, the search for indicators resulted in a set of 21 variables, presented in the Table 1.

Table 1: List of variables in the New Globalisation Index

	Indices and Variables	Source	Definition
ECONOMIC	**Trade in Goods (weighted with geographical distances) in %GDP**	UN COMTRADE	Bilateral imports and exports of goods. Data in % GDP.
		CEPII	Geographical distances between countries in km, using city-level data to assess the geographic distribution of population inside each country.
	Trade in Services	WB 08	Sum of services exports and imports. Data in % GDP.
	FDI Stock	UNCTAD	Sum of inward and outward foreign direct investment stock. Data in % GDP.
	FDI Flow	UNCTAD	Sum of inflows and outflows of foreign direct investment recorded in the balance of payments financial account. Data in % GDP.
	Portfolio Investment Stock (NEW)	IMF 08	Sum of portfolio investment stock assets and liabilities from the international investment position records. Data in % GDP.
	Portfolio Investment Flow	IMF 08	Sum of inflows and outflows of portfolio investment recorded in the balance of payments. Data in % GDP.
	Income Payments to Foreign Nationals	WB 08	Sum of receipts and payments of employee compensation for non-resident workers, and investment income. Data in % GDP.
	Trademark Applications by Non-Residents (NEW)	WB 08	Share of applications by non-residents to register a trademark with a national or regional trademark office. Data provided by the WIPO.
	Patent Applications by Non-Residents (NEW)	WB 08	Share of patent applications filed by non-residents with a national patent office. Data provided by the WIPO.
POLITICAL	**Environmental Agreements (NEW)**	CIA	Absolute number of international environmental agreements ratified.
	International Organization Membership	CIA	Absolute number of memberships in international organizations.
	Embassies in Country	EWY	Absolute number of embassies in a country.
	Participation in UN Peacekeeping Missions	UNDPKO	Peacekeeping personnel contributions to UN peacekeeping missions.
SOCIAL	Migration Stock	WB 08	Number of people born in a country other than that in which they live. It includes refugees. Data in percent of total population.
	International Tourism[1]	WB 08	Sum of arrivals and departures of international tourists as a share of population.
	Outbound Student Mobility (NEW)	UNESCO	The number of students from a given country studying abroad as a percentage of the total tertiary enrolment in that country.
	International Phone Calls	WB 08	Sum of international incoming and outgoing telephone traffic (in minutes) divided by total population.
	International Internet Bandwidth	WB 08	Contracted capacity of international connections between countries for transmitting Internet traffic. Data in bits per person.
	International Trade in Newspapers	UN COMTRADE	Sum of exports and imports in newspapers and periodicals, code 892.2 of SITC. Data in % GDP.
	International Trade in Books	UN COMTRADE	Sum of exports and imports in books and pamphlets, code 892.11 of the SITC. Data in % GDP.
	Transfers	WB 08	Sum of current transfers recorded in the balance of payments whenever an economy provides or receives goods, services, income, or financial items without a quid pro quo. Data in % GDP.

[1] The 'international tourism' variable is a sum of incoming and outgoing tourists. For three countries in the index (Croatia, Czech Republic and Greece) data for outgoing tourists are missing. In these cases (exceptionally) an average of data of all countries on outgoing tourists was added to available country data on incoming students to obtain the sum.

The variables are presented in the same conceptual structure that emerged from the globalisation definition in the previous section, namely divided into three spheres: an **economic**, a **political** and a **social** sphere. It is important to mention already at this point that these three spheres (economical, political and social) are not to be confused with subdimensions of the index that will later be constructed via a statistical approach (principal component analysis). To make sure that the important aspects of globalisation are accounted for, however, a structured approach based on theoretical reasoning is necessary when selecting individual indicators. This means that each of the three defined spheres should be represented by at least a couple of indicators. Additionally, such a breakdown of the globalisation process into spheres enables a more pragmatic variable search.

Of the 21 indicators used in the New Globalisation Index (NGI), 5 do did not appear in the globalisation indices published until now[2]. As far as the variables that already appeared in other indices are concerned, the reasoning for including them here is similar to that provided by other authors and some of these variables are becoming quite established as indicators for certain dimensions of globalisation through repeated use. Consequently, they do not require lengthy introduction and will be presented only in a short manner here. Maybe more interesting will be to present the 5 variables being newly introduced here as possible variables for globalisation indices.

[2] This refers to the following 6 globalisation indices: *G-Index* by World Markets Research Centre (Randolph, 2001), *ATK/FP* Globalization Index by A.T. Kearney and Foreign Policy Magazine (A.T. Kearney/ Foreign Policy, 2007), *KOF* Index of Globalization by ETH Zurich (Dreher, 2006), *GlobalIndex* by TransEurope research program of the European Science Foundation (Raab, et al., 2008), *CSGR* Globalisation Index by the Centre for Study of Globalisation and Regionalisation at Warwick University (Lockwood & Redoano, 2005) and Maastricht Globalisation Index (*MGI*) by International Centre for Integrated assessment and Sustainable development (ICIS) at Universiteit Maastricht (Martens & Raza, 2008).

In **Table 1**, all variables that are new or changed as compared to previously published globalisation indices are marked in bold. Several innovations can be found in the economic sphere. Firstly, the **trade in goods** is separated from **trade in services** and treated specifically in order to introduce the geographical distance factor to the index (more details on this in the next section). Secondly, a **stock** variable has been added next to the flow value for **portfolio investment**, which is especially important for very volatile variables such as this one. Additionally to trade and finance, two completely new variables have been added to the economic sphere, namely **patent** and **trademarks** applications by non-residents. Introducing variables from the intellectual property and innovation domain seemed to add a valuable notion of possibilities, dominance and dynamics of introduction of new products and R&D activities by foreign companies to the domestic market. In the political sphere, three out of four variables are very common in most globalisation indices, clearly representing country's political relations and involvement with the rest of the world. A new variable counts the number of ratified **international environmental agreements** and in this way introduces environmental issues to the index. In the social sphere, a new variable are the **outgoing students**[3], concentrating on mobility of young highly educated population, leaving home country only for education purposes or academic exchange. In some globalisation indices, number of internet users is taken as a proxy for the internet variable. This seems like a loose match, as it does not have an explicit international component. **International internet bandwidth** seems to better describe what is intended to be measured.

[3] Data for Germany are unavailable for this variable (outgoing students), so an average of data for France, Switzerland and Austria was taken as a proxy. The idea behind the selection of countries was certain similarity – a big developed European country (France) and culturally similar countries with German-speaking population.

4. The Effect of Geographical Distance

Coming back to the definition of globalisation after the indicators for the main spheres have been collected, the geographical distance factor is left to be accounted for. As the definition clearly states, globalisation involves interaction of actors across large distances. Otherwise, we run the risk of confusing regionalisation for globalisation. To give an example, more than 70% of Austria's foreign trade is restricted to the EU area, with about 30% of its exports and 40% of its imports flowing to and from its main trading partner - Germany. To mark this high degree of interconnectedness of EU members as globalisation would be erroneous, as by measuring in this way we may end up measuring regional integration rather than globalisation. This can be avoided through a simple weighting of the bilateral relationships with geographical distance, which will be shown here on the example of the *trade in goods* variable. The *trade in goods* variable in this case is a sum of bilateral trade volumes multiplied by the geographical distance between respective countries. The described weighting procedure favours countries that trade most with distant partners, literally across the globe, while trade with neighbouring countries is less emphasized. Austria's trade with China says more about country's globalisation level than the trade with its neighbouring countries does and should therefore receive a higher weight in the indicator. Which countries move up or down in ranking of the *trade in goods* variable after introducing distances as described above can be seen in Table 2.

Table 2: Difference in rankings for 'trade in goods' variable with and without distance-weights

COUNTRY		Simple	Distance-weighted	Difference	COUNTRY		Simple	Distance-weighted	Difference
Malaysia	→	**1**	**1**	0	**Chile**	↑	**36**	**2**	34
Belgium	↓	**2**	**10**	-8	**Canada**	↑	**37**	**30**	7
Slovak Rep.	↓	**3**	**25**	-22	**Mexico**	↑	**38**	**24**	14
Estonia	↓	**4**	**27**	-23	**Morocco**	↓	**39**	**39**	0
Czech Rep.	↓	**5**	**28**	-23	**Portugal**	↓	**40**	**59**	-19
Hungary	↓	**6**	**26**	-20	**Bolivia**	↑	**41**	**20**	21
Bulgaria	↓	**7**	**16**	-9	**Venezuela**	↑	**42**	**12**	30
Slovenia	↓	**8**	**65**	-57	**Norway**	↓	**43**	**60**	-17
Belarus	↓	**9**	**32**	-23	**Turkey**	↓	**44**	**46**	-2
Lithuania	↓	**10**	**36**	-26	**Georgia**	↓	**45**	**62**	-17
Malta	↑	**11**	**9**	2	**Indonesia**	↑	**46**	**15**	31
Moldova	↓	**12**	**45**	-33	**Iceland**	↓	**47**	**50**	-3
Netherlands	↓	**13**	**23**	-10	**Armenia**	↓	**48**	**51**	-3
Philippines	↑	**14**	**4**	10	**Russia**	↑	**49**	**48**	1
Ireland	↓	**15**	**19**	-4	**Uruguay**	↑	**50**	**14**	36
Latvia	↓	**16**	**68**	-52	**Spain**	↓	**51**	**61**	-10
Tunisia	↓	**17**	**44**	-27	**Italy**	↓	**52**	**66**	-14
Ukraine	↓	**18**	**33**	-15	**New Zealand**	↑	**53**	**5**	48
Kazakhstan	↑	**19**	**13**	6	**France**	↓	**54**	**69**	-15
Austria	↓	**20**	**54**	-34	**South Africa**	↑	**55**	**7**	48
Mauritius	↑	**21**	**3**	18	**El Salvador**	↑	**56**	**52**	4
Kyrgyz Rep.	↓	**22**	**29**	-7	**Cyprus**	↓	**57**	**63**	-6
Croatia	↓	**23**	**67**	-44	**UK**	↑	**58**	**57**	1
Switzerland	↓	**24**	**43**	-19	**Burundi**	↑	**59**	**31**	28
Korea, Rep	↑	**25**	**8**	17	**Argentina**	↑	**60**	**17**	43
Romania	↓	**26**	**55**	-29	**Peru**	↑	**61**	**22**	39
Honduras	↑	**27**	**21**	6	**Panama**	↑	**62**	**41**	21
Israel	↑	**28**	**6**	22	**Banglagesh**	↑	**63**	**34**	29
Sweden	↓	**29**	**49**	-20	**Colombia**	↑	**64**	**47**	17
Azerbaijan	↓	**30**	**37**	-7	**India**	↑	**65**	**35**	30
Finland	↓	**31**	**40**	-9	**Australia**	↑	**66**	**18**	48
Germany	↓	**32**	**42**	-10	**Greece**	↓	**67**	**70**	-3
Poland	↓	**33**	**64**	-31	**Japan**	↑	**68**	**53**	15
China	↑	**34**	**11**	23	**Brazil**	↑	**69**	**38**	31
Denmark	↓	**35**	**58**	-23	**USA**	↑	**70**	**56**	14

As expected, almost all European countries moved downwards from their positions after distances have been accounted for. Germany and Spain lost 10 positions, France 15. Denmark moved 23 positions backwards in rank, Austria even 34, from position 20 to 54, which sets it behind all the BRICSAM[4] countries (Brazil, Russia, India, China, South Africa and Mexico). United States, on the contrary, gains 14 positions in rank after the change. The weighting procedure also favours Latin American countries. Brazil, Chile, Uruguay, Peru and Argentina

[4] BRICSAM term denoting the 6 large emerging economies (Manmohan, 2008).

all move by more than 30 positions towards higher rankings. Main trading partners of developing countries generally tend to be the United States and certain European countries rather than their immediate neighbours, which may explain these movements in ranks.

Distances used as weights come from CEPII[5] and they are weighted so that they take geographic distribution of population inside each nation into account. A small drawback of including the geographical distances in kilometres in the measure might be the size of countries. With a simple geographical measure, a large country turns out to be farther away from its neighbours than a small country. For instance, the measured distance between USA and Mexico is larger than the one between Austria and Slovenia. Nevertheless, this should not be seen as a problem in the example of trade. It is a commonly discussed issue that classical openness measures favour small countries over large ones, as they tend to be more open to foreign trade precisely because of being small and therefore more dependent on foreign resources and markets. With this variable, however, that automatically puts more weight on trade of large countries, this problem becomes neutralized instantly. More details on the influence of country size on the variables of the index are presented in the next section.

The described adjustment demonstrated that the geographical distant weights are important for carving out the special feature of globalisation as opposed to regional integration. Of course, it would be desirable to treat other variables in this way to. Due to a lack of bilateral data for most variables, this is difficult to achieve at the moment. However, the distance parameter could be used in for some other economic variables (FDI, portfolio investment)[6] if the index would have been limited e.g. to OECD countries. In any case, further research and

[5] Centre d'Etudes Prospectives et d'Informations Internationales, available at http://www.cepii.fr/anglaisgraph/bdd/distances.htm (last retreived March 29, 2009)
[6] Some bilateral data for financial variables can be found in UNCTAD, OECD and IMF databases.

academic discussion in the field of globalisation measurement may induce some new incentives for database construction in the researcher community.

5. Other Adjustments of the Data

To become suitable for use in a composite index, the variables have to go through some additional adjustments. As databases are mostly not perfectly filled with data, some imputation of missing data needs to be performed. For values missing 'in the middle' of the sample, linear interpolation was used for this purpose. For values missing at the end of the sample, the last available value was copied. Once the data set is complete, the standard steps include dealing with outliers and normalisation of data. Through a process called winsorisation, extreme values at the ends of the sample have been trimmed to 2.5 and 97.5 percentile values, so as to leave out the possible outliers (Esty et al., 2005). Afterwards, different variables have to be scaled to become comparable through a process of normalisation. Normalisation procedure used here is quite simple and was done using the Min-Max equation[7] on annual basis, whereby all variables take values between 0 and 1.

The last step before the grouping of variables into subindices and their aggregation concerns the influence of country size on globalisation outcomes and how this problem can be treated. A common critique on the first globalisation indices (ATK/FP, KOF) was the fact that they favour smaller countries, which were regularly top-ranked in any globalisation index. The case for correcting for country size in the globalisation indices sourced in arguments concerning trade openness, following the argument that small countries have more incentive

[7] Using the following formula: $I_c = \frac{x_{ct} - min(x_t)}{max(x_t) - min(x_t)}$; with x_{ct} = value of the variable *X* for country *c* in the year *t*; $max(x_t)$ and $min(x_t)$ denoting minimal and maximal value for the year *t*. Using this equation, every value is substituted with a new indicator (I_c) for country *c*, adopting a value between 0 and 1.

to trade internationally because they are more dependent on foreign resources and markets (Brahmbhatt, 1998). Lockwood (2004) suggested a correction for that small country bias in his critique on the ATK/FP Globalization Index. Correcting the indicators for size is done by regressing the relevant globalisation variables of the index on measures of country size. Residuals from such estimation should provide a better measure of underlying policies for promoting globalisation than the unadjusted variables themselves. Country size is thereby represented by two different measures, namely the land area and population size.[8] Lockwood (2004) considered such an adjustment to be relevant only for economic variables. This argument does not seem to be justified, as it is quite feasible to apply the same argumentation for other globalisation variables too. It seems to bee reasonable to presume that bigger countries will, for example, have more foreign embassies than small countries, which often find themselves grouped together, having one foreign diplomacy office in charge of a whole region. This is why the adjustment procedure will be applied to all the variables in the index, to check for possible significant effects of country size. As the chosen regressors, population and country size, display high correlation, they turn out to be insignificant when measured at the same time. Nevertheless, for all variables where the regressions with these control variables proved any significance at all, it was clear that one of these variables is considerably more significant than the other. So, the globalisation index variables that proved to be affected by area size were regressed only with this variable, and vice versa for the ones significantly affected by population size.

Table 3: Regression results of the adjustment for country size

AREA	***coefficient***	***p-value***	**POPULATION**	***coefficient***	***p-value***
trade in services	**-0,4710**	0,0025	trademarks	**-0,6254**	0,0030
tourism	**-0,3978**	0,0365	books	**-0,5129**	0,0105
transfers	**-0,4954**	0,0011	newspapers	**-0,4131**	0,0362
int. organisations	**0,4126**	0,0353			
embassies	**0,7125**	0,0001			

[8] A dummy variable for a country being landlocked or having a coast has also been tested, as it has been argued that this structural characteristic has a similar effect on the openness of a country (Lockwood, 2004; Martens & Raza, 2008; Brahmbhatt, 1998). Our calculations, however, showed no significance for this measure.

Table 3 lists all the variables that were significantly affected by the two control variables representing country size. As expected, trade openness is affected negatively by country size. This suggests that larger countries should move up in the openness ranking after the correction. It may seem confusing that only 'trade in services' was found significantly affected. There is a good explanation for it. The 'trade in goods' variable, namely, showed no significance in the regression after the adjustment for geographical distance took care of the small country bias by putting more weight on trade openness of large countries (as discussed earlier).[9] The political variables (international organisation participation and foreign embassies in country) also fulfilled the expectations and correlated positively to country size. For the eight variables in Table 3, residuals will be used instead of the unadjusted values in the aggregation to the globalisation index. For all the other variables, the effect of country size proved to be insignificant.

6. Construction of Factors and Weights

For constructing the globalisation dimensions and variable weights, the principal component analysis (PCA) was used. Dimenstions and weights constructed in such manner reflect the statistical characteristics of the dataset. In this way, the PCA enables helpful insights by testing to what extent these statistical characteristics back up the theoretical framework. When juggling as many variables as there are in composite indicators of complex social phenomena, recognizing the structure of the relationships between variables is not straightforward, due to the complexity and multidimensionality of the set. To understand these relationships would nevertheless be very important for better grasping the phenomenon

[9] The unadjusted 'trade in goods' variable (i.e. without distance-related weights) proves significant correlation to country size area (coefficient: -0.4017, p-value: 0.0162).

being measured. With help of the PCA, it is possible to simultaneously analyse multiple variables in order to discover the patterns of their interrelationships and explain them in terms of their common components. The first step will be to group the variables into 3 factors with help of the PCA and check if the statistical result coincides with the preconstructed theoretical spheres (economic, political and social) from the globalisation definition that served as a guidance for the variable search. In the second step, the three dimensions and individual variables will be assigned weights with which they will enter the overall index. For a detailed and elaborate introduction to PCA and other methods of multivariate analysis, see Hair et al. (2006).

PCA creates new factors or components in form of linear combinations of the original data, in a way that the first component absorbs as much as possible of variance of the whole dataset. Subsequently, the second component accounts for the maximum possible proportion of the remaining variance, and so on (JRC/OECD, 2008). This leaves the individual factors uncorrelated (orthogonal), while maximizing the variance absorbed by the principal components. After extracting and rotating the first 3 components, the individual variables tend to load on one particular component more significantly, the rest of their variance being scattered among the other factors. Hence, a certain grouping of the existing variables between the three components takes place. As the individual components are independent of each other, it is possible to say that the variables grouped in different factors really do measure different independent dimensions of globalisation. Ideally, these would coincide with the theoretical dimensions that were defined in the first chapter. In each case, it is a good way to check by means of a statistical method if the selected variables do in fact represent the dimensions they are supposed to stand for. Moreover, a favourable structure of the groups would even allow labelling the individual components basing on conceptual interpretation of

factor loadings. As can be seen from Table 4, the emerging factor solutions really do resemble the theoretical assumptions substantially.

Table 4: Dimensions and Weights

FINANCE	**37%**	**TRADE AND POLITICS**	**32%**	**SOCIAL**	**31%**
FDI stock	19%	trade in goods	11%	trade in services	14%
FDI flow	13%	trademarks	14%	migration	9%
portfolio stock	20%	patents	14%	tourism	15%
portfolio flow	14%	transfers	10%	telephone	15%
income payments	19%	env. agreements	16%	books	11%
internet	15%	int. organisations	18%	newspapers	14%
		embassies	16%	outgoing students	12%
				peacekeeping	11%

This is most obvious for variables supposed to represent the social dimension (books and newspapers, migration, tourists, etc.). The third component (factor) is constituted almost exclusively by this group of variables, which is why it can remain with a '*social*' label. Political variables (embassies, environmental agreements, etc.) are also mostly grouped within the same component (factor 2), exception being the peacekeeping missions which ended up in the social dimension. The economic dimension proved to be more diverse than assumed in the theoretical introduction. Even so, a consistent conceptual interpretation for this can be found, as the economic dimension obviously got divided into a financial part and a trade-and-business part. All the financial variables are strongly correlated with the first component, while trade in goods and trademark and patent indicators moved to join the political variable in the second component. This is why the second factor was labelled with two keywords: *trade and politics*. The first variable group clearly represents a *financial* dimension. The fact that the internet variable also loaded to this financial factor has its interpretation too. The large amount of electronic data sent by banks internationally obviously accounts for the largest part of the variable, making it an inappropriate social indicator. Same goes for the international transfers, which may incline towards political variables, accounting presumably to a large part for the governmental transfers. Not

everything is as imagined in an ideal case. Much rather would one want to see the trade in services variable in the trade/politics dimension than in the social one. This formation may be connected to the correlation of *services* and *tourism* variables. This especially applies for small tourism-oriented countries, where income from tourism constitutes a significant part of their GDP. Nonetheless, the overall results of the analysis can be classified as satisfying, having been able to produce conceptually more or less consistent groups of variables according to their statistical characteristics, which can enter the composite index as separate dimensions. Weights ascribed to each of the dimensions reflect the portion of variance explained by each of these factors and are presented in the title row of the Table 4. The weights of individual indicators within the dimensions emerged from a procedure based on PCA analysis of each dimension (Nicoletti et al. 2000). PCA-generated weights are also popular in other published globalization indices (Dreher, 2006; Lockwood & Redoano, 2005; Raab, et al., 2008).

7. Main Results

This chapter presents the results of the New Globalisation Index (NGI). The NGI ranking for the year 2005 is presented in Table 5. The results show that Ireland is the most and Belarus as the least globalized of the 70 ranked countries. Later in text, the description and analysis of the results will concentrate on 4 groups of countries that are of interest – small developed countries, large developed countries, new EU-member states and the large emerging countries.

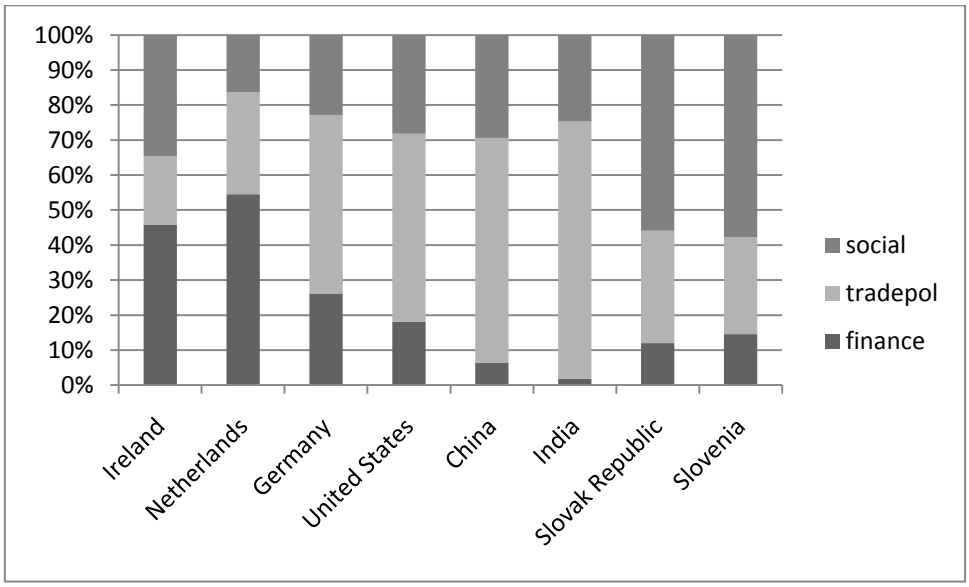
Table 5: New Globalisation Index 2005 rankings and scores

Rank	Country	Score	Rank	Country	Score
1	Ireland	66,45	36	Bulgaria	23,91
2	Switzerland	60,85	37	Tunisia	23,65
3	Netherlands	58,47	38	Poland	23,60
4	Belgium	56,78	39	Morocco	23,06
5	Malta	52,99	40	Slovenia	22,60
6	Cyprus	47,96	41	Greece	22,49
7	Iceland	46,99	42	China	22,14
8	United Kingdom	46,91	43	Argentina	22,09
9	Austria	45,90	44	Philippines	21,95
10	Sweden	44,74	45	Bolivia	21,81
11	Denmark	43,43	46	Russian Federation	21,80
12	Canada	42,00	47	Latvia	21,36
13	Norway	37,67	48	El Salvador	21,16
14	Estonia	36,06	49	Azerbaijan	21,11
15	France	35,59	50	Venezuela	20,41
16	Slovak Republic	35,43	51	Peru	20,35
17	Germany	34,62	52	India	20,29
18	Finland	34,17	53	Ukraine	20,14
19	Panama	33,76	54	Mexico	20,07
20	Malaysia	33,09	55	Moldova	19,72
21	New Zealand	31,22	56	Colombia	19,41
22	Spain	30,73	57	Indonesia	18,02
23	Australia	30,69	58	Korea, Rep.	17,79
24	Croatia	29,91	59	Japan	17,71
25	Israel	29,15	60	Lithuania	17,61
26	Portugal	28,61	61	Burundi	16,70
27	Italy	28,50	62	Kazakhstan	15,81
28	Czech Republic	28,46	63	Brazil	15,68
29	Hungary	28,06	64	Romania	15,16
30	Chile	27,96	65	Kyrgyz Republic	14,62
31	Mauritius	27,77	66	Banglagesh	13,72
32	United States	26,96	67	Turkey	13,33
33	Honduras	25,47	68	Georgia	12,51
34	Uruguay	25,44	69	Armenia	12,02
35	South Africa	24,46	70	Belarus	10,49

Except for the overall score, a good look into the composition of the rankings is necessary to draw any meaningful conclusions from the results. This composition varies significantly across different countries, which is nicely shown for some example countries in Figure 1. The figure shows to what extent each of the three dimensions (financial, trade-and-politics and

social) contributes to the final result of a particular country. Eight countries are shown in the graphic, with two countries representing one of the 4 groups. Netherlands and Ireland are examples of small European countries placed in the top 10 of the ranking. It is easy to note that there exists a certain difference in the composition of the globalisation index between them and the large developed countries, such as Germany and United States. New EU members are represented by Slovenia and Slovak Republic in the graphic, while China and India are logical examples for the large emerging countries. Figure 1 already provides the reader with some interesting patterns, which will be further discussed when backed up by numerical results in the following analysis of the results.

Figure 1: Contribution of individual dimensions to total globalisation score for selected countries



Top 10: Small European Countries

To start with the top 10, the first group to look at are the small European countries, which constitute a lion's share of this group, United Kingdom being the only larger country in the lot.

Table 6: Top 10 (rankings, 2005)

Country	total globalisation	finance globalisation	tradepol globalisation	social globalisation
Ireland	**1**	2	39	2
Switzerland	**2**	3	14	5
Netherlands	**3**	1	9	20
Belgium	**4**	5	2	10
Malta	**5**	6	29	4
Cyprus	**6**	14	56	1
Iceland	**7**	4	47	13
United Kingdom	**8**	9	4	19
Austria	**9**	12	16	6
Sweden	**10**	7	13	17
Average	*6*	*6*	*23*	*10*

A first issue to discuss is the fact that small countries predominantly take up the highest positions in the index. Such a clear predominance of smaller countries was not expected after a correction for country size has been conducted (see section 4). A closer look at the results of the size adjustment (e.g. for the trade in services variable) shows, namely, that countries with the most dramatic, double digit upward surge are all very large countries (Russia, Canada, United States, China, Brazil and Australia), which is a satisfying result. Small countries, however, are not very much affected by the adjustment and therefore do not fall back much in their score results[10]. In this way, even if the adjustment still for pushing the bigger countries upward, small countries kept their high scores.

However, it is not only size bias that keeps the small countries in their high positions in the index. First of all, the high top 10 places of the index seem to owe much to a high ranking of the financial indicators (see also Figure 1), which did not show significant correlation with country size. Secondly, these small top ranked countries are all European. A question can be posed on whether these small countries are in fact globalized or only very well integrated in their region. A very important thought that arises from the strong European presence in the

[10] It is similar with the political variables (e.g. foreign embassies), where very large countries, as expected, experience an significant reduction in their scores, while the scores of small countries change only modestly.

high positions[11] is a possible confirmation of the critique from the first chapter that globalisation measures do not distinguish between globalisation and regionalisation. European countries are indeed open to international flows of goods, people and ideas. The question is, however, how many of these flows involve cross-continental interactions? A high regional integration level in Europe presumably pushes these countries forward in globalisation indices, without accounting for this important difference. One proposed step into the right direction in this thesis was the introduction of geographical distances in the trade in goods variable. It showed that European countries tend to fall behind once the distances have been accounted for. Only one variable is however not enough to correct for the bias of the European integration processes in the overall index.

To go back to the Table 6, representing the top 10 globalized countries, let us look at the structure of this group more closely. The traditionally developed countries of the group (Switzerland, Netherlands, Belgium, United Kingdom, Austria and Sweden) perform quite well (top 20 rank) in all the individual dimensions. It is different for the other four countries (Ireland, Malta, Cyprus and Iceland), which seem to be pushed to the top owing to a very high ranking in the *finance* or *social* dimension, while having a much lower score in the *trade and politics* dimension. Figure 1 already showed that the globalisation of this group of countries is induced by the financial factor to a larger extent than of the other countries represented in the graphic. This is most notorious maybe for Ireland and Iceland, known for their intense integration with the international financial flows.[12] Malta and Cyprus are also interesting. First account of their high ranking may give the impression that the islands were favoured by the geographical distance weighting of the trade in goods variable. However, the

[11] Top 15 is, with the exception of Canada, purely European (see Table 5).
[12] From the perspective today in 2009, it would be interesting to see the results for Cyprus for the years of the current financial crisis, which may happen to pull it down in this type of ranking.

drivers of their high result seem to be hiding in the social variable, which happens to be a distinguishing characteristic for many new EU members and will be discussed further below.

Big developed countries

Even after agreeing that small and finance driven countries own the top 10 ranks, it still may strike one as surprising that some developed countries such as Italy, USA and Japan do not make it even to the top 25.

Table 7: Big developed countries (rankings, 2005)

Country	total globalisation	finance globalisation	tradepol globalisation	social globalisation
United Kingdom	**8**	9	4	19
Canada	**12**	22	1	8
France	**15**	17	8	29
Germany	**17**	20	6	28
New Zealand	**21**	30	17	15
Spain	**22**	18	37	30
Australia	**23**	21	38	26
Italy	**27**	27	10	47
United States	**32**	33	23	31
Japan	**59**	57	32	70
Average	*24*	*25*	*18*	*30*

A look at the overview of ten big developed countries in Table 7 shows that the lowest scores for these countries lie in the social dimension. This is especially true for Japan, which suggests a rather introverted society and lets Japan land on the last place for the social dimension. It will prove to be just the opposite for the new EU countries in the next paragraph. Generally, the countries in Table 7 tend to have a higher score in the trade and politics domain than in the other two dimensions. Individually, this is true for all the countries of the group but Australia and Spain. Countries of this group that enter the top 20 show very high rankings in that particular dimension.

"New Europe"

Table 8 gives an overview of the globalisation index composition for the new EU countries, inclusive the two candidate countries, Croatia and Turkey. A notable feature seen in Table 8 is that all countries except for Poland and Turkey rank much lower in the trade and politics dimension than in the other two. So, trade with distant countries, patent applications by foreigners, environmental issues and diplomatic relations seem to be the weaker points for the group. Many of the countries record their highest performance in the social dimension. A look at the individual indicators reveals that these countries have very high scores for imported and exported books and newspapers on one hand, and services and tourism on the other. The latter is especially conclusive, as countries in which tourism accounts for a significant part of their GDP (such as Croatia) lure foreign tourists and sell services to international visitors at the same time.

Table 8: "New Europe" (rankings, 2005)

Country	total globalisation	finance globalisation	tradepol globalisation	social globalisation
Malta	**5**	6	29	4
Cyprus	**6**	14	56	1
Estonia	**14**	11	61	9
Slovak Republic	**16**	36	48	3
Croatia	**24**	37	54	7
Czech Republic	**28**	26	46	18
Hungary	**29**	24	40	27
Bulgaria	**36**	28	50	40
Poland	**38**	45	26	46
Slovenia	**40**	49	64	12
Latvia	**47**	39	62	16
Lithuania	**60**	42	63	35
Romania	**64**	53	58	63
Turkey	**67**	62	60	67
Average	*34*	*34*	*51*	*25*

An interesting note may be the large gap between Estonia (overall rank 14, with very high scores in the finance and social dimension) and the other two Baltic countries, Latvia and Lithuania, who dwell in ranks 47 and 60 respectively. This 'peculiarity' was already noticed

in the first globalisation index (Randolph, 2001), where Estonia left behind its Baltic neighbours. In the discussion of the results, Estonia is referred to as "*one of the fastest recent globalisers in the world*" (Randolph, 2001, p. 8). That Estonia has indeed "*rapidly and successfully embraced trade and foreign investment from the West*" (Randolph, 2001, p. 8) is also visible in the New Globalisation Index (NGI), where all its trade and finance related indicators have higher scores than in Latvia and Lithuania. It is however not only a pure economically-based phenomenon that surrounds Estonia. Even though his G-Index measured exclusively the economic and technical indicators, Randalph already suggested in his comments that "*a full explanation as to why Estonia, of the three Baltic states, has led the way and is now included amongst the 'first wave' of European Union (EU) hopefuls must also refer to the Estonians themselves. Estonians are arguably the most socially cohesive, skilled, educated and economically adaptive people of all the former Soviet Republics.*" (Randolph, 2001, p. 8). These insinuations about the open nature of Estonian people seem to be confirmed in the New Globalisation Index too. Almost all social indicators (including tourism, international trade in books and newspapers, outgoing students, international telephone calls) are significantly higher than in the other two Baltic countries.

Emerging giants

The last group to be observed here is a very interesting one in globalisation terms, as some of these countries seem to represent the very idea of globalisation to many people. BRICSAM as a term stands for the 6 big emerging countries (Brazil, Russia, India, China, South Africa and Mexico) presented in the Table 9 (Manmohan, 2008). Interestingly, they are all settled in the middle-lower part of the index (with the exception of the quite low ranking of Brazil) and hence less dispersed than the new EU members, even though this group is geographically much more heterogeneous. Latin American emerging countries perform lower than the Asian counterparts, while South Africa ranks as the most globalized of the group, mostly due to a

higher score in *trade and politics*. (a very high distance-weighted trade indicator may be reflecting its connectedness to the trading partners in Europe). A general feature of the group is very low score across the finance dimension.

Table 9: BRICSAM countries (rankings, 2005)

Country	total globalisation	finance globalisation	tradepol globalisation	social globalisation
South Africa	**35**	38	15	49
China	**42**	65	27	38
Russian Federation	**46**	46	52	34
India	**52**	67	20	48
Mexico	**54**	56	24	59
Brazil	**63**	61	55	64
Average	*49*	*56*	*32*	*49*

7.1. Changes over Time

The New Globalisation Index (NGI) was calculated for the period of 1995 to 2005. The annual normalisation procedure that was applied to the data is not ideal for time comparisons in a sense that it can not trace changes in score over time[13]. Score values from year to year are not comparable, especially if the changes are small. Therefore, statements about how big the progress of globalisation over the years is are not possible. On the positive side, however, the globalisation index contains the same number of countries over the whole observed time period, which increases comparability of rankings significantly, as rankings are very sensitive to a change in number of observed cases[14].

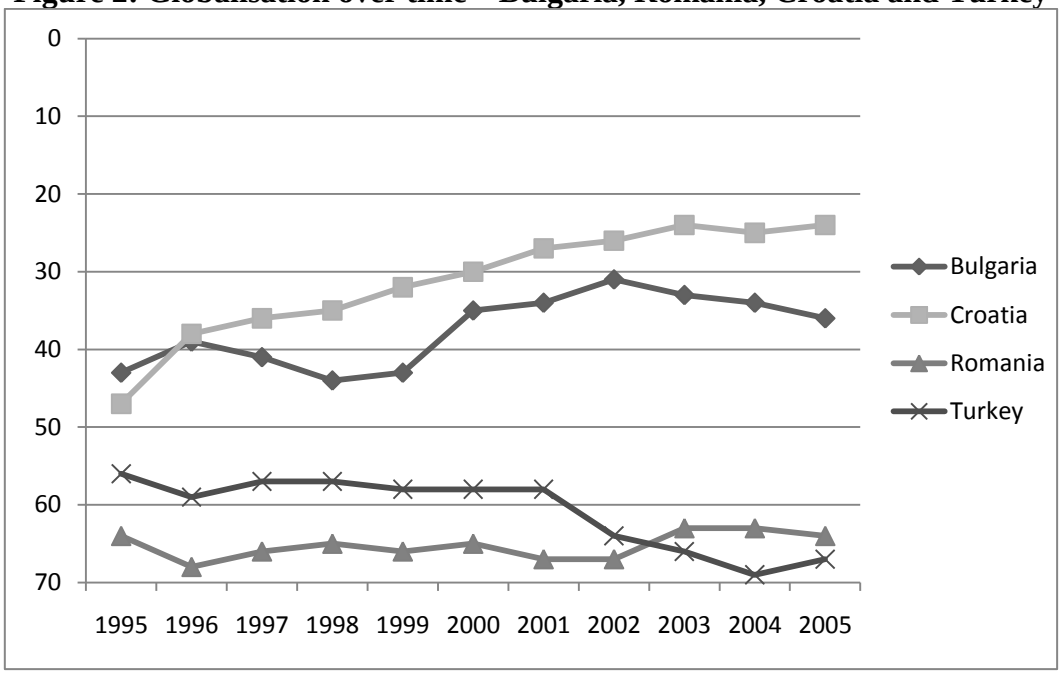
A first note on this subject is that the rankings generally do not change much in short term. This is not surprising, as globalisation is a long-winding process in which sudden changes are normally not expected. Less than 20 countries change their ranking by more than 10 places

[13] The annual normalisation provides a better snapshot of globalization ranks for an individual year, which is why it was chosen. For pros and cons of annual normalisation as opposed to the panel normalisation, see Lockwood (2004).

[14] Globalization Indicators that trace globalization over long time periods do not keep the same number of countries for each year, which makes the time comparisons less conclusive (e.g. KOF, CSGR)

over the 1995 to 2005 period. Developments of globalisation over time are not easy to follow in such a short period. Real trends are probably visible only over more decades. Due to the annual normalisation that was used here, small changes are hard to spot, as some volatility in rankings from year to year is generated through the normalisation process, which makes the data less comparable. However, strong trends are still well reflected in the results and for some countries the movement direction is quite clear in the observed period. Comparing Croatia, as a candidate country for the EU, with the other candidate (Turkey) and the two newest Union members, provides some interesting insights (see Figure 2).

Figure 2: Globalisation over time – Bulgaria, Romania, Croatia and Turkey



Three of the four countries (Croatia, Bulgaria and Turkey) started in similar positions in year 1995 (around position number 50), with Romania lower, among the last 10 countries. Over time, Croatia and Bulgaria climbed to much higher positions, opening a big gap between them and the other two countries. While Romania kept around the same rank throughout the whole period, Turkey even lost more than 10 positions.[15] It is interesting to observe the very

[15] This does not have to mean that the globalization process for Turkey is going backwards, as rankings represent relative values. Rather, it can suggest that while stagnating or only progressing slowly in terms of globalization, it was outpaced by other countries that were previously residing in lower positions. Nevertheless, the point of downturn seems to coincide with the stock market crisis in Turkey 2001.

different development between the two EU countries Romania and Bulgaria, with the former stagnating in the lower rankings while the latter climbed to the upper half of the index. Croatia, interestingly, ends up higher than both EU member countries in 2005. However, to note is that these developments are recorded for the period before the EU accession of the two countries. It would hence be interesting to see the developments of the following years. It can be assumed that their ranking would improve once the integration into the EU shows effects, as the index weights all the international transactions equally, be it within or outside the Union. Trade in goods variable represents the only exception to this rule, as it was transformed by introducing geographical distance weights.

That Croatia is the country with fastest opening process in the index should not be surprising. The observed period starts in the year of the ending of the Croatian War of Independence. This is definitely a low point after which it only went upwards in terms of international reintegration of the country. Comparing Croatia and Turkey in more detail, a different development for different indicators is obvious. While Croatia surged in rankings due to an opening to foreign finance and tourism, Turkey still kept a higher score for factors that need a longer-winding process to create international links (especially for a small country like Croatia), such as international political relations and trade with distant partners. Croatian society nevertheless showed its greater openness to the world as compared to the population in Turkey, as seen in higher rankings of every social indicator of the index.

7.2. Comparing with Results of Other Globalisation Indices

Some interesting insights can be derived from a comparison between the New Globalisation Index (NGI) and the KOF Index of Globalization (Dreher, 2006). For comparison purposes, only the 70 countries from the New Globalisation Index have been kept in the KOF index. Therefore, the KOF rankings in Table 10 are not the original rankings, but newly generated

ranks for the 70 countries kept in the index. In the table, the ranks of the 70 countries in both indices are listed, as well as the differences between the two for each country.

Table 10: Comparison of the NGI and KOF Index Rankings(R)

COUNTRY	NEW Index	KOF Index(R)	Difference	COUNTRY	NEW Index	KOF Index(R)	Difference
Ireland	**1**	7	6	**Bulgaria**	**36**	36	0
Switzerland	**2**	3	1	**Tunisia**	**37**	49	12
Netherlands	**3**	4	1	**Poland**	**38**	27	-11
Belgium	**4**	1	-3	**Morocco**	**39**	53	14
Malta	**5**	22	17	**Slovenia**	**40**	17	-23
Cyprus	**6**	16	10	**Greece**	**41**	29	-12
Iceland	**7**	32	25	**China**	**42**	63	21
United Kingdom	**8**	24	16	**Argentina**	**43**	46	3
Austria	**9**	2	-7	**Philippines**	**44**	58	14
Sweden	**10**	6	-4	**Bolivia**	**45**	66	21
Denmark	**11**	5	-6	**Russia**	**46**	48	2
Canada	**12**	8	-4	**Latvia**	**47**	34	-13
Norway	**13**	19	6	**El Salvador**	**48**	42	-6
Estonia	**14**	13	-1	**Azerbaijan**	**49**	61	12
France	**15**	12	-3	**Venezuela, RB**	**50**	56	6
Slovak Republic	**16**	21	5	**Peru**	**51**	54	3
Germany	**17**	20	3	**India**	**52**	68	16
Finland	**18**	10	-8	**Ukraine**	**53**	40	-13
Panama	**19**	38	19	**Mexico**	**54**	47	-7
Malaysia	**20**	30	10	**Moldavia**	**55**	52	-3
New Zealand	**21**	18	-3	**Colombia**	**56**	59	3
Spain	**22**	14	-8	**Indonesia**	**57**	64	7
Australia	**23**	26	3	**Korea, Rep.**	**58**	44	-14
Croatia	**24**	23	-1	**Japan**	**59**	50	-9
Israel	**25**	33	8	**Lithuania**	**60**	28	-32
Portugal	**26**	15	-11	**Burundi**	**61**	70	9
Italy	**27**	25	-2	**Kazahstan**	**62**	55	-7
Czech Republic	**28**	9	-19	**Brazil**	**63**	57	-6
Hungary	**29**	11	-18	**Romania**	**64**	37	-27
Chile	**30**	31	1	**Kyrgyz rep**	**65**	60	-5
Mauritius	**31**	45	14	**Bangladesh**	**66**	69	3
United States	**32**	35	3	**Turkey**	**67**	41	-26
Honduras	**33**	51	18	**Georgia**	**68**	65	-3
Uruguay	**34**	39	5	**Armenia**	**69**	62	-7
South Africa	**35**	43	8	**Belarus**	**70**	67	-3

(R): reduced to 70 countries

In this short discussion of the comparison of rankings, a few points that seemed to be the most interesting will be presented. There are 6 countries (Ireland, Switzerland, Netherlands, Belgium, Austria and Sweden) that appear in the top 10 of both indices. What is remarkable in these top rankings is that in NGI particularly the island countries get higher ranks. This seems suitable to our definition globalisation which accentuates the difference between global and regional relations. Islands do not have immediate neighbours and they compensate

well for it through the overseas connections with their partners. Additionally, these countries have been pushed forward by the new variables (patents, trademarks and environmental agreements especially) that showed a new aspect of international integration. Some interesting differences seem to be caused by the fact that the KOF Index includes variables for trade and financial restrictions additionally to the typical economic flow variables. Spain and Japan receive higher trade scores in the KOF index partly due to a high result for trade restrictions, which were by intention not included in the New Globalisation Index (NGI). The lower results in NGI show that these countries, while having relatively high results for barrier-related openness, still do not use this openness to trade more with distant partners. This fact is especially applicable to EU countries, where the barrier openness concentrates intensively to the regional and not to global partners. Turning to "new Europe", these countries generally tend to attain somewhat lower rankings in the New Globalisation Index as compared to KOF. This may be caused by two different issues. One of them could be that these countries tend to have weaker scores in the newly added variables, especially the financial stock, which has a stronger presence in the New Globalisation Index. Additional push downwards may have been caused by the adjustment for country size (which was not conducted in the construction of the KOF index), which may have kept the smaller countries in a bit lower positions in the New Globalisation Index. The effects of the country size adjustments are better visible for the BRICS group of countries, which generally have higher positions in the New Globalisation Index than in KOF. This is especially true for the Asian emerging giants, China and India, which both surge in the New Globalisation Index by more than 15 positions. Latin American big emerging countries actually rank somewhat higher in the KOF Index.

One problem that is to note concerned with the comparison of the New Globalisation Index and KOF index is that the results KOF results for a certain year change every time a new year is added, due to the panel normalisation procedure, which cause some movements in rankings for other years every time a new year is added to the index[16]. The results for 2005 used here were the ones published in 2009 KOF Index. In comparison to the results from last year (2008), showed some movements are apparent. For example, while United Kingdom is ranked 26 for 2005 in the most recent publication, in the 2008 edition it was on place 7 for the same year. Most changes are not as dramatic, but this example shows an obvious disadvantage of the panel normalisation. Therefore, with the next publication of the KOF index, the results of the comparison here may change again.

8. Conclusions and Further Issues

The NGI was constructed with an aim to contribute to the existing attempts to quantify the phenomenon of globalisation and to improve the methodology of construction of globalisation indices in a way that hopefully can stimulate the research on sources and consequences of globalisation. A good index of globalisation would be of great value in many areas for the researcher community, but also for the policy makers and communication with the general public.

In comparison to other existing indices of globalisation, innovations with respect to the scope of the index were made through adding new variables. One of the additional variables extended the index to the environmental aspect of globalisation. Conceptually probably the most important innovation of this paper was the emphasis on the importance of distinguishing between globalisation and regionalisation. It was shown on the example of trade in goods

[16] For more on the differences between the annual and panel normalisation, see Lockwood (2004).

variable that adding geographical distances to the measure has a significant impact on the ranking of countries. Especially EU countries mark a significant fall in ranking after the distances have been accounted for. As trade with distant partners is weighted more through this procedure, countries in with mostly regional partners land on lower index positions than they would have without the distance-related weights. This ensures that the indicator is measuring globalisation, and not regional integration. Ideally, this adjustment should be carried out for other variables too. With only one variable adjusted, European countries kept on dominating the top positions.

The use of principal component analysis as a method for constructing dimensions of the index produced some interesting insights. The most notable was that the finance indicators were extracted together in a separate dimension, leaving the trade and business indicators in a "trade and politics" dimension together with political variables. Most social indicators landed in the same group, which confirmed that there indeed is a separate social or "people" factor to the globalisation process.

Apart from analyzing globalisation trends and relative position of countries in global integration progress, an index such as NGI can serve many other purposes in further research. The most interesting aspects of globalisation are surely its consequences for different countries. Links between globalisation and other social and economic phenomena such as poverty, economic growth, development, inequality and living standards can be explored with the help of results of a globalisation measure that covers many countries. Additionally, researchers can look into the question of different impacts of globalisation on different countries. Does the globalisation process affect developed and developing countries the same

way? Both benefits and consequences are probably very different for different types of countries.

As the globalisation index itself is concerned, a further research is necessary to tackle the problem of confusing regionalisation for globalisation in many globalisation measures. One step in this direction has been taken in this thesis, but a more elaborate solution will be needed for this problem if one really wants to measure "real" globalisation.

Except for geographical distances, the number of partners and international links could be another interesting aspect of globalisation. Is a country more globalized if its "partner portfolio" is more diversified, i.e., if it interacts with a lot of different partner countries instead of concentrating on one major partner? It is surely an interesting question that could provide interesting insights if addressed in future research. There is definitely still much room for progress in this area of research.

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