Comparing informal institutions

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Introduction

The crucial role of institutions in the economic development of countries is increasingly widely accepted in economic research (Harms 2010, 109). Nevertheless, there is demand for further research, especially when the aim is to measure and to compare institutions not only in a qualitative, but in a quantitative way. Some cases in recent history revealed that political restructurings of formal institutions without considering the informal institutions can cause severe (economic and social) problems. One well-known example is the transformation process of Eastern Europe. Developing a tool that is able to operationalize and measure the informal institutions of a country and compare them to those of other countries can help to solve this problem.

This paper aims to provide the approach of a composite index as a first step towards a measurement and comparison of informal institutions. Since this methodology has its advantages and disadvantages, like any other scientific method, the results of this index should be interpreted with caution. Yet it is possible to identify some major tendencies and developments.

Compared to another recently published article by Theurl and Wicher (2012), the focus of this paper is broader. The next section lays down the theoretical background which is necessary for the analysis, while the following section explains the construction of the index and the methodology. The paper concludes with a presentation and discussion of the descriptive results.

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Theoretical background

The concept of categorising institutions as formal or informal was first developed by Douglass C. North (1990). He uses two criteria for this distinction: (i) the degree of formalization of institutions (written and unwritten) and (ii) their emergence and change. As far as the written form is concerned, North uses the terms of informal and formal constraints. He describes informal institutions as codes of behavior, conventions and customs in contrast to formal institutions, which are rules that are provided in written form (North 1990, 4). In terms of the emergence of institutions, he argues that the formal institutions have been consciously established by humans. So they are invented at a certain time. Informal institutions have a more complex genesis and are part of a culture in which information about institutions is transferred between generations. Different forms of this transfer can be imitation, oral traditions or the teaching of traditions (Pejovich 1998, 4). It is also possible to describe the emergence of formal institutions as a process planned by political agents and that of informal institutions as spontaneous. In conclusion, the emergence of formal institutions is a dateable event and conducted by humans. The emergence of informal institutions, by contrast, is an uncontrollable process (Geiger 1987, 82-83). However, it is also important to bear in mind that these processes can be seen as sequential. Many economists consider informal institutions as the preliminary stage of formal institutions (Axelrod 1986). They think that an informal institution, once established, may achieve such a level of relevance that political agents want to transform it into a formal institution.

Similar to the process of emergence, institutions can be distinguished in terms of their change. In line with North, informal institutions are persistent to a high degree. Formal institutions can be changed through political or judicial decisions within a short period of time, which is not possible for informal institutions. That is the main reason why they cause challenges and problems in the process of economic transformation (Mummert 1995, 17). The different levels of institutions developed by Williamson in his hierar-

chy of institutions (Williamson 2000, 597) highlight this problem. Informal institutions are part of the first level, at which changes are especially difficult and require more time.

Additionally, North also states that there are generally only gradual differences between the categories of distinction and that the classification is not dichotomous. He therefore proposes a continuum that is capable of displaying different degrees of formal and informal institutions.

Another distinction criterion is the enforcement of institutions (Knight and Sened 1995, 5). Informal institutions are not enforced by official sanction mechanisms, whereas formal institutions are safeguarded by courts, for example (Helmke and Levitsky 2004, 730). The existence of formal institutions is exogenously guaranteed by governmental authority, the enforcement is provided by central state agencies and the sanctions for violations are clearly determined. The enforcement of informal institutions, on the other hand, is provided by local entities, namely members of affected groups. The sanction mechanisms of informal institutions do not have a written form, since the sanctions are mostly provided by another informal institution. These sanctions may include exclusion from a group, ostracism by neighbors and friends, or the loss of reputation (Pejovich 1998, 4).

In our paper we use an additional criterion for the classification of institutions, namely a content-related criterion. This provides further differentiation and allows for a more sophisticated analysis of institutions, including informal institutions. The previous literature mainly uses four different categories of institutions: political, judicial, economic and cultural/social institutions (Acemoglu and Johnson 2005, 949). Before we explain these categories in detail, it is important to remember that this classification is also not selective.

The content of political institutions is, in most cases, related to the form of government of a country. This includes the rules of election, details of governance and other characteristics of the political system (Kotte 2004, 67–68). The constitution is the most commonly cited example of a formal political institution (De Soysa and Jütting 2006, 5). An example of an informal political institution is the acceptance of the political system. There are several countries in the world, for example the USA or France, which have a long democratic tradition and thus the democracy in these countries may be described as more stable than in countries that have recently become democratic.

As the name indicates, judicial institutions are related to the judiciary of a country. They generally include the legal framework, the systems for recruiting judges and the determination of their tenure, the assignment and enforcement of property rights and the rights and protection of customers and investors. A general characteristic of judicial institutions is their written form (Grusevaja 2005, 4). Therefore, the majority of judicial institutions are formal institutions. Like political institutions, the acceptance of the legal framework of a country is an informal judicial institution. This can be approximated by the level of organized crime in a society, for example. If organized crime is high, the acceptance and enforcement of the legal framework is insufficient.

Economic institutions deal with the economic system of a country. They lay down the rules that determine the production, allocation and distribution processes in a society (Jütting 2003, 14). Formal economic institutions, for example, apply to the competition law and regulation. As for informal judicial institutions, a high level of shadow economy in a society can be interpreted as a sign of the low acceptance and enforcement of formal economic institutions. The fourth type of institutions are cultural or social. Their content is less concrete. Examples of this type of institution are codes of conduct postulating ethical behavior like certain Corporate Governance Codes, for example. The granting and enforcement of civil liberty rights can also be understood as a cultural institution (Havrylyshyn and Van Rooden 2002, 6).

Data and methodology

This section explains the construction of the composite index. It starts by describing the data used in the paper. Based on this description, the methods conducted to build a composite index are presented.

The methods of the surveys on which the composite index is based, are very similar. It is therefore sufficient to describe just two surveys in detail, the "World Competitiveness Yearbook" of the Institute for Management Development (IMD) and the "Country Policy and Institutional Assessment" of

the Asian Development Bank. The proceedings of the other surveys vary mostly only in terms of the questions asked and geographical regions covered, but not in terms of the method itself.

In the "World Competitiveness Yearbook" of 2010, the IMD analyzes the economic competitiveness of 58 countries worldwide. According to the IMD, these are the 58 countries that have a substantial impact on the world economy. The IMD surveys 300 different variables covering economic performance, government efficiency, a country's infrastructure and corporate efficiency. The survey was completed by 4,460 managers at an upper and middle management level. The questions were answered on a zero-to-six interval-scale.

The annual "Country Policy and Institutional Assessment" survey of the Asian Development Bank focuses on countries of the Asian continent. In the 2009 edition, economists were asked to state their opinion on 16 different variables on a zero-to-six interval-scale. The topics covered were the efficiency of government, an evaluation of the trade policy and the enforcement of property rights.

The following part contains the explanation how the data of the surveys described above (and other) can be merged to obtain a composite index. The goal is to consider the most influential and important countries of the world. When choosing the countries that should be part of the analysis of the informal institutions, one has to ensure that these countries cover geographical regions all over the world to increase the validity of the results. This can cause problems because the collection of data is much easier in industrialized compared to developing and emerging countries. We therefore opted for a combination of the two criteria. The 193 countries under consideration have been listed according to their places in two rankings of the 2009 edition of the CIA World Factbook: the number of inhabitants and Gross Domestic Product divided by the number of inhabitants (GDP/capita). The mean of the two positions was subsequently calculated. Germany, for example, ranked 14th in terms of number of inhabitants and 21st in terms of GDP/capita. Hence, Germany obtained a value of 17.5 in the new ranking. The 100 countries with the lowest ranking values were chosen for the analysis of the informal institutions. In comparison to the isolated consideration of the number of inhabitants, the advantage of this procedure is that it also covers small countries with a strong economy. On the other hand, the isolated consideration of GDP/capita would have excluded too many countries from Asia and Africa. Within the 100 countries selected there are 36 European, 32 Asian, 12 African, 18 American and two from Oceania, so that each region of the world is covered.[1] In other rankings and composite indices a common procedure is to approximate missing values with the help of cluster-based averages. This will not be applied here, since there will be a cluster-analysis later on and the proceeding would antedate the results, or would at least have an impact on it.

As stated above, the general methodology of this analysis is the building of a composite index in connection with country rankings. The goal of this approach is to construct an index that assigns a value of the validity of its informal institutions to each country. The index consists of four sub-indices relating to the four different types of institutions described above, respectively. The partition into four sub-indices allows a more detailed view and an analysis on a disaggregated level, so that the respective strengths and weaknesses can be identified for each country (Enste and Hardege 2006, 7).

The construction of such a sub-index can be illustrated with the help of the following examples. The sub-index for informal political institutions includes several variables, for example the "Transparency of government policymaking" of the World Economic Forum´s "Global Competitiveness Report" in the 2010 edition. Individuals in 139 countries have been asked to state their opinion as to what extent the political decision process related to the business operations within a country is transparent. The scale ranges from one (absolutely intransparent) to seven (absolutely transparent). Subsequently, the mean was calculated over all answers of a country and then the countries were ranked with respect to the mean. Since this is only one variable of the sub-index and the other variables are sometimes based on different scales, the results have to be standardized by assigning relative values. The standardization is necessary to aggregate them. To do this, the countries with the most extreme results within a variable get assigned the values 0 and 100, and the countries in between receive values relative in dis-

[1] When conducting the analysis, some problems with data availability will arise. For this reason, some countries have to be deleted from the analysis, namely Equatorial Guinea, The Bahamas, Burma, Iraq, Yemen, Cuba, Liechtenstein, North Korea, Sudan, Uzbekistan and Belarus.

tance to these extreme values (Enste and Hardege 2006, 54). The standardization is conducted in two different ways. If a high value of a scale implies a good characteristic of informal institutions, the standardization equation can be written as follows:

$$X_i = \frac{I_i - \min(I_i)}{\max(I_i) - \min(I_i)}$$

I_i denotes the absolute value of the variable in the respective country and X_i is the assigned relative value. max (I_i) and min (I_i) denote the two most extreme absolute values over all countries.

On the other hand, if a low value on a scale implies a good characteristic of informal institutions, the standardization equation is as follows:

$$X_i = \frac{\max(I_i) - I_i}{\max(I_i) - \min(I_i)}$$

Subsequently, the relative values are used to build one of the four sub-indices by computing the mean over all relevant variables. Since the four sub-indices are constructed in the same way, an aggregation to an overall index is possible.

The only deviation from this procedure takes place when the number of countries covered by a variable is too small. An example is the "Trust in police"-variable of the Afrobarometer survey. In the latest edition of 2009 only three of the countries that took part in the analysis were covered by the Afrobarometer. In such cases of insufficient observations an application of the normal procedure would lead to a bias, because the values 0 and 100 would have to be assigned to two of the three countries. So the alternative procedure chosen is to assign the numbers of 0 and 100 to the lowest and highest possible answers (i.e. the range of the scale), respectively, and the countries receive the relative values with respect to these answers.

Table 1 offers a short overview of the contents of the four sub-indices. For a more detailed description of the sub-index informal political institutions, for example, see Theurl and Wicher (2012, 81).

There are, of course, critical points concerning the procedure used for this analysis. They can be divided into two categories, the general scientific critique and the criticism relating to parts of the analysis. The critical points are stated here and followed by a description and discussion of the results of the analysis.

The general scientific critique questions the appropriateness of the applied procedure. Some economists state that the selection, the weighting, and the assignments of points are highly subjective and not scientifically justifiable (Van Suntum 2004, 2). Other researchers argue that there are several possibilities for manipulation, so that the results may be influenced by the researcher. This questions the validity of the results (Grupp and Mogee 2004, 1382).
The criticism related to parts of the analysis has at least three dimensions (Enste and Hardege 2006, 15): (i) the incorrect reduction of informational variety, (ii) the weaknesses of the methods used, and (iii) the determination of the results by the availability of data.

The critique of incorrect reduction of informational variety relates to the aggregation and computation of the mean values. A concentration of several variables into a single number can result in a loss of informational details (Nardo et al. 2005, 63). One way to reduce this critique is to state that the exact results shall not be taken too seriously and that only general tendencies can be derived. If one wants to obtain concrete operation instructions, additional data are necessary.

Criticizing the weaknesses of the methods used points in the same direction. When constructing a composite index the implicit substitutability is a problem. A bad result in one sub-index can be compensated for by a good result in another sub-index. So if there is a great variety within the results, this information is lost in the process of aggregation. Explicit analysis of the four sub-indices therefore becomes necessary.

The third critique states that the availability of data determines the results. Aspects that are difficult to operationalize are excluded from the analysis, although they do constitute an important part of it. This reduces the possibility of obtaining reasonable operation instructions.

Subsequent to the construction of the index, a cluster analysis will be conducted. With the help of the Single-Linkage-Approach statistical outliers are identified in the first part and excluded from the analysis. This is also called the "nearest neighbor"-approach. The distance between two clusters is estimated through the distance between the two most similar observations. In the second step, the approach of Ward (1963) is used to assign the coun-

Table 1

Contents of the index

Sub-index	Contains indicators explaining
P	Trust in political agents Corruption (political) Transparency Political stability
J	Acceptance of the judicial system Crime Independence of the judicial system
E	Shadow economy Competition policy Corruption (economic)
C	Ethical behavior Credibility Civil rights

Source: Compilation of the authors.

tries of the analysis to different clusters. This approach is used to minimize the loss of information that is inherent when grouping several objects. Ward states that this loss of information can be approximated with the help of the following equation:

$$ESS = \sum_{i=1}^{n} x_i^2 - \frac{1}{n}\left(\sum_{i=1}^{n} x_i\right)^2$$

x_i denotes the assigned single number of a country and ESS is the error sum of squares. As stated above, the approach of Ward tries to find the number of clusters and the assignment of countries to those clusters that minimize the loss of information.

Descriptive results

In this chapter the descriptive results of the analysis are presented. Table 2 shows selected results from the four sub-indices and the overall index.

When interpreting the results one has to keep in mind that these values are relative. They are an approximation of the distance to the best or worst performing countries in this study. It follows that if all covered countries would improve with respect to their current position, the results of Table 2 would be the same.

Denmark achieves the best results in the overall index. It gets high values in each of the four sub-indices, like the other Scandinavian countries. Like Denmark, the runner-up country Sweden accomplishes 90+ percent scores in three of the four sub-indices, followed by several countries, which are European or Anglo-Saxon and have a strong economy. Switzerland and Germany obtain the sixth and the eleventh place, respectively. Today, both countries are managing to sustain a strong economic performance, although the countries around them struggle because of the Euro crisis.[2] New Zealand is one of the most liberal countries of the world as far as its economy is concerned. It is ranked the fifth best country and therefore achieves much better results than the United States of America at 24th place. This rather bad result for the USA is caused by the low values in the sub-indices of the informal political and judicial institutions.

The next group contains those European countries that have faced substantial economic problems in their recent history, like Spain or Greece. Spain reaches a position similar to that of the USA, whereas Greece also falls behind emerging economies like India or Brazil and finishes 43rd. This group also includes the most OPEC-countries covered by analysis, such as Qatar for example. These countries obtain relatively high values in the sub-indices of the informal political and judicial institutions, but relatively low values in the sub-indices of informal economic and cultural/social institutions.

The second half of the ranking mostly consists of Asian and Southern American countries. They represent the center of the ranking, achieving better results than the African countries, but worse results than the European countries. Angola and Nigeria, for example, finish second and third from last.[3] Venezuela takes the last place, with a value of just above 20 percent for the sub-index of cultural/social institutions.

These results can be used to conduct the cluster analysis mentioned above. The approach of Ward

[2] Switzerland is not part of the European Monetary Union, but has strong economic links to it as its exports to and imports from European Union countries account for over 50 percent.
[3] Caused by the non-availability of data, the overall index consists only of 83 countries.

Table 2

Selected results

Country	Sub-indices				Overall index (equally weighted)	Rank
	Political	Judicial	Economic	Cultural/ Social		
Denmark	88.36	93.08	93.74	96.64	92.96	1
Sweden	90.08	93.24	88.80	94.62	91.69	2
New Zealand	87.81	94.76	86.53	92.06	90.29	5
Switzerland	86.66	93.71	84.94	91.38	89.17	6
Germany	76.64	89.21	86.99	82.96	83.95	11
USA	66.62	55.62	79.46	84.21	71.48	24
Spain	51.40	65.07	76.16	75.88	67.13	25
Brazil	46.93	39.61	63.37	83.94	58.46	36
Qatar	85.70	83.14	30.46	33.22	58.13	37
India	39.99	48.34	58.98	79.77	56.77	41
Greece	41.34	55.31	53.67	75.60	56.48	43
China	50.01	43.64	39.67	28.27	40.40	64
Ethiopia	35.33	46.72	22.61	26.07	32.68	76
Angola	38.76	38.91	17.80	18.75	28.56	81
Nigeria	10.90	23.80	24.12	52.44	27.81	82
Venezuela	9.16	4.75	18.07	57.02	22.25	83

Source: Based on the authors' analysis.

leads to the five clusters, depicted in Table 3. The ranking of the clusters themselves is irrelevant.

If two countries are assigned to the same cluster, this does not necessarily mean, that they have the same informal institutions. One can only say that the informal institutions are similarly viewed and rated. Not included in the cluster analysis is Singapore as it has been identified as a statistical outliner due to the Single-Linkage approach.

Discussion

This section offers a brief discussion of the descriptive results above. Cluster 1 consists of ten countries, four located in Africa and six located in Asia. The countries in this cluster have relatively low values in each of the four categories. Relating to the sub-indices of informal political and judicial institutions, the countries have an average of about 40 percent, the other two sub-indices are in the mid-twenties. Therefore, this is the cluster of those countries that are the so-called "under-performers" in terms of informal institutions. Besides, the cluster also includes China and Russia, which shows that economic performance plays only a minor role in this ranking, as intended.

The second cluster includes 15 countries, two European countries, as well as three Asian, seven American and three African countries. In terms of the first three sub-indices this cluster resembles the first cluster. The major difference lies in the fourth category, or informal cultural/social institutions. Here, cluster 2 has an average of about 60 percent, whereas the average of cluster 1 is about 20 percent. Cluster 3 contains 23 countries: 14 European, four American, three Asian and two Oceanian. This cluster can be described as the "best-countries" cluster, as the averages of all four sub-indices of the countries in this cluster lie above the averages of any other cluster. The countries included in this cluster are mainly so-called "first world" countries. This

Table 3

Result of the cluster analysis

Cluster	Countries
1	Angola, Azerbaijan, China, Egypt, Ethiopia, Iran, Libya, Russia, Syria, Vietnam.
2	Algeria, Argentina, Bangladesh, Dominican Republic, Ecuador, Guatemala, Kenya, Lebanon, Mexico, Nigeria, Pakistan, Peru, Serbia, Ukraine, Venezuela.
3	Australia, Austria, Belgium, Canada, Chile, Cyprus, Denmark, Estonia, Finland, France, Germany, Ireland, Israel, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, Taiwan, United Kingdom, United States, Uruguay.
4	Bahrain, Brazil, Bulgaria, Colombia, Czech Republic, Greece, Hungary, India, Indonesia, Italy, Kazakhstan, Kuwait, Latvia, Lithuania, Malaysia, Morocco, Panama, The Philippines, Poland, Portugal, Romania, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Thailand, Turkey.
5	Oman, Qatar, Saudi Arabia, Tunisia, United Arab Emirates.

Source: Based on the authors' analysis.

does not hold for Chile, but Chile was the first country in Southern America to open its borders to world trade (Sachs and Warner 1995, 23).

Out of the 29 countries of the fourth cluster, 13 are located in Europe, 11 in Asia, two in Africa and three in America. These countries achieve medium results in all of the four categories. This cluster can therefore be seen as the cluster of the Transition Economies, because it contains countries with improving economies like Brazil, India, South Korea, South Africa and the Eastern Europe countries. The "PIGS-countries", i.e., the countries that faced the most severe economic problems in the current financial crisis, are also part of this cluster and can be seen as Transition Economies, with the restriction of decreasing economic performance.

The countries of the fifth and last cluster are from Asia (four) and Africa (one). This cluster achieves good results in terms of the averages of the political (71.5 percent) and informal judicial institutions (77.0 percent). As far as the other two sub-indices of informal economic institutions and informal cultural/social institutions are concerned, this cluster performs "below-average" with 37.9 percent on average and 33.0 percent, respectively. Furthermore, the cluster can be described as Islam-related.

Some general tendencies can be derived from the results of the cluster analysis. Again, the absolute values should not be overemphasized. However, the previously described analysis is a first step towards measuring and comparing informal institutions.

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