Entropy-based Indexes of Gender-related Development Equity

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Resumen

Este trabajo analiza el Índice de Desarrollo Humano (HDI), así como también los indicadores similares que tienen en cuenta las diferencias genéricas, entre las mismas dimensiones consideradas en el HDI. Este tema es importante, en primera instancia, por la existencia de diferencias significativas en los niveles de bienestar y desarrollo personal alcanzados por hombres y mujeres, lo cual debe ser corregido. En este trabajo, se propone un nuevo índice de entropía neutral, basado en el concepto de la distribución equitativa genérica, para cada dimensión del desarrollo humano. El resultado del valor medio de estas entropías es un índice compuesto, que mide la desigualdad genérica entre los dos géneros. Se proponen también dos índices "orientados", que miden la desigualdad específica para cada uno de los dos géneros. En la mayoría de los casos, el índice de desigualdad genérico coincide con el índice propuesto para las mujeres, ya que en la mayoría de las ocasiones, son las mujeres las que sufren más retrasos y carencias, en los niveles de desarrollo humano. La metodología propuesta

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es aplicada en todos los países del mundo. Sus resultados, para el año 2004, son analizados y comentados por zonas geográficas. El continente africano es el sitio en el que las mujeres sufren una mayor discriminación respecto de los hombres (en cuanto a la salud, la educación y los ingresos económicos). La situación es algo mejor en Asia, y bastante mejor en América, Europa y Oceanía.

Palabras claves: Índice de Desarrollo Humano, índices compuestos, diferencias de género, igualdad de género, entropía.

Abstract

This paper reviews the Gender-related Development Index (GDI) and other similar indicators that the take into account gender differences along the dimensions considered in the Human Development Index (HDI).The issue of measuring the degree of gender equity in human development is important as a first step in looking for ways to correct it. In this paper, we propose a Gender-neutral Entropy-based Index of Gender-related Development Equity (GEIGDE) that takes into account the distribution of each dimension indicator for the two genders. These dimension entropies are averaged forming a composite index. We also consider two specific indexes so that the directions of the gender gaps are taken into account for each gender. Usually, the GEIGDE coincides with the corresponding women-specific index since generally it is women who suffer the lower attainment levels of well-being. The proposed methodology has been applied to all countries in the world and the results for year 2004 have been analyzed and discussed for each geographical region. In particular, the African continent shows the worst levels of the proposed index indicating low levels of women access to health, education and income. The situation improves somewhat for the Asian region and is rather better in America, Europe and Oceania.

Keywords: Human Development, composite indexes, gender gaps, gender equity, entropy.

Resumo

Este trabalho analisa o Índice de Desenvolvimento Humano (HDI), assim como os indicadores similares que levam em conta as diferenças genéricas, entre as mesmas dimensões consideradas no HDI. Este tema é importante, em primeira instância, pela existência de diferenças significativas nos níveis de bem-estar e desenvolvimento pessoal atingidos por homens e mulheres, o que deve ser corrigido. Neste trabalho, propõe-se um novo índice de entropia neutral, baseado no conceito da distribuição

equitativa genérica, para cada dimensão do desenvolvimento humano. O resultado do valor meio destas entropias é um índice composto, que mede a desigualdade genérica entre os dois gêneros. Propõem-se também dois índices "orientados", que medem a desigualdade específica para cada um dos dois gêneros. Na maioria dos casos, o índice de desigualdade genérico coincide com o índice proposto para as mulheres, já que na maioria das ocasiões, são as mulheres as que sofrem mais atrasos e carências, nos níveis de desenvolvimento humano. A metodologia proposta é aplicada em todos os países do mundo. Seus resultados, para o ano 2004, são analisados e comentados por zonas geográficas. O continente africano é o lugar no qual as mulheres sofrem uma maior discriminação a respeito dos homens (em quanto à saúde, a educação e os ingressos econômicos). A situação é um pouco melhor na Ásia, e bastante melhor na América, Europa e Oceania.

Palavras-chaves: Índice de Desenvolvimento Humano, índices compostos, diferenças de gênero, igualdade de gênero, entropia.

JEL: O15, C61

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1. Introducción

The United Nations Development Programme (UNDP) introduced in 1990 the well-known Human Development Index (HDI) as a composite of three indexes. The Gender-related Development Index (GDI), introduced in the Human Development Report (HDR) 1995, aims at correcting the HDI for gender disparities. Specifically, for a given country, GDI is always lower than HDI and the larger the gender disparities in the life expectancy, education index and estimated income indexes the larger the difference between HDI and GDI. This has led researchers to consider this difference either in absolute (HDI-GDI) or in relative terms (HDI-GDI)/HDI as a measure of Gender Equity in development (Hill and Dhanda 1999, Saith and Harriss-White 1999, Dijkstra 2002, 2006).

Although GDI has been used in different studies (e.g. Oudhof 2001, Martínez Peinado and Cairó Céspedes 2004) it has been subject to much criticism. Different researchers have identified conceptual and empirical problems of the GDI as well as misuses and misinterpretations (Pillarisetti and McGillivray 1998, Bardhan and Klasen 1999, Klasen 2004, 2006b, Schüler 2006).

Among the drawbacks of the GDI are that it is a gendered measure of development and not a measure of gender equality and that it does not take into account the direction of the gender gaps found in its component indexes. To correct these issues Dijkstra and Hanmer 2000 (see also Dijkstra 2006) proposed the Relative Status of Women (RSW) index, constructed directly using the same achievement indexes as the GDI, namely Life Expectancy at Birth (LEB), Education Attainment (EA)

and Estimated Earned Income (EEI). Using subscripts f and m for female and male respectively and denoting their respective population shares as P_f and P_m the index can be computed as

$$RSW = \frac{1}{3} \cdot \left(\frac{LEB_f}{LEB_m} + \frac{EA_f}{EA_m} + \frac{\frac{EEI_f}{EEI_f + EEI_m}}{\frac{P_f}{P_f + P_m}} \right) \qquad (1)$$

The RSW index is an unweighted average of three ratios. The first two correspond to the ratio of the female achievement indexes in LEB and EA. Note that these achievement indexes are computed with respect to fixed goalposts that represent minimum and maximum values of the corresponding indicators. The third ratio corresponds to the ratio of the female share of EEI to the female share of the Population. One of the advantages of RSW over the GDI is that it takes into account the direction of the different gender gaps. Thus, if RSW<1 then women are discriminated against while if RSW>1 it is men who are discriminated against.

Dholakia (2005) proposed the Modified Gender-related Development Index (MGDI) and the Equally Distributed Gender-related Development Index (EDGDI), which although related, are not directly comparable to the GDI due to the inclusion of additional indicators such as fertility rates and economic and political participation indicators. Similarly, considering another set of indicators, Dijkstra (2002) proposed another measure of gender equality called the Standardized Index of Gender Equality (SIGE).

In this paper, the Entropy of the distribution of the same gendered achievement indexes used by the GDI is used to define three indexes of gender-related development equity. The structure of the paper is the following. These indexes are presented in section 2. In section 3 numerical results are presented and compared with other existing indexes. In section 4 conclusions are drawn.

2. Entropy-Based Gender-Related Development Equity

As mentioned above, the GDI is a measure of Human Development that takes into account existing gender gaps. According to the computation procedure of the GDI (see for example Klasen 2006a), once the female and male achievement indexes LEB_f, LEB_m, EA_f, EA_m, EEI_f and EEI_m the corresponding Equally-distributed Indexes (EDI) are computed for the three dimensions according to the formula

$$EDI = \left[\text{femalepopulationshare} \cdot (\text{femaleindex})^{1-\varepsilon} + \text{malepopulationshare} \cdot (\text{maleindex})^{1-\varepsilon} \right]^{1/1-\varepsilon} \qquad (2)$$

where ε measures the aversion to inequality. Since the value ε=2 is used (i.e. the GDI assumes a strong social aversion to inequality) EDI is the harmonic mean of the female and

male indexes weighted by their respective population shares. In the end, the GDI is computed as the unweighted average of the three EDI.

Instead of that, we propose to use the female and male achievement indexes to compute a gendered probability function, i.e. for each achievement index a discrete probability function is defined. Thus, for LEB the discrete probabilities of the two genders are computed as

$$v_f^{LEB} = \frac{LEB_f}{LEB_f + LEB_m} \qquad v_m^{LEB} = \frac{LEB_m}{LEB_f + LEB_m} \tag{3}$$

and represent their relative shares of the LEB achievement index. Similarly, for the EA and EEI achievement indexes, the corresponding values of their gendered probability distribution are computed as

$$v_f^{EA} = \frac{EA_f}{EA_f + EA_m} \qquad v_m^{EA} = \frac{EA_m}{EA_f + EA_m} \tag{4}$$

$$v_f^{EEI} = \frac{EEI_f}{EEI_f + EEI_m} \qquad v_f^{EEI} = \frac{EEI_m}{EEI_f + EEI_m} \tag{5}$$

For each of these three distributions, the corresponding entropy functions can be defined as

$$H = -v_f \cdot \log v_f - v_m \cdot \log v_m \tag{6}$$

Entropy has been proposed as a measure of income inequality in economics as in the Theil index (Theil 1967). It has also been used to assess the degree of inter-country inequality in human development indicators (Ogwang 2000). Assuming, as it is usual for binary probability distributions, that the logarithms in the above formulae are to the base 2, the values of these entropy functions lie in the interval [0,1]. The maximum value H=1 corresponds to a uniform distribution, i.e. v_f=v_m=0.5 while the minimum value H=0 corresponds to a completely unequal distribution, i.e. either v_f=1, v_m=0 or v_f=0, v_m=1. Since for each distribution the two probability values add to unity, (6) can also be expressed as a function of just one of the two variables

$$H = -v_f \cdot \log v_f - (1 - v_f) \cdot \log (1 - v_f) = -v_m \cdot \log v_m - (1 - v_m) \cdot \log (1 - v_m) \tag{7}$$

The graph of this function can be found in Annex I (Figure 1), which in information theory is known as the binary entropy function (see e.g. MacKay 2003). Note that, as mentioned above, the binary entropy function attains its maximum value when v_f=v_m=½, i.e. when

the female and male achievement indexes are equal. Note also that as the gender gap increases the entropy decreases.

A Gender-neutral Entropy-based Index of Gender-related Development Equity (GEIGDE) can be computed as an unweighted average of these three entropy functions as

$$\text{GEIGDE} = \frac{1}{3}\cdot\left(H^{LEB} + H^{EA} + H^{EEI}\right) \qquad (8)$$

The value of this composite index is always between zero and one. The unity value is attained if and only if three entropy functions are equal to unity, i.e. the female and male achievement indexes are equal in all three dimensions. Although this index, like RSW, unlike the GDI, measures gender equity, it does not distinguish the direction of the gender gaps. Thus, if for example $LEB_f > LEB_m$ and $EA_m > EA_f$ the index adds both imbalances although they are in opposite directions.

In order to take into account the direction of gender gaps we propose to define two more indexes, namely the Female Entropy-based Index of Gender-related Development Equity (FEIGDE) and the Male Entropy-based Index of Gender-related Development Equity (MEIGDE). To that end, instead of the symmetric binary function shown in Figure 1 we will consider the gender-biased functions shown in Annex I (Figure 2) and which correspond to the following modified binary entropy functions

$$H_f = \begin{cases} -v_f \cdot \log v_f - (1-v_f)\cdot\log(1-v_f) & \text{if } v_f \le 1/2 \\ 1 & \text{otherwise} \end{cases} \qquad (9)$$

$$H_m = \begin{cases} -v_m \cdot \log v_m - (1-v_m)\cdot\log(1-v_m) & \text{if } v_m \le 1/2 \\ 1 & \text{otherwise} \end{cases} \qquad (10)$$

The rationale behind these functions is that in order to measure only those gender gaps of a certain direction the possible gaps in the opposite direction should not be taken into account. The indexes are computed as

$$\text{FEIGDE} = \frac{1}{3}\cdot\left(H_f^{LEB} + H_f^{EA} + H_f^{EEI}\right) \qquad \text{MEIGDE} = \frac{1}{3}\cdot\left(H_m^{LEB} + H_m^{EA} + H_m^{EEI}\right) \qquad (11)$$

Because each of these gender-biased indexes FEIGDE and MEIGDE only measures those gender gaps of a certain direction, their values are always above that of the gender-neutral GEIGDE, which measure all gender gaps. Thus, consider for example, the female and male achievement indexes of Peru for year 2004, published in the HDR 2006 (UNDP 2006) and shown in Table 1.

Table 1. Female and male achievement indexes for Peru in year 2004

	LEB	EA	EEI	P (in thousands)
Female	0.757	0.841	0.583	14,115.7
Male	0.755	0.907	0.732	14,264.5

The corresponding probability distributions, the binary entropy and modified binary entropy values and the values of the three proposed indexes are shown in Table 2. For the sake of comparison, Table 3 shows the corresponding values for some related existing indexes and the Female and Male HDI as computed in Klasen (2006b) together with some interesting, derived ratio indicators.

Table 2. Probability distributions, entropies and proposed indexes for Peru in year 2004

	LEB	EA	EEI	GEIGDE	FEIGDE	MEIGDE
v_f	0.50055	0.48111	0.44342	-	-	-
v_m	0.49945	0.51888	0.55658	-	-	-
H	0.99999	0.99897	0.99074	0.99657	-	-
H_f	1.00000	0.99897	0.99074	-	0.99657	-
H_m	0.99999	1.00000	1.00000	-	-	1.00000

Table 3. Values of some related existing indexes and other interesting indicators for Peru in year 2004

Existing indexes	Value	Other indicators	Value
HDI	0.767	Female HDI	0.739
GDI	0.759	Male HDI	0.786
HDI-GDI	0.008	Female HDI/ Male HDI	0.941
(HDI-GDI)/HDI	0.010	Female HDI/HDI	0.964
RSW	0.940	Male HDI/HDI	1.024

Note that, since the gender gaps in this example are mostly in favour of men, GEIGDE is equal to FEIGDE and MEIGDE is equal to one. The largest gap between men and women is in the EEI and not too big 0.44 versus 0.55. The resulting entropy values are close to one but small differences that discriminate against women are detected. This coincides with the results of the existing indexes which are rather small for HDI and (HDI-GDI)/HDI and close to one for RSW. Similarly, the female and male HDI are also relatively close although a little bit higher for the male HDI.

3. Results and discussion

In the present study the countries are grouped geographically into five major areas: Africa, America, Asia, Europe and Oceania. Those major areas are further divided geographically into eighteen regions.

Tables 4 through 8 in Annex II show, for year 2004 and grouped by geographical areas, the values of the entropy functions and the proposed indexes for the 136 countries for which the GDI is available in the HDR 2006 (UNDP 2006).

In general, African countries show the lowest entropy levels among all the tables. Swaziland has the lowest H^{LEB} value (0.8832), which means that female LEB is much lower than that of male. Although the figure 0.8832 does not seem too low, take into account the relative flatness of the entropy function around its maximum (as shown in Figure 1) which means that even small deviations from 1 of the GEIGDE represent significant imbalances in the gender distribution of the human development dimensions. Other rather low H^{LEB} values (around 0.95) correspond to Zambia, Zimbabwe and Botswana. The lowest H^{EA} value is 0.8650 and corresponds to Chad. Niger (with a H^{EA} value of 0.8851 is also very low). With H^{EA} values below 0.95 we also find Central African Republic, Benin and Guinea. The values of H^{EEI} are not so low (lowest values are Sudan and Sierra Leone, 0.9536 and 0.9589 respectively), which means that there is a smaller gender gap in earned income than in life expectancy and education. In the end, the lowest GEIGDE correspond to Chad, Niger and Swaziland. To show the power of the proposed methodology, note that although these three countries have similar values of the GEIGDE index (between 0.9523 and 0.9548) they draw a different picture in each case. Thus, the low GEIGDE of Chad comes from its low value of women Education Attainment, the gender-gap in other two dimensions being rather low. The case of Niger is similar in the sense that the main gender inequity is also in Education Attainment but, although less acute, there also gender gaps in Life Expectancy and in Earned Income. Finally, in Swaziland it is the differences in Life Expectancy between men and women which is more troublesome, while access to Education is much less problematic and Earned Income is somewhat unequally distributed. The largest GEIGDE belong to Madagascar, Mauritius, Rwanda, Namibia and South Africa. Since in almost all cases, the gender gap is in favour of men, FEIGDE is practically equal to GEIGDE and MEIGDE is equal to one meaning that the existing gender gap in human development corresponds to women attaining lower levels

in health, education and income. Exceptions are Mozambique and Lesotho.

For the American continent, except for H^{EEI}, the rest of entropy values are very close to one. Lowest H^{EEI} value is 0.9797 and corresponds to Nicaragua. The resulting GEIGDE are all above 0.99 with lowest values for Guatemala and Nicaragua and highest values for USA and Canada. Although in the majority of cases the discrimination is against women, in some countries, namely Dominican Republic, Jamaica, Guatemala, Honduras, Argentina, Brazil and Uruguay, men also suffer a little bit of discrimination. These gender differences are focus on Education Attainment and Life Expectancy at Birth.

The results for Asia are somewhat lower than those of America, especially in H^{EA} and H^{EEI}. Thus, the lowest values of both entropies are 0.9230 and 0.9310 respectively and in both cases it corresponds to Yemen. Its GEIGDE is also the lowest (0.9511). The countries with highest GEIGDE are Israel, Cyprus and Armenia. The frequency of male discrimination, although still much lower (actually not comparable) than female discrimination, seems a little bit higher than in previous cases.

The only European country with a relatively small H^{LEB} (0.9928) is Russia. H^{EA} are all very high and close to one. More gender differences are seen in H^{EEI} with the lowest values for Spain (0.9943) and Moldova (0.9952). The GEIGDE are generally very high with lowest values for Ukraine and Russia, followed by Belarus, Spain, Estonia, Albania and Latvia. The highest GEIGDE correspond to Nordic countries, U.K., Belgium, Netherlands and Luxemburg, the latter being the only country in the world with a GEIGDE equal to one, i.e. without any gender gaps of any kind in the indicators considered. Small discriminations against men are relatively frequent, especially in Nordic and Eastern European countries (most notably Russia) although it never occurs in the EEI dimension.

Australia and New Zealand have very high GEIGDE while Papua New Guinea and Samoa have low GEIGDE, mainly due to the low values of H^{LEB} (0.9971) and H^{EA} (0.9932) in the case of Papua New Guinea and the low H^{EEI} value (0.9890) in the case of Samoa. As with the rest of countries, practically all discrimination in the indicators considered are against women.

The Pearson's correlations coefficients among these indexes are presented in Table 9. Note that both FEIGDE and GEIGDE are highly correlated with both HDI-GDI, (HDI-GDI)/HDI and RSW and that MEIGDE is almost constant and is weakly correlated with RSW only. Figure 3 also shows, in the main diagonal, the histograms of the corresponding indexes. In this respect, note that the three proposed indexes concentrate most of their values in a smaller range than the other indexes. This is due to the flatness of the entropy function (see Figure 1) in the proximity of point 0.5. Most RSW values are around one and most HDI-GDI and (HDI-GDI)/HDI values are close to zero.

Table 9. Pearson's correlation coefficients among proposed and related existing indexes

	GEIGDE	FEIGDE	MEIGDE	RSW	HDI-GDI
GEIGDE	1.000	0.999*	-0.103	0.857*	-0.723*
FEIGDE	0.999*	1.000	-0.136	0.866	-0.726*
MEIGDE	-0.103	-0.136	1.000	-0.310*	0.167
RSW	0.853*	0.863*	-0.343*	1.000	-0.707*
HDI-GDI	-0.723*	-0.726*	0.167	-0.638*	1.000
(HDI-GDI)/HDI	-0.897*	-0.899*	0.153	-0.806*	0.920*

* Correlation is significant at 0.01 level (two-tailed)

4. Summary and conclusions

In order to measure Gender-related Development Equity, three entropy-based indexes have been proposed in this paper. The first one is termed gender-neutral because it adds gender gaps in achievement indexes irrespective of the direction of the gaps. The other two only take into account gender gaps that discriminate against women or against men respectively. The proposed indexes have been computed for year 2004 and their values compared with those of existing related indexes. The results show that the proposed GEIGDE is highly correlated with both (HDI-GDI)/HDI and RSW, that for most countries MEIGDE is unity (indicating that men are not discriminated against in any of the LEB, EA and EEI dimensions) and that, consequently, FEIGDE is almost identical to GEIGDE.

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ANNEX I

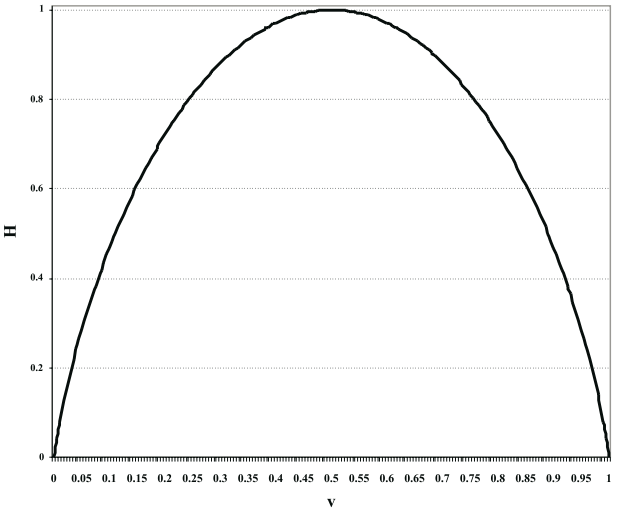

Figure 1. Binary entropy function

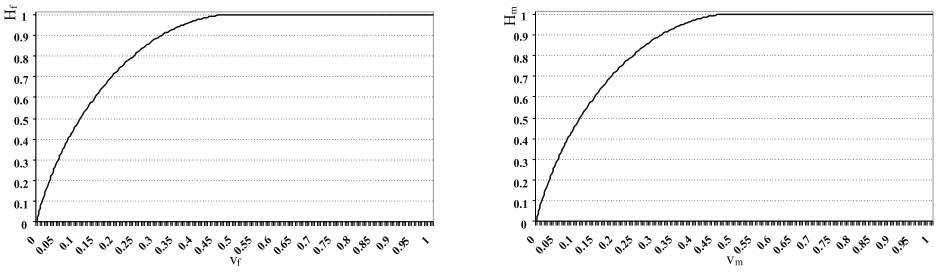

Figure 2. Female and male modified binary entropy functions

ANNEX II

Table 4. Proposed indexes for African countries in year 2004

Eastern Africa												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Burundi	0.9952	0.9891	0.9968	**0.9937**	0.9952	0.9891	0.9968	**0.9937**	1.0000	1.0000	1.0000	**1.0000**
Comoros	0.9999	0.9906	0.9901	**0.9936**	0.9999	0.9906	0.9901	**0.9936**	1.0000	1.0000	1.0000	**1.0000**
Kenya	0.9825	0.9985	0.9990	**0.9933**	0.9825	0.9985	0.9990	**0.9933**	1.0000	1.0000	1.0000	**1.0000**
Madagascar	0.9989	0.9970	0.9948	**0.9969**	0.9989	0.9970	0.9948	**0.9969**	1.0000	1.0000	1.0000	**1.0000**
Malawi	0.9759	0.9911	0.9949	**0.9873**	0.9759	0.9911	0.9949	**0.9873**	1.0000	1.0000	1.0000	**1.0000**
Mauritius	0.9997	0.9991	0.9933	**0.9974**	1.0000	0.9991	0.9933	**0.9975**	0.9997	1.0000	1.0000	**0.9999**
Mozambique	0.9911	0.9612	0.9987	**0.9837**	0.9911	0.9612	0.9987	**0.9837**	1.0000	1.0000	1.0000	**1.0000**
Rwanda	0.9984	0.9971	0.9976	**0.9977**	0.9984	0.9971	0.9976	**0.9977**	1.0000	1.0000	1.0000	**1.0000**
Uganda	0.9944	0.9927	0.9968	**0.9946**	0.9944	0.9927	0.9968	**0.9946**	1.0000	1.0000	1.0000	**1.0000**
Tanzania	0.9920	0.9946	0.9950	**0.9938**	0.9920	0.9946	0.9950	**0.9938**	1.0000	1.0000	1.0000	**1.0000**
Zambia	0.9577	0.9932	0.9867	**0.9792**	0.9577	0.9932	0.9867	**0.9792**	1.0000	1.0000	1.0000	**1.0000**
Zimbabwe	0.9479	0.9989	0.9942	**0.9803**	0.9479	0.9989	0.9942	**0.9803**	1.0000	1.0000	1.0000	**1.0000**
Middle Africa												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Angola	0.9969	0.9743	0.9955	**0.9889**	0.9969	0.9743	0.9955	**0.9889**	1.0000	1.0000	1.0000	**1.0000**
Cameroon	0.9936	0.9898	0.9900	**0.9911**	0.9936	0.9898	0.9900	**0.9911**	1.0000	1.0000	1.0000	**1.0000**
Central African Re	0.9882	0.9359	0.9922	**0.9721**	0.9882	0.9359	0.9922	**0.9721**	1.0000	1.0000	1.0000	**1.0000**
Chad	0.9956	0.8650	0.9962	**0.9523**	0.9956	0.8650	0.9962	**0.9523**	1.0000	1.0000	1.0000	**1.0000**
Congo	0.9985	0.9974	0.9822	**0.9927**	0.9985	0.9974	0.9822	**0.9927**	1.0000	1.0000	1.0000	**1.0000**
Congo, Dem. Rep.	0.9953	0.9755	0.9783	**0.983**	0.9953	0.9755	0.9783	**0.9830**	1.0000	1.0000	1.0000	**1.0000**
Equat. Guinea	0.9909	0.9952	0.9951	**0.9937**	0.9909	0.9952	0.9951	**0.9937**	1.0000	1.0000	1.0000	**1.0000**
Northern Africa												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Algeria	0.9995	0.9939	0.9863	**0.9933**	0.9995	0.9939	0.9863	**0.9933**	1.0000	1.0000	1.0000	**1.0000**
Morocco	1.0000	0.9754	0.9726	**0.9826**	1.0000	0.9754	0.9726	**0.9826**	1.0000	1.0000	1.0000	**1.0000**
Sudan	0.9992	0.9865	0.9536	**0.9798**	0.9992	0.9865	0.9536	**0.9798**	1.0000	1.0000	1.0000	**1.0000**
Tunisia	1.0000	0.9960	0.9834	**0.9931**	1.0000	0.9960	0.9834	**0.9931**	1.0000	1.0000	1.0000	**1.0000**
Southern Africa												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Botswana	0.9511	0.9999	0.9907	**0.9806**	0.9511	1.0000	0.9907	**0.9806**	1.0000	0.9999	1.0000	**1.0000**
Lesotho	0.9861	0.9960	0.9929	**0.9917**	0.9861	1.0000	0.9929	**0.9930**	1.0000	0.9960	1.0000	**0.9987**
Namibia	0.9932	1.0000	0.9969	**0.9967**	0.9932	1.0000	0.9969	**0.9967**	1.0000	1.0000	1.0000	**1.0000**
South Africa	0.9977	0.9999	0.9947	**0.9974**	0.9977	0.9999	0.9947	**0.9974**	1.0000	1.0000	1.0000	**1.0000**
Swaziland	0.8832	0.9998	0.9813	**0.9548**	0.8832	0.9998	0.9813	**0.9548**	1.0000	1.0000	1.0000	**1.0000**
Western Africa												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Benin	0.9974	0.9451	0.9814	**0.9746**	0.9974	0.9451	0.9814	**0.9746**	1.0000	1.0000	1.0000	**1.0000**
Burkina Faso	0.9955	0.9548	0.9948	**0.9817**	0.9955	0.9548	0.9948	**0.9817**	1.0000	1.0000	1.0000	**1.0000**
Cape Verde	0.9999	0.9964	0.9873	**0.9945**	1.0000	0.9964	0.9873	**0.9946**	0.9999	1.0000	1.0000	**1.0000**
Côte d'Ivoire	0.9950	0.9668	0.9650	**0.9756**	0.9950	0.9668	0.9650	**0.9756**	1.0000	1.0000	1.0000	**1.0000**
Ghana	0.9970	0.9896	0.9978	**0.9948**	0.9970	0.9896	0.9978	**0.9948**	1.0000	1.0000	1.0000	**1.0000**
Guinea	0.9958	0.9310	0.9972	**0.9747**	0.9958	0.9310	0.9972	**0.9747**	1.0000	1.0000	1.0000	**1.0000**
Mali	0.9953	0.9471	0.9944	**0.9790**	0.9953	0.9471	0.9944	**0.9790**	1.0000	1.0000	1.0000	**1.0000**
Mauritania	0.9993	0.9898	0.9896	**0.9929**	0.9993	0.9898	0.9896	**0.9929**	1.0000	1.0000	1.0000	**1.0000**
Niger	0.9888	0.8851	0.9855	**0.9531**	0.9888	0.8851	0.9855	**0.9531**	1.0000	1.0000	1.0000	**1.0000**
Nigeria	0.9881	0.9779	0.9739	**0.9800**	0.9881	0.9779	0.9739	**0.9800**	1.0000	1.0000	1.0000	**1.0000**
Senegal	0.9987	0.9694	0.9910	**0.9864**	0.9987	0.9694	0.9910	**0.9864**	1.0000	1.0000	1.0000	**1.0000**
Sierra Leone	0.9966	0.9586	0.9589	**0.9713**	0.9966	0.9586	0.9589	**0.9713**	1.0000	1.0000	1.0000	**1.0000**
Togo	0.9997	0.9574	0.9816	**0.9796**	0.9997	0.9574	0.9816	**0.9796**	1.0000	1.0000	1.0000	**1.0000**

Table 5. Proposed indexes for American countries in year 2004

North America												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Canada	1.0000	0.9999	0.9988	**0.9996**	1.0000	1.0000	0.9988	**0.9996**	1.0000	0.9999	1.0000	**1.0000**
United States	1.0000	0.9999	0.9989	**0.9996**	1.0000	1.0000	0.9989	**0.9996**	1.0000	0.9999	1.0000	**1.0000**
Caribbean												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Dominican Rep	0.9995	0.9998	0.9923	**0.9972**	1.0000	1.0000	0.9923	**0.9974**	0.9995	0.9998	1.0000	**0.9998**
Jamaica	0.9998	0.9976	0.9958	**0.9977**	0.9998	1.0000	0.9958	**0.9985**	1.0000	0.9976	1.0000	**0.9992**
Trinidad&Tobago	0.9999	1.0000	0.9953	**0.9984**	1.0000	1.0000	0.9953	**0.9984**	0.9999	1.0000	1.0000	**1.0000**
Central America												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Costa Rica	1.0000	1.0000	0.9947	**0.9982**	1.0000	1.0000	0.9947	**0.9982**	1.0000	1.0000	1.0000	**1.0000**
El Salvador	0.9999	0.9996	0.9915	**0.9970**	1.0000	0.9996	0.9915	**0.9970**	0.9999	1.0000	1.0000	**1.0000**
Guatemala	0.9994	0.9961	0.9824	**0.9926**	1.0000	0.9961	0.9824	**0.9928**	0.9994	1.0000	1.0000	**0.9998**
Honduras	0.9999	0.9998	0.9891	**0.9963**	0.9999	1.0000	0.9891	**0.9963**	1.0000	0.9998	1.0000	**0.9999**
Mexico	1.0000	0.9999	0.9922	**0.9974**	1.0000	0.9999	0.9922	**0.9974**	1.0000	1.0000	1.0000	**1.0000**
Nicaragua	1.0000	1.0000	0.9797	**0.9932**	1.0000	1.0000	0.9797	**0.9932**	1.0000	1.0000	1.0000	**1.0000**
Panama	1.0000	0.9999	0.9967	**0.9989**	1.0000	1.0000	0.9967	**0.9989**	1.0000	0.9999	1.0000	**1.0000**
Costa Rica	1.0000	1.0000	0.9947	**0.9982**	1.0000	1.0000	0.9947	**0.9982**	1.0000	1.0000	1.0000	**1.0000**
South America												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Argentina	0.9995	0.9998	0.9969	**0.9987**	1.0000	1.0000	0.9969	**0.9990**	0.9995	0.9998	1.0000	**0.9998**
Bolivia	0.9999	0.9975	0.9947	**0.9974**	0.9999	0.9975	0.9947	**0.9974**	1.0000	1.0000	1.0000	**1.0000**
Brazil	0.9993	0.9999	0.9971	**0.9988**	1.0000	1.0000	0.9971	**0.9990**	0.9993	0.9999	1.0000	**0.9998**
Chile	0.9999	1.0000	0.9924	**0.9974**	1.0000	1.0000	0.9924	**0.9975**	0.9999	1.0000	1.0000	**1.0000**
Colombia	0.9999	1.0000	0.9971	**0.9990**	1.0000	1.0000	0.9971	**0.9990**	0.9999	1.0000	1.0000	**1.0000**
Peru	1.0000	0.9990	0.9907	**0.9966**	1.0000	0.9990	0.9907	**0.9966**	1.0000	1.0000	1.0000	**1.0000**
Uruguay	0.9996	0.9996	0.9969	**0.9987**	1.0000	1.0000	0.9969	**0.9990**	0.9996	0.9996	1.0000	**0.9998**
Venezuela, RB	0.9999	1.0000	0.9950	**0.9983**	1.0000	1.0000	0.9950	**0.9983**	0.9999	1.0000	1.0000	**1.0000**

Table 6. Proposed indexes for Asian countries in year 2004

Eastern Asia												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
China	0.9998	0.9991	0.9978	**0.9989**	0.9998	0.9991	0.9978	**0.9989**	1.0000	1.0000	1.0000	**1.0000**
Japan	0.9998	1.0000	0.9962	**0.9987**	1.0000	1.0000	0.9962	**0.9987**	0.9998	1.0000	1.0000	**0.9999**
Korea, Rep. of	0.9997	0.9996	0.9961	**0.9985**	1.0000	0.9996	0.9961	**0.9986**	0.9997	1.0000	1.0000	**0.9999**
Mongolia	0.9999	0.9998	0.9904	**0.9967**	0.9999	1.0000	0.9904	**0.9968**	1.0000	0.9998	1.0000	**0.9999**
South-central Asia												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Bangladesh	0.9987	0.9889	0.9866	**0.9914**	0.9987	0.9889	0.9866	**0.9914**	1.0000	1.0000	1.0000	**1.0000**
India	0.9996	0.9811	0.9770	**0.9859**	0.9996	0.9811	0.9770	**0.9859**	1.0000	1.0000	1.0000	**1.0000**
Iran Islamic Rep	0.9997	0.9968	0.9904	**0.9956**	0.9997	0.9968	0.9904	**0.9956**	1.0000	1.0000	1.0000	**1.0000**
Kazakhstan	0.9955	1.0000	0.9979	**0.9978**	1.0000	1.0000	0.9979	**0.9993**	0.9955	1.0000	1.0000	**0.9985**
Kyrgyzstan	0.9988	1.0000	0.9936	**0.9975**	1.0000	1.0000	0.9936	**0.9979**	0.9988	1.0000	1.0000	**0.9996**
Nepal	0.9977	0.9673	0.9875	**0.9842**	0.9977	0.9673	0.9875	**0.9842**	1.0000	1.0000	1.0000	**1.0000**
Pakistan	0.9974	0.9577	0.9664	**0.9739**	0.9974	0.9577	0.9664	**0.9739**	1.0000	1.0000	1.0000	**1.0000**
Sri Lanka	1.0000	0.9999	0.9897	**0.9965**	1.0000	0.9999	0.9897	**0.9965**	1.0000	1.0000	1.0000	**1.0000**
Tajikistan	1.0000	0.9996	0.9906	**0.9968**	1.0000	0.9996	0.9906	**0.9968**	1.0000	1.0000	1.0000	**1.0000**
Uzbekistan	0.9998	1.0000	0.9942	**0.9980**	1.0000	1.0000	0.9942	**0.9981**	0.9998	1.0000	1.0000	**0.9999**
South-eastern Asia												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Cambodia	0.9989	0.9891	0.9984	**0.9955**	1.0000	0.9891	0.9984	**0.9959**	0.9989	1.0000	1.0000	**0.9996**
Indonesia	0.9999	0.9991	0.9909	**0.9966**	0.9999	0.9991	0.9909	**0.9966**	1.0000	1.0000	1.0000	**1.0000**
Lao People's D .R.	0.9988	0.9914	0.9907	**0.9936**	0.9988	0.9914	0.9907	**0.9936**	1.0000	1.0000	1.0000	**1.0000**
Malaysia	1.0000	0.9999	0.9906	**0.9968**	1.0000	0.9999	0.9906	**0.9968**	1.0000	1.0000	1.0000	**1.0000**
Philippines	0.9999	0.9999	0.9967	**0.9989**	0.9999	1.0000	0.9967	**0.9989**	1.0000	0.9999	1.0000	**1.0000**
Thailand	0.9995	0.9998	0.9974	**0.9989**	1.0000	0.9998	0.9974	**0.9991**	0.9995	1.0000	1.0000	**0.9998**
Viet Nam	0.9999	0.9990	0.9980	**0.9990**	0.9999	0.9990	0.9980	**0.9990**	1.0000	1.0000	1.0000	**1.0000**
Western Asia												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Armenia	0.9998	0.9999	0.9972	**0.9990**	1.0000	1.0000	0.9972	**0.9991**	0.9998	0.9999	1.0000	**0.9999**
Azerbaijan	0.9995	0.9999	0.9974	**0.9989**	1.0000	0.9999	0.9974	**0.9991**	0.9995	1.0000	1.0000	**0.9998**
Bahrain	0.9996	1.0000	0.9916	**0.9971**	0.9996	1.0000	0.9916	**0.9971**	1.0000	1.0000	1.0000	**1.0000**
Cyprus	1.0000	0.9999	0.9983	**0.9994**	1.0000	0.9999	0.9983	**0.9994**	1.0000	1.0000	1.0000	**1.0000**
Israel	1.0000	1.0000	0.9988	**0.9996**	1.0000	1.0000	0.9988	**0.9996**	1.0000	1.0000	1.0000	**1.0000**
Jordan	0.9997	0.9990	0.9809	**0.9932**	0.9997	0.9990	0.9809	**0.9932**	1.0000	1.0000	1.0000	**1.0000**
Kuwait	1.0000	1.0000	0.9931	**0.9977**	1.0000	1.0000	0.9931	**0.9977**	1.0000	1.0000	1.0000	**1.0000**
Oman	0.9997	0.9974	0.9750	**0.9907**	0.9997	0.9974	0.9750	**0.9907**	1.0000	1.0000	1.0000	**1.0000**
Saudi Arabia	0.9999	0.9948	0.9684	**0.9877**	0.9999	0.9948	0.9684	**0.9877**	1.0000	1.0000	1.0000	**1.0000**
Syrian Arab Rep	0.9999	0.9968	0.9814	**0.9927**	0.9999	0.9968	0.9814	**0.9927**	1.0000	1.0000	1.0000	**1.0000**
Turkey	1.0000	0.9943	0.9890	**0.9944**	1.0000	0.9943	0.9890	**0.9944**	1.0000	1.0000	1.0000	**1.0000**
U. Arab Emirates	1.0000	0.9975	0.9855	**0.9943**	1.0000	1.0000	0.9855	**0.9952**	1.0000	0.9975	1.0000	**0.9992**
Yemen	0.9993	0.9230	0.9310	**0.9511**	0.9993	0.9230	0.9310	**0.9511**	1.0000	1.0000	1.0000	**1.0000**

Table 7. Proposed indexes for European countries in year 2004

Eastern Europe												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Belarus	0.9958	1.0000	0.9980	**0.9979**	1.0000	1.0000	0.9980	**0.9993**	0.9958	1.0000	1.0000	**0.9986**
Bulgaria	0.9998	1.0000	0.9983	**0.9993**	1.0000	1.0000	0.9983	**0.9994**	0.9998	1.0000	1.0000	**0.9999**
Czech Rep	0.9999	1.0000	0.9969	**0.9989**	1.0000	1.0000	0.9969	**0.9990**	0.9999	1.0000	1.0000	**1.0000**
Hungary	0.9992	0.9999	0.9987	**0.9993**	1.0000	1.0000	0.9987	**0.9996**	0.9992	0.9999	1.0000	**0.9997**
Poland	0.9993	0.9999	0.9979	**0.9990**	1.0000	1.0000	0.9979	**0.9993**	0.9993	0.9999	1.0000	**0.9997**
Moldova, Rep.	0.9995	1.0000	0.9952	**0.9982**	1.0000	1.0000	0.9952	**0.9984**	0.9995	1.0000	1.0000	**0.9998**
Romania	0.9996	1.0000	0.9983	**0.9993**	1.0000	1.0000	0.9983	**0.9994**	0.9996	1.0000	1.0000	**0.9999**
Russia	0.9928	0.9999	0.9981	**0.9969**	1.0000	1.0000	0.9981	**0.9994**	0.9928	0.9999	1.0000	**0.9975**
Slovakia	0.9994	1.0000	0.9979	**0.9991**	1.0000	1.0000	0.9979	**0.9993**	0.9994	1.0000	1.0000	**0.9998**
Ukraine	0.9943	1.0000	0.9957	**0.9967**	1.0000	1.0000	0.9957	**0.9986**	0.9943	1.0000	1.0000	**0.9981**
Northern Europe												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Denmark	1.0000	0.9998	0.9995	**0.9998**	1.0000	1.0000	0.9995	**0.9998**	1.0000	0.9998	1.0000	**0.9999**
Estonia	0.9966	0.9997	0.9984	**0.9982**	1.0000	1.0000	0.9984	**0.9995**	0.9966	0.9997	1.0000	**0.9988**
Finland	0.9998	0.9999	0.9993	**0.9997**	1.0000	1.0000	0.9993	**0.9998**	0.9998	0.9999	1.0000	**0.9999**
Iceland	0.9999	0.9997	0.9994	**0.9997**	0.9999	1.0000	0.9994	**0.9998**	1.0000	0.9997	1.0000	**0.9999**
Ireland	1.0000	1.0000	0.9976	**0.9992**	1.0000	1.0000	0.9976	**0.9992**	1.0000	1.0000	1.0000	**1.0000**
Latvia	0.9969	0.9996	0.9987	**0.9984**	1.0000	1.0000	0.9987	**0.9996**	0.9969	0.9996	1.0000	**0.9988**
Lithuania	0.9970	0.9998	0.9990	**0.9986**	1.0000	1.0000	0.9990	**0.9997**	0.9970	0.9998	1.0000	**0.9989**
Norway	1.0000	0.9998	0.9996	**0.9998**	1.0000	1.0000	0.9996	**0.9999**	1.0000	0.9998	1.0000	**0.9999**
Sweden	1.0000	0.9997	0.9997	**0.9998**	1.0000	1.0000	0.9997	**0.9999**	1.0000	0.9997	1.0000	**0.9999**
United Kingdom	1.0000	0.9999	0.9990	**0.9996**	1.0000	1.0000	0.9990	**0.9997**	1.0000	0.9999	1.0000	**1.0000**
Southern Europe												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Albania	1.0000	1.0000	0.9953	**0.9984**	1.0000	1.0000	0.9953	**0.9984**	1.0000	1.0000	1.0000	**1.0000**
Croatia	0.9997	1.0000	0.9988	**0.9995**	1.0000	1.0000	0.9988	**0.9996**	0.9997	1.0000	1.0000	**0.9999**
Greece	1.0000	0.9999	0.9977	**0.9992**	1.0000	1.0000	0.9977	**0.9992**	1.0000	0.9999	1.0000	**1.0000**
Italy	0.9999	0.9999	0.9966	**0.9988**	1.0000	1.0000	0.9966	**0.9989**	0.9999	0.9999	1.0000	**1.0000**
Macedonia TFYR	1.0000	0.9999	0.9963	**0.9987**	1.0000	1.0000	0.9963	**0.9988**	1.0000	0.9999	1.0000	**1.0000**
Malta	0.9998	0.9999	0.9981	**0.9993**	1.0000	1.0000	0.9981	**0.9994**	0.9998	0.9999	1.0000	**0.9999**
Portugal	0.9996	0.9998	0.9985	**0.9993**	1.0000	1.0000	0.9985	**0.9995**	0.9996	0.9998	1.0000	**0.9998**
Slovenia	0.9997	0.9999	0.9971	**0.9989**	1.0000	1.0000	0.9971	**0.9990**	0.9997	0.9999	1.0000	**0.9999**
Spain	1.0000	0.9999	0.9943	**0.9981**	1.0000	0.9999	0.9943	**0.9981**	1.0000	1.0000	1.0000	**1.0000**
Western Europe												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Austria	1.0000	1.0000	0.9963	**0.9988**	1.0000	1.0000	0.9963	**0.9988**	1.0000	1.0000	1.0000	**1.0000**
Belgium	0.9999	1.0000	0.9988	**0.9996**	1.0000	1.0000	0.9988	**0.9996**	0.9999	1.0000	1.0000	**1.0000**
France	0.9997	1.0000	0.9989	**0.9995**	1.0000	1.0000	0.9989	**0.9996**	0.9997	1.0000	1.0000	**0.9999**
Germany	1.0000	1.0000	0.9983	**0.9994**	1.0000	1.0000	0.9983	**0.9994**	1.0000	1.0000	1.0000	**1.0000**
Luxembourg	0.9999	1.0000	1.0000	**1.0000**	1.0000	1.0000	1.0000	**1.0000**	0.9999	1.0000	1.0000	**1.0000**
Netherlands	1.0000	1.0000	0.9988	**0.9996**	1.0000	1.0000	0.9988	**0.9996**	1.0000	1.0000	1.0000	**1.0000**
Switzerland	1.0000	0.9999	0.9987	**0.9995**	1.0000	0.9999	0.9987	**0.9996**	1.0000	1.0000	1.0000	**1.0000**

Table 8. Proposed indexes for Oceanian countries in year 2004

Oceania												
Country	H^{LEB}	H^{EA}	H^{EEI}	**GEIGDE**	H_f^{LEB}	H_f^{EA}	H_f^{EEI}	**FEIGDE**	H_m^{LEB}	H_m^{EA}	H_m^{EEI}	**MEIGDE**
Australia	1.0000	1.0000	0.9993	**0.9998**	1.0000	1.0000	0.9993	**0.9998**	1.0000	1.0000	1.0000	**1.0000**
New Zealand	1.0000	0.9998	0.9992	**0.9997**	1.0000	1.0000	0.9992	**0.9997**	1.0000	0.9998	1.0000	**0.9999**
Papua New Guinea	0.9971	0.9932	0.9982	**0.9962**	0.9971	0.9932	0.9982	**0.9962**	1.0000	1.0000	1.0000	**1.0000**
Tamoa (Western)	0.9998	1.0000	0.9890	**0.9963**	1.0000	1.0000	0.9890	**0.9963**	0.9998	1.0000	1.0000	**0.9999**
Tonga	0.9995	1.0000	0.9945	**0.9980**	0.9995	1.0000	0.9945	**0.9980**	1.0000	1.0000	1.0000	**1.0000**