DEMOS

The Everyday Democracy Index: Technical Appendix

v1.0

31st January 2008

This document provides technical background and additional information relevant to the Everyday Democracy Index

Paul Skidmore, Demos Associate and author, *The Everyday Democracy Index*

Contents

1. Introduction

The Everyday Democracy Index (EDI) was launched by Demos on 31st January 2008. The EDI is a new way of measuring the democratic health of countries. Its initial focus is 25 of the 27 member states of the European Union, although in future its geographical scope may be widened.

The initial results of the EDI and a description of the methodology used to create it were included in the pamphlet *The Everyday Democracy Index*, which is available to download free from the Demos website.

The purpose of this online technical appendix is partly to reiterate that methodology but also to offer some additional information – including the results of various tests of the robustness of the results – which it was not possible to include in the pamphlet itself.

As we noted in the pamphlet, debating the merits and shortfalls of different approaches to measuring democracy has become virtually a sub-field of political science.[1] Yet the results of these debates have been inconclusive.[2] A wide variety of approaches to the construction of indices have been used,[3] and our goal here is to be as transparent as possible about our own approach.

2. Summary of the EDI

The EDI is composed of six dimensions:

1. *Electoral and procedural democracy*: the basic integrity of the formal political system. To what extent does this country get the basics right? To what extent do people value the right to vote that is the foundation of democracy?
2. *Activism and civic participation*: the associational life that surrounds these formal institutions. How vibrant is it?
3. *Aspirations and deliberation*: the broad cultural orientation to democratic practice. How much do people value democracy as a way of solving problems?
4. *Family democracy*: the degree of empowerment in relation to family structures and roles within them. How free are people to choose the kind of

[1] To give one illustration, a fairly recent article reviewing the various indices has itself now been cited 37 times in the International Bibliography of the Social Sciences. Munck, G and J Verkuilen (2002) 'Conceptualizing and measuring democracy: evaluating alternative indices' *Comparative Political Studies*, Vol. 35 No. 1, pp. 5-34, Feb 2002

[2] As Geraint Parry and George Moyser put it, 'There seem to be no entirely uncontestable indices of participation…Rival theories of democracy point to very different evaluations of participation in general and of its sundry components.' Parry, G. and G. Moyser 'More Participation, More Democracy?' in D. Beetham (ed.) (1994) *Defining and Measuring Democracy* (London: SAGE)

[3] See M. Nardo, M. Saisana, A. Saltelli, S. Tarantola, A. Hoffman and E. Giovannini (2005) 'Handbook on Constructing Composite Indicators: Methodology and User Guide', *OECD Statistics Working Papers, 2005/3,* OECD Publishing.doi:10.1787/533411815016

family structure they want? What roles are expected of women and children, and how able are they to define these roles for themselves?

5 *Workplace democracy*: the degree of empowerment in relation to daily working life. How much autonomy do workers have over their tasks? How much creativity can they show? How much can they influence what happens to them in the workplace?

6 *Democratic public services*: the degree of empowerment in public services. What channels for formal control or engagement exist? Do citizens see themselves as 'co-producers' of public services?

Key terms used in this document
The EDI is composed of **six dimensions**. Several **indicators** are used to measure each of these dimensions. A total of **21 indicators** are used.

3. Indicator Codebook

This section provides details of the indicators used in the EDI, their date, source, and how they were coded.

Electoral and Procedural Dimension

1. *ELEC. Average voter turnout in last three national elections.*

Date: Data updated through to September 2007
Sources: International Institute for Democracy and Electoral Assistance; for most recent results, BBC News
Other notes: in countries with presidential and parliamentary elections, averages for both were computed and the higher of the two was counted

2. *VOICE. Score on the "Voice and Accountability" indicator of the World Bank's Worldwide Governance Indicators*

Date: 2007
Source: World Bank
Other notes: original source available at www.govindicators.org

3. *STAB. Score on the "Political Stability and Absence of Violence" indicator of the World Bank's Worldwide Governance Indicators*

Date: 2007
Source: World Bank
Other notes: original source available at www.govindicators.org

4. *RULE. Score on the "Rule of Law" indicator of the World Bank's Worldwide Governance Indicators*

Date: 2007
Source: World Bank
Other notes: original source available at www.govindicators.org

5. *CORR. Score on the "Control of Corruption" indicator of the World Bank's Worldwide Governance Indicators*

Date: 2007
Source: World Bank
Other notes: original source available at www.govindicators.org

Activism and Participation Dimension

6. *BOYCOTT. Percentage of people who claimed to have joined a boycott.*

Date: 1999-2002
Source: World Values Survey
Coding: respondents coded 1 if they said they had joined a boycott, 0 if they had not. National average computed based on all respondents from that country.
Other notes: original survey item as follows – 'Now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things…Joining in boycotts'

7. *PETITION. Percentage of people who claimed to have signed a petition.*

Date: 1999-2002
Source: World Values Survey
Coding: respondents coded 1 if they said they had signed a petition, 0 if they had not. National average computed based on all respondents from that country.
Other notes: original survey item as follows – 'Now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things…Signing a petition'

8. *PROTEST. Percentage of people who claimed to have attended a demonstration.*

Date: 1999-2002
Source: World Values Survey
Coding: respondents coded 1 if they said they had attended lawful demonstrations, 0 if they had not. National average computed based on all respondents from that country.
Other notes: original survey item as follows – 'Now I'd like you to look at this card. I'm going to read out some different forms of political action that people can take, and I'd like you to tell me, for each one, whether you have actually done any of these things…Attending lawful demonstrations'

9. *MEMVOL. Number of civic organisations people claimed to be a member of or to volunteer for.*

Date: 1999-2002
Source: World Values Survey

Coding: the total number of groups that respondents belonged to *or* volunteered for was added together (i.e. no double counting). National average computed based on all respondents from that country.
Other notes: original survey items as follows – (1) 'Please look carefully at the following list of voluntary organisations and activities and say... which, if any, do you belong to?' and (2) 'And for which, if any, are you currently doing unpaid voluntary work?' Questionnaire then lists following categories: 'Social welfare services for elderly, handicapped or deprived people; Religious or church organizations; Education, arts, music or cultural activities; Labor unions; Political parties or groups; Local community action on issues like poverty, employment, housing, racial equality; Third world development or human rights; Conservation, environment, animal rights groups; Professional associations; Youth work (e.g. scouts, guides, youth clubs etc.); Sports or recreation; Women's groups; Peace movement; Voluntary organizations concerned with health; Other groups.'

Deliberation and Aspiration Dimension

10. *SCIENCE. Five point scale measuring commitment to public engagement in science*

Date: 2005
Source: Special Eurobarometer 224, Wave 63.1
Coding: respondents given 1 point for strongly agreeing or agreeing with statement (1) below, 0 otherwise; respondents given 1 point for strongly agreeing or agreeing with statement (2) below, 0 otherwise; respondents given 1 point for answering "regularly" or "occasionally" to question (3) below; respondents given 1 point for answering "regularly" or "occasionally" to *either* question (4) *or* question (5) below. This yielded a score from 0-4. National average then computed for all the respondents from that country.
Other notes: original survey items as follows – (1) 'For people like me it is not important to be involved in decisions about science and technology'; (2) 'Scientists put too little effort into informing the public about their work'; (3) 'How often do you…talk with your friends about science and technology?'; (4) 'How often do you…attend public meetings or debates about science and technology?'; (5) 'How often do you…sign petitions or join street demonstrations about nuclear power, biotechnology or the environment?'

11. *EFFIC. Four point scale that taps the extent to which people feel able and equipped to participate and engage in democratic deliberation*

Date: 2005
Source: Special Eurobarometer 225, Wave 63.1
Coding: respondents coded 1 for strongly agreeing or agreeing with statement (1) below, 0 otherwise; respondents coded 1 for strongly agreeing or agreeing with statement (2) below, 0 otherwise; respondents coded 1 for strongly disagreeing or disagreeing with statement (3) below

Other notes: original survey items as follows – 'For each of the following statements please tell me to what extent you tend to agree or disagree…' (1) 'I think I have something to offer in decisions about politics and current affairs'; (2) 'I know how to get my voice heard when it comes to politics and public affairs issues'; (3) 'People like me have too little influence in what the government does'.

12. AUTH. Five point scale tapping strength of opposition to authoritarian attitudes.
Date: 1999-2002
Source: World Values Survey
Coding: respondents coded 1 for responding 'bad' or 'very bad' to statement (1) below, 0 otherwise; respondents coded 1 for responding 'bad' or 'very bad' to statement (2) below, 0 otherwise; respondents coded 1 for responding 'bad' or 'very bad' to statement (3) below, 0 otherwise; respondents coded 1 for responding 'good' or 'very good' to statement (4) below, 0 otherwise. This yielded a score from 0-4. National average then computed for all the respondents from that country.
Other notes: original survey items as follows – 'I'm going to describe various types of political systems and ask what you think about each as a way of governing this country. For each one, would you say it is a very good, fairly good, fairly bad or very bad way of governing this country?...' (1) 'Having the army rule'; (2) 'Having experts, not government, make decisions according to what they think is best for the country'; (3) 'Having a strong leader who does not need to bother with parliament and elections'; (4) 'Having a democratic political system'.

Families Dimension

13. FAMCHOICE. Four point scale of how permissive the legal environment is to different personal choices about family structure.
Date: 2007
Sources: Mutual Information System on Social Protection (MISSOC); International Gay and Lesbian Association-Europe, ILGA-Europe; BBC.
Coding: countries coded 1 if MISSOC tables refer to an entitlement for widowed cohabitees (i.e. not just spouses) to inherit their partner's pension, 0 otherwise; countries coded 1 if ILGA table refers to a right to gay marriage or civil partnership, 0 otherwise; countries coded 1 if BBC table refers to the availability to women of abortion on demand (i.e. without conditions), 0 otherwise. This yielded a country score from 0-3.
Other notes: original sources available at http://ec.europa.eu/employment_social/spsi/missoc_tables_en.htm; http://www.ilga-europe.org/europe/issues/marriage_and_partnership/same_sex_marriage_and_partnership_country_by_country; http://news.bbc.co.uk/2/hi/europe/6235557.stm

14. CHIVAL. Four point scale of cultural attitudes to children's values
Date: 2005
Source: Special Eurobarometer 225, Wave 63.1

Coding: respondents coded 1 if they described 'independence' as 'very important', 0 otherwise; respondents coded 1 if they described 'responsibility' as 'very important', 0 otherwise; respondents coded 1 if they described 'tolerance and respect' as 'very important', 0 otherwise. This yielded a scale from 0-3. National average then computed for all the respondents from that country.
Other notes: original survey items as follows – 'Here is a list of qualities that children might be encouraged to learn at home. Please indicate for each of them how important you consider it to be.' The list of values was: independence; obedience; hard work; sense of responsibility; imagination; tolerance and respect for other people; thrift, economising and avoiding waste; determination, perseverance.

15. GENDER. Four point scale of cultural attitudes to gender roles.
Date: 2005
Source: Special Eurobarometer 225, Wave 63.1
Coding: respondents coded 1 for agreeing or strongly agreeing with statement (1) below, 0 otherwise; respondents coded 1 for agreeing or strongly agreeing with statement (2) below, 0 otherwise; respondents coded 1 for disagreeing or strongly disagreeing with statement (3) below, 0 otherwise. This yielded a scale from 0-3. National average then computed for all the respondents from that country.
Other notes: original survey items as follows – (1) 'A working mother can establish just as warm and secure a relationship with her children as a mother who does not work'; (2) 'In general, fathers are as well suited to look after their children as mothers'; (3) 'A job is alright but what most women really want is a home and children'.

Democratic public services

16. TAX. Local taxation as a proportion of total taxation.
Date: 1995-2005
Source: Eurostat
Other notes: data available at
http://ec.europa.eu/taxation_customs/taxation/gen_info/economic_analysis/tax_structures/index_en.htm

17. EDUC. Five point scale of user empowerment in education
Date: 2002-3
Sources: Eurydice; Adam Smith Institute
Coding: countries coded 1 if parent governor bodies have decision-making power or a consultative function in at least three of six important areas of school life (the school educational plan or action plan; rules governing everyday school activity; expulsion and suspension of a pupil; decisions regarding teaching content; recruitment of teachers; and termination of teachers' employment), 0 otherwise; countries coded 1 if there are official recommendations to involve pupils in school governing bodies at both primary and secondary level, 0 otherwise; countries coded

1 if "Parents choose a school but the public authorities may intervene if its enrolment capacity is overstretched" or "Parents choose a school, with no action by the public authorities to regulate pupil numbers", 0 otherwise; countries coded 1 if parents have a constitutional right to demand that new schools be created, 0 otherwise. This yielded a 0-4 point country score.
Other notes: data on parent governor bodies from *Key Data on Education in Europe 2005*, pg. 116, Figure B25; data on school choice from *Key Data on Education in Europe 2005*, pg. 70, Figure B5; data on pupil involvement from *Citizenship education at school in Europe*, pg. 29, Figure 3.1; data on parental power to set up schools from M. Justesen (2002) *Learning from Europe: The Dutch and Danish school systems* (London: Adam Smith Institute). Original sources available at http://www.eurydice.org/ressources/eurydice/pdf/0_integral/052EN.pdf; http://www.eurydice.org/ressources/eurydice/pdf/055EN/005_chap3_055EN.pdf www.adamsmith.org/images/uploads/publications/learning-from-europe.pdf

18. HEALTH. Five point scale measuring 'co-production' in health.
Date: 2004
Source: European Social Survey (2nd Round)
Coding: respondents coded 1 for disagreeing or strongly disagreeing with statement (1) below, 0 otherwise; respondents coded 1 for agreeing or strongly agreeing with statement (2) below, 0 otherwise; respondents coded 1 for agreeing or strongly agreeing with statement (3) below, 0 otherwise; respondents coded 1 for agreeing or strongly agreeing with statement (4) below, 0 otherwise. This yielded a scale from 0-4. National average then computed for all the respondents from that country.
Other notes: Data missing for Italy, Latvia, Lithuania, Bulgaria, and Romania. Original survey items as follows – (1) 'I generally feel a bit disappointed when I leave a doctor's surgery without a prescription'; (2) 'When suffering from illnesses like the common cold, people can cure themselves'; (3) 'GPs/regular doctors treat their patients as their equals'; and (4) 'Before doctors decide on a treatment, they discuss it with their patient'.

Workplace

19. INFLUENCE. Four point scale measuring ability to influence the working environment
Date: 2005
Source: European Working Conditions Survey
Coding: respondents coded 1 for answering "always" or "often" to statement (1) below, 0 otherwise; respondents coded 0 for answering "They are set by the company with no possibility for changes" to statement (2) below, 1 otherwise; respondents coded 1 for answering "yes" to statement (3) below, 0 otherwise. This yielded a scale from 0-3. National average then computed for all the respondents from that country.

Other notes: original survey items as follows – (1) 'You have influence over the choice of your working partners'; (2) 'How are your working time arrangements set?'; and (3) 'Over the past 12 months have you been consulted about changes in the organisation of work and/or your working conditions?'

20. AUTONOMY. Four point scale measuring worker autonomy.
Date: 2005
Source: European Working Conditions Survey
Coding: respondents coded 1 for answering "yes" to statement (1), 0 otherwise; respondents coded 1 for answering "yes" to statement (2), 0 otherwise; respondents coded 1 for answering "yes" to statement (3), 0 otherwise. This yielded a scale from 0-3. National average then computed for all the respondents from that country.
Other notes: original survey items as follows – (1) 'Does your main paid job involve: assessing yourself the quality of your own work?'; (2) 'Is your pace of work dependent on the direct control of your boss?'; and (3) 'Are you able to choose or change your methods of work?'

21. CREATIVITY. Four point scale measuring workplace creativity
Date: 2005
Source: European Working Conditions Survey
Coding: respondents coded 1 for answering "always" or "often" to statement (1), 0 otherwise; respondents coded 1 for answering "yes" to statement (2), 0 otherwise; respondents coded 1 for answering "yes" to statement (3), 0 otherwise. This yielded a scale from 0-3. National average then computed for all the respondents from that country.
Other notes: original survey items as follows – (1) 'You are able to apply your own ideas in your work'; (2) 'Does your main paid job involve solving unforeseen problems on your own?'; and (3) 'Does your main paid job involve learning new things?'

4. Formal description of the EDI model[4]

The three key technical issues in the construction of the EDI involve:

- Normalisation – how raw data is manipulated to make it comparable
- Weighting – how much weight is placed on different indicators in calculating a dimension score, and how much weight is placed on different dimension scores in calculating an overall EDI score
- Aggregation – how the normalised, weighted indicators are aggregated into dimension scores, and how these dimension scores are aggregated into an overall EDI score

Formally, the EDI model can therefore be summarised as follows:

[4] I am grateful to Sarah Marr for her assistance with this section.

Values and data
We have a set of countries, each with an EDI value of E_c, where c runs from 1 to 25
Each country has a set of dimensions of value D_{cd}, where d runs from 1 to 6
Each dimension has a set of indicators of value I_{cdi}, where i runs from 1 to the number of indicators for the dimension d (between 3 and 5).

Calculating the indicator values for a dimension (I_{cdi})
Each indicator is calculated from its underlying metric by subtracting the minimum score achieved by any country and dividing by the range:

$$I_{cdi} = \frac{(M_{cdi} - M_{min})}{M_{max} - M_{min}}$$

where

$$\begin{aligned} M_{min} &= \min(\{M_{cdi}\}) \qquad \forall c, \text{ fixed } d, i \\ M_{max} &= \max(\{M_{cdi}\}) \qquad \forall c, \text{ fixed } d, i \end{aligned}$$

This normalises the raw data such that the highest value for a particular metric has an indicator value of 1, the lowest has a value of 0, and the remainder are positioned in the range [0,1] according to their appropriately scaled metrics.

Calculating the dimension values for a country (D_{cd})

Each dimension value is a weighted sum of its underlying indicators, multiplied by 10 to give a score out of 10. That is:

$$D_{cd} = 10 \sum_i W_{di} I_{cdi}$$

where W_{di} are weightings which vary for different indicators, but are the same for each country, and which sum to 1 so that:

$$\sum_i W_{di} = 1$$

W_{di} is calculated by using principal components analysis to derive factor loadings for each indicator, and then rescaling these factor loadings so that they sum to 1. In this way, the weight attached to each indicator is proportional to how closely it is correlated with the underlying dimension it is meant to be measuring.

Note: because the dimension value D_{cd} is a sum of several indicators, its potential range is [0,10] but the maximum value could only be achieved if a country scored 1 on each of the indicators that compose it.

Calculating the EDI value of a country (E_c)

Each EDI value is a weighted sum of its underlying dimensions, to give a total score out of 60. That is:

$$E_c = \sum_d \tilde{W}_d D_{cd}$$

As before, $\tilde{W}_d$ are weightings which vary for different dimensions, but are the same for each country so that:

$$\sum_d \tilde{W}_d = N$$

where N is the total number of dimensions (6). $\tilde{W}_d$ is calculated by using principal components analysis to derive factor loadings for each dimension, and then rescaling these factor loadings so that they sum to 6. In this way, the weight attached to each dimension is proportional to how closely it is correlated with the underlying construct of everyday democracy.

Note: because E_c is a sum of several dimensions, its potential range is [0,60] but the maximum value could only be achieved if a country scored 10 on each of the dimensions that compose it.

5. Robustness checks

In any index, the aggregation rule and weighting scheme will affect the final results, and the EDI is no exception. While the aggregation rule and weighting scheme we have used is justifiable on a range of grounds, the choice nevertheless embodies certain assumptions. For example, using a linear aggregation rule implies that our indicators are perfectly substitutable, when in fact they may be partly complementary – how much you have of one affects how much you have of another. To test the robustness of our results, the following tables show the results of reconstructing the EDI using the same normalised data but with different specifications of the aggregation rule and weighting scheme.

Specifically we compare three aggregation rules:

- Linear (as used in the current version of the EDI)
- Geometric (i.e. dimension scores are multiplied together, rather than added)
- Geometric with diminishing returns (i.e. dimension scores are multiplied together, but small differences in scores count for more at the low end of the range than at the high end)

And three weighting rules:

- PCA (weights derived from principal components analysis, as in the current version of the index)
- Indicators weighted equally within dimensions, and dimensions weighted equally within the overall index
- All 21 indicators weighted equally across the index regardless of dimension

Table 1: Linear aggregation with different weighting schemes								
Indicator weights	PCA[5]	Equal v.1[6]	Equal v. 2[7]	PCA	Equal v.1	Equal v.2	Average variation in scores (% of a std. deviation)[8]	Maximum difference in rankings
Dimension weights	PCA	PCA	PCA	Equal v.3[9]	Equal v.3	Equal v.3		
Sweden	51.66	51.51	51.98	50.96	50.84	51.05	4.6%	1
Denmark	50.73	50.45	50.17	51.16	50.89	50.22	3.4%	1
Netherlands	44.61	44.32	44.60	43.30	42.96	43.12	8.4%	0
Finland	38.74	38.50	39.57	38.25	38.06	38.88	4.2%	0
Luxembourg	35.15	35.44	37.20	34.52	34.81	36.32	7.9%	0
Belgium	33.34	33.55	34.70	32.86	33.08	34.01	5.3%	0
Ireland	32.01	31.67	32.22	31.47	31.11	31.50	4.4%	1
Austria	31.57	31.38	33.87	31.50	31.31	33.45	8.3%	1
UK	31.44	30.84	31.28	31.05	30.45	30.72	5.0%	0
France	29.88	30.05	30.93	29.63	29.81	30.48	3.8%	0
Germany	28.21	28.24	29.62	27.67	27.70	28.90	5.6%	0
Greece	25.26	25.74	25.91	24.41	24.89	25.01	4.6%	1
Spain	24.39	24.29	24.14	24.64	24.54	24.20	1.6%	1
Slovenia	23.69	23.82	23.99	22.68	22.82	22.96	5.4%	1
Italy	22.88	23.13	23.29	22.97	23.20	23.19	2.5%	1
Estonia	22.26	22.37	21.88	22.50	22.63	21.97	2.5%	0
Czech Republic	20.52	20.81	21.16	19.77	20.08	20.38	4.0%	1
Hungary	19.94	20.05	19.67	20.51	20.61	20.02	3.0%	1
Slovakia	18.05	18.16	18.84	18.21	18.31	18.82	3.7%	0
Latvia	17.16	17.64	17.82	16.94	17.44	17.53	3.5%	0
Portugal	16.93	16.95	17.76	16.54	16.58	17.29	3.4%	1
Lithuania	16.04	16.20	15.77	16.64	16.79	16.17	3.4%	1
Poland	13.52	13.41	13.01	13.48	13.37	12.90	2.6%	0
Romania	10.71	10.98	9.78	11.25	11.52	10.23	5.3%	1
Bulgaria	10.33	10.57	9.86	10.43	10.65	9.89	2.8%	1
Average							4.4%	**0.56**

Discussion

Table 1 shows that the impact of the weighting rules is relatively limited when the aggregation rule remains linear. On average, countries scores change by about a twentieth of a standard deviation, and their ranking by just over half a position. Eleven countries do not change position at all under any of the alternative weighting schemes, and the remainder move up or down by a maximum of one position.

[5] PCA = derived using principal components analysis. Note that this column is the current version of the Index

[6] Equal v.1 means that each indicator is equally weighted *within* each dimension; that is, if there are 3 indicators in a dimension, each carries a weight of 0.33, and if there are 4 each carries a weight of 0.25.

[7] Equal v.2 means that each indicator is equally weighted *across* the index as a whole; that is, there are 21 indicators in total and each carries a weight of 0.29 (because the total weight sums to 6). Since this is the case regardless of the number of indicators within each dimension, this effectively means that some dimensions carry more weight than others.

[8] This is calculated by taking the differences in scores under the new weighting schemes compared to the original weighting scheme, averaging them, and expressing the result as a % of a standard deviation in the original scores

[9] Equal v.3 means that each dimension is equally weighted in its contribution to the overall EDI score (i.e. it receives a weight of 1)

Table 2: Geometric aggregation with different weighting schemes							
Indicator weights	PCA	Equal v.1	Equal v. 2	PCA	Equal v.1	Equal v.2	Maximum difference in rankings
Dimension weights	PCA	PCA	PCA	Equal v.3	Equal v.3	Equal v.3	
Denmark	339993	329279	288764	358084	346800	304129	1
Sweden	337346	334523	295368	355296	352323	311084	1
Netherlands	100613	91996	81053	105967	96891	85365	0
Finland	52252	50622	44532	55032	53316	46902	0
Lux'bourg	27193	28652	25430	28640	30177	26783	0
Belgium	23327	24314	21427	24569	25608	22567	0
Ireland	17001	15823	13820	17906	16665	14556	1
UK	16550	14749	12995	17431	15534	13686	1
Austria	14591	14071	14469	15368	14820	15239	1
France	12890	13507	11997	13576	14225	12636	0
Germany	6870	7036	6192	7235	7410	6521	0
Spain	3175	3218	2814	3344	3389	2964	1
Greece	2234	2546	2249	2352	2681	2369	0
Italy	1858	2047	1781	1957	2155	1876	1
Estonia	1286	1347	1179	1354	1419	1242	1
Slovenia	758	817	721	799	860	759	2
Czech Republic	698	802	697	736	845	734	0
Slovakia	673	690	604	708	726	637	1
Latvia	341	424	372	359	447	392	1
Hungary	334	324	285	352	342	300	2
Portugal	233	251	216	245	264	227	0
Lithuania	213	233	206	224	245	216	0
Poland	84	80	71	88	84	75	0
Bulgaria	12	15	13	13	16	14	1
Romania	5	7	6	5	7	6	1
Average							**0.64**

Table 2 reports the results of changing to a geometric aggregation rule – that is, instead of adding the dimension scores together, we multiply them. Instead of being a weighted sum of the dimension scores, the overall EDI score is now a weighted product.

Discussion

Immediately obvious from Table 2 is that the main effect of geometric aggregation is to dramatically stretch the distribution of scores. Intuitively, this is because linear aggregation allows for more second chances – countries can compensate for poor performance on one dimension with better performance elsewhere – whereas geometric aggregation disproportionately awards consistent performers. We know that countries scores across the dimensions tend to be fairly consistent, and this method of aggregation simply reinforces that. That is why, although the gap in *scores* between top and bottom is massively stretched, *rankings* still do not change much under any of the weighting schemes. On average, countries move up or down about two-thirds of a position. Eleven countries do not move, twelve move one place, and just two move two places.

Table 3: Geometric aggregation with diminishing returns & different weighting schemes				
Indicator weights	PCA	Equal v.1	Equal v. 2	Maximum difference in rankings
Dimension weights	PCA	PCA	PCA	
Sweden	4.51	4.51	4.46	0
Denmark	4.45	4.43	4.38	0
Netherlands	3.99	3.96	3.92	0
Finland	3.62	3.61	3.57	0
Luxembourg	3.38	3.40	3.37	0
Belgium	3.31	3.32	3.29	0
Ireland	3.19	3.17	3.13	0
UK	3.17	3.13	3.10	1
Austria	3.10	3.08	3.11	2
France	3.07	3.09	3.06	1
Germany	2.88	2.89	2.86	0
Spain	2.57	2.57	2.55	1
Greece	2.56	2.60	2.57	1
Italy	2.42	2.45	2.42	1
Slovenia	2.33	2.34	2.32	1
Estonia	2.31	2.32	2.29	0
Czech Republic	2.26	2.30	2.27	0
Slovakia	2.15	2.16	2.13	1
Latvia	2.01	2.06	2.04	1
Hungary	1.95	1.94	1.92	3
Portugal	1.94	1.96	1.93	1
Lithuania	1.85	1.87	1.85	0
Poland	1.70	1.69	1.67	0
Bulgaria	1.34	1.37	1.36	1
Romania	1.17	1.22	1.21	1
Average				**0.64**

Table 3 reports the results of specifying a model that displays diminishing returns – that is, where the impact of a 1 point difference on a dimension score is greater at lower values than at higher values. We do this using a geometric aggregation rule that takes the Cobb-Douglas form, with the exponents on the terms summing to less than 1.[10]

Discussion

Table 3 obviously shows a much more compressed distribution of overall scores. But again we see that the impact on relative rankings is limited. On average, countries again move up or down about two-thirds of a place. Twelve do not move position, eleven move one place, one moves two places and only one country, Hungary, jumps significantly – by three places.

Overall conclusions from the robustness checks

The results of these robustness checks suggest that the overall results of the EDI are not unduly sensitive to the choice of aggregation rule and weighting scheme. While

[10] E.g. $WD^{k}WD^{1-k}$, where k, in this case, equals 0.7.

it would be possible to embody different assumptions about the relationships between our indicators by choosing a different method, doing so would not fundamentally change our results.

6. Errata

The following errors in the published version of *The Everyday Democracy Index* have been identified:

Pg. 94: Figure 9 is incorrectly labelled. Data were missing for Italy, as shown by the black bar in the chart but not mentioned in the note beneath the figure, and for Romania, as noted in the text but not illustrated with a black bar in the figure.

Pg 115: Figure 20 is incorrectly labelled. The word "Diversity" is mistakenly included in the title and should not appear there – it appears in the title of a later figure.