The Economist Intelligence Unit's quality-of-life index

The Economist Intelligence Unit has developed a new "quality of life" index based on a unique methodology that links the results of subjective life-satisfaction surveys to the objective determinants of quality of life across countries. The index has been calculated for 111 countries for 2005. This note explains the methodology and gives the complete country ranking.

Quality-of-life indices

It has long been accepted that material wellbeing, as measured by GDP per person, cannot alone explain the broader quality of life in a country. One strand of the literature has tried to adjust GDP by quantifying facets that are omitted by the GDP measure—various non-market activities and social ills such as environmental pollution. But the approach has faced insurmountable difficulties in assigning monetary values to the various factors and intangibles that comprise a wider measure of socio-economic wellbeing.

There have been numerous attempts to construct alternative, non-monetary indices of social and economic wellbeing by combining in a single statistic a variety of different factors that are thought to influence quality of life. The main problem in all these measures is selection bias and arbitrariness in the factors that are chosen to assess quality of life and, even more seriously, in assigning weights to different indicators (measured on a comparable and meaningful scale) to come up with a single synthetic measure. GDP, despite its drawbacks, at least has a clear, substantive meaning and prices are the objective weights for the goods and services that make it up (although there are also very big problems in estimating the purchasing-power parities that have to be used instead of market exchange rates in order to express countries' incomes in the same currency).

Some researchers have invoked the UN's Universal Declaration of Human Rights to identify the factors that need to be included in a quality-of-life measure. But, even if accepted as a starting point, that still does not point to precise indicators or how they are to be weighted. A technocratic and unsatisfying device that is sometimes used is to resort to "expert opinion".

Life-satisfaction surveys

Our starting point for a methodologically improved and more comprehensive measure of quality of life is subjective life-satisfaction surveys (surveys of life satisfaction, as opposed to surveys of the related concept of happiness, are preferred for a number of reasons). These surveys ask people the simple question of how satisfied they are with their lives in general. A typical question on the four-point scale used in the EU's Eurobarometer studies is, "On the whole are you very satisfied, fairly satisfied, not very satisfied, or not at all satisfied with the life you lead?"

The results of the surveys have been attracting growing interest in recent years. Despite a range of early criticisms (cultural non-comparability and the effect of language differences across countries; psychological factors distorting responses), tests have disproved or mitigated most concerns. One objection is that responses to surveys do not adequately reflect how people really feel about their life; they allegedly report how satisfied they are expected to be. But people know very well how satisfied they are. Responses to questions about life satisfaction tend to be prompt; non-response rates are very low. This simple measure of life satisfaction has been found to correlate highly with more sophisticated tests, ratings by others who know the individual, and behavioural measures. The survey results have on the whole proved far more reliable and informative than might be expected.

Another criticism is that life-satisfaction responses reflect the dominant view on life, rather than actual quality of life in a country. Life satisfaction is seen as a judgment that depends on social and culturally specific frames of reference. But this relativism is disproved by the fact that people in different countries report similar criteria as being important for life satisfaction, and by the fact that most differences in life satisfaction across countries can be explained by differences in objective circumstances. In addition, it has been found that the responses of immigrants in a country are much closer to the level of the local population than to responses in their motherland. Answers to questions on satisfaction

in bilingual countries do not reveal any linguistic bias arising from possibly differing meanings and connotations of the words "happiness" and "satisfaction". Self-reports of overall life satisfaction can be meaningfully compared across nations.

The Economist Intelligence Unit's index

So why not just take the survey results completely at face value and use the average score on life satisfaction as the indicator of quality of life for a country? There are several reasons. First, comparable results for a sufficient number of countries tend to be out-of-date and many nations are not covered at all. Second, the impact of measurement errors on assessing the relationship between life-satisfaction perceptions and objective indicators tends to cancel out across a large number of countries. But there might still be significant errors for any given country. So there is a bigger chance of error in assessing quality of life between countries if we take a single average life-satisfaction score as opposed to a multi-component index. Finally, and most important, although most of the inter-country variation in the life-satisfaction surveys can be explained by objective factors, there is still a significant unexplained component which, in addition to measurement error, might be related to specific factors that we would want to net out from an objective quality-of-life index.

Instead we use the survey results as a starting point, and a means for deriving weights for the various determinants of quality of life across countries, in order to calculate an objective index. The average scores from comparable life-satisfaction surveys (on a scale of one to ten) can be assembled for 1999 or 2000 for 74 countries. These scores are then related in a multivariate regression to various factors that have been shown to be associated with life satisfaction in many studies. As many as nine factors survive in the final estimated equation (all except one are statistically significant; the weakest, gender equality, falls just below). Together these variables explain more than 80% of the inter-country variation in life-satisfaction scores. Using so-called Beta coefficients from the regression to derive the weights of the various factors, the most important were health, material wellbeing, and political stability and security. These were followed by family relations and community life. Next in order of importance were climate, job security, political freedom and finally gender equality.

The values of the life-satisfaction scores that are predicted by our nine indicators represent a country's quality-of-life index, or the "corrected" life-satisfaction scores, based on objective cross-country determinants. The coefficients in the estimated equation weight automatically the importance of the various factors; the method also means that the original units or measurement of the various indicators can be used. They do not, unlike for other indices, have to rely on the potentially distortive effect of having to transform all indicators to a common measurement scale. We can also use the estimated equation based on 1999/2000 data to calculate index values for other years or even to forecast an index, thus making it up-to-date and facilitating comparison over time.

Determinants of quality of life

The nine quality-of-life factors, and the indicators used to represent these factors, are:

1. **Material wellbeing**
   GDP per person, at PPP in $. Source: Economist Intelligence Unit
2. **Health**
   Life expectancy at birth, years. Source: US Census Bureau
3. **Political stability and security**
   Political stability and security ratings. Source: Economist Intelligence Unit
4. **Family life**
   Divorce rate (per 1,000 population), converted into index of 1 (lowest divorce rates) to 5 (highest). Sources: UN; Euromonitor
5. **Community life**
   Dummy variable taking value 1 if country has either high rate of church attendance or trade-union membership; zero otherwise. Sources: ILO; World Values Survey
6. **Climate and geography**
   Latitude, to distinguish between warmer and colder climes. Source: CIA World Factbook
7. **Job security**
   Unemployment rate, %. Sources: Economist Intelligence Unit; ILO.
8. **Political freedom**
   Average of indices of political and civil liberties. Scale of 1 (completely free) to 7 (unfree). Source: Freedom House
9. **Gender equality**
   Ratio of average male and female earnings, latest available data. Source: UNDP Human Development Report

A number of other variables were also investigated but, in line with findings in the literature, had no impact in this multivariate framework. These were: education levels, the rate of real GDP growth and income inequality (Gini coefficient). Studies have often found at most a small correlation between education and life satisfaction, over and above any impact that education has on incomes and health, and possibly other variables such as the extent of political freedom. A recent report by the ILO found that an indicator of schooling and training was actually inversely related to wellbeing when jobs are poorly attuned to people's needs and aspirations.

Regression statistics	
Multiple R	0.919
Adjusted R square	0.823
Standard error	0.482
Observations	74

	Coefficients	Standard error	Statistic
Constant	2.7959	0.7890	3.5435
GDP per person	0.00003	0.00001	3.5247
Life expectancy	0.0448	0.0106	4.2299
Political freedom	-0.1052	0.0561	-1.8749
Job security	-0.0217	0.0099	-2.2062
Family life	-0.1878	0.0640	-2.9349
Climate and geography	-1.3534	0.4691	-2.8852
Political stability	0.1519	0.0520	2.9247
Gender equality	0.7423	0.5428	1.3676
Community life	0.3865	0.1237	3.1255

The role of income

The aim is to supplement not supplant real GDP. We find that GDP per person explains more than 50% of the inter-country variation in life satisfaction, and the estimated relationship is linear. Surveys show that even in rich countries people with higher incomes are more satisfied with life than those with lower incomes. In 24 out of 28 countries surveyed by Eurobarometer, material wellbeing is identified as the most important criterion for life satisfaction.

However, over several decades there has been only a very modest upward trend in average life-satisfaction scores in developed nations, whereas average income has grown substantially. There is no evidence for an explanation sometimes proffered for the apparent paradox of increasing incomes and stagnant life-satisfaction scores: the idea that an increase in someone's income causes envy and reduces the welfare and satisfaction of others. In our estimates, the level of income inequality had no impact on levels of life satisfaction. Life satisfaction is primarily determined by absolute, rather than relative, status (related to states of mind and aspirations).

The explanation is that there are factors associated with modernisation that, in part, offset its positive impact. A concomitant breakdown of traditional institutions is manifested in the decline of religiosity and of trade unions; a marked rise in various social pathologies (crime, and drug and alcohol addiction); a decline in political participation and of trust in public authority; and the erosion of the institutions of family and marriage. In personal terms, this has also been manifested in increased general uncertainty and an obsession with personal risk. These phenomena have accompanied rising incomes and expanded individual choice (both of which are highly valued). However, stable family life and community are also highly valued and these have undergone a severe erosion.

2005 quality-of-life index

The coefficients in the equation are used to forecast a quality-of-life index for 2005. Four of the indicators are forecast for 2005 (GDP, life expectancy, unemployment rate, political stability); one (geography) is fixed and the remaining four, which represent slow-changing factors, are based on the latest available data. The table presents values of the forecast index for 2005 for 111 countries. Also in the table are data for GDP per person at PPP.

For *The World in 2005*, Economist.com conducted an electronic survey, with more than 3,000 respondents, on how people rated various factors associated with quality of life (on a scale of one to five). Although the approaches are very different and the Economist.com sample of mainly well-to-do, English speaking and globalised people is rather unrepresentative, it is interesting to compare the implied weightings from the survey responses with those that emerge from our approach (for factors covered in both). There are differences, but they seem much less dramatic than might have been expected, underscoring the assumption of universalist values that underpins our approach.

	Economist.com survey weights	Quality-of-life weights
Material wellbeing	11.5	18.8
Health	15.0	19.0
Family relations	14.3	11.3
Job security	11.9	7.7
Social and community activities	10.9	12.2
Political freedom and security	25.3	26.2
Gender equality	11.1	4.7
	100.0	100.0

Accounting for difference

The framework for calculating quality-of-life indices can be used to decompose and compare the sources of differences in quality of life between countries and regions (the values of the explanatory variables are multiplied by the equation coefficients).

When one understands the interplay of modernity and tradition in determining life satisfaction, it is then easy to see why Ireland ranks a convincing first in the international quality-of-life league table. It successfully combines the most desirable elements of the new—material wellbeing, low unemployment rates, political liberties—with the preservation of certain life satisfaction-enhancing, or modernity-cushioning, elements of the old, such as stable family life and the avoidance of the breakdown of community. Its score on all of these factors are above the eu-15 average, easily offsetting its slightly lower scores on health, climate and gender equality.

The United Kingdom, by contrast, ranks 29th in the world—well below its rank on income per person and bottom among the eu-15 countries. Social and family breakdown is high, offsetting the impact of high incomes and low unemployment. Its performance on health, civil liberties, and political stability and security is also below the eu-15 average. The United States ranks lower on quality of life than on income but it is above the eu-15 average. Italy performs well, but Germany and France do not—belying the notion that the big euro-zone nations compensate for their productivity lag with a better quality of life than in America.

Accounting for differences in quality of life, 2005			
	Ireland score	**UK score**	**US score**
	8.333	**6.917**	**7.615**
EU-15 score	**7.504**	**7.504**	**7.504**
Difference	0.829	-0.587	0.111
Material wellbeing	0.179	0.010	0.321
Health	-0.054	-0.017	-0.047
Political freedom	0.028	-0.025	0.028
Job security	0.061	0.039	0.034
Family life	0.426	-0.326	-0.326
Climate and geography	-0.049	-0.064	0.177
Political stability	0.105	-0.100	-0.373
Gender equality	-0.098	0.050	0.065
Community life	0.232	-0.155	0.232
Total	**0.829**	**-0.587**	**0.111**

Worldwide quality-of-life index, 2005 (Score on a scale from 1 to 10)

	Quality of life Score	Rank	GDP per person $ (at PPP)	Rank	Difference in ranks		Quality of life Score	Rank	GDP per person $ (at PPP)	Rank	Difference in ranks
Ireland	8.333	1	36,790	4	3	Bulgaria	6.162	57	8,664	59	2
Switzerland	8.068	2	33,580	7	5	Romania	6.105	58	8,252	60	2
Norway	8.051	3	39,590	3	0	Venezuela	6.089	59	4,771	79	20
Luxembourg	8.015	4	54,690	1	-3	China	6.083	60	6,270	74	14
Sweden	7.937	5	30,590	19	14	Vietnam	6.080	61	2,890	97	36
Australia	7.925	6	31,010	14	8	Bahrain	6.035	62	17,670	34	-28
Iceland	7.911	7	33,560	8	1	Lithuania	6.033	63	13,758	41	-22
Italy	7.810	8	27,960	23	15	Jamaica	6.022	64	4,200	84	20
Denmark	7.796	9	32,490	10	1	Morocco	6.018	65	4,660	80	15
Spain	7.727	10	25,370	24	14	Latvia	6.008	66	11,862	47	-19
Singapore	7.719	11	32,530	9	-2	Oman	5.916	67	12,040	45	-22
Finland	7.618	12	29,650	20	8	Estonia	5.905	68	14,800	39	-29
United States	7.615	13	41,529	2	-11	United Arab Emirates	5.899	69	18,330	33	-36
Canada	7.599	14	34,150	5	-9	Libya	5.849	70	10,060	53	-17
New Zealand	7.436	15	25,110	25	10	Indonesia	5.814	71	3,840	90	19
Netherlands	7.433	16	30,920	15	-1	Saudi Arabia	5.767	72	11,110	49	-23
Japan	7.392	17	30,750	16	-1	India	5.759	73	3,290	96	23
Hong Kong	7.347	18	31,660	11	-7	Paraguay	5.756	74	3,600	95	21
Portugal	7.307	19	19,530	31	12	Jordan	5.675	75	4,510	83	8
Austria	7.268	20	31,420	12	-8	Nicaragua	5.663	76	2,600	99	23
Taiwan	7.259	21	28,070	22	1	Bangladesh	5.646	77	1,660	105	28
Greece	7.163	22	22,340	27	5	Albania	5.634	78	5,260	78	0
Cyprus	7.097	23	20,500	30	7	Dominican Republic	5.630	79	6,610	72	-7
Belgium	7.095	24	30,660	17	-7	Egypt	5.605	80	3,930	88	8
France	7.084	25	30,640	18	-7	Algeria	5.571	81	5,770	76	-5
Germany	7.048	26	28,250	21	-5	Bolivia	5.492	82	3,680	94	12
Slovenia	6.986	27	21,892	28	1	Tunisia	5.472	83	7,910	64	-19
Malta	6.934	28	18,710	32	4	Serbia and Montenegro	5.428	84	6,079	75	-9
United Kingdom	6.917	29	31,150	13	-16	Armenia	5.422	85	3,993	87	2
Korea, South	6.877	30	23,360	26	-4	Azerbaijan	5.377	86	4,628	81	-5
Chile	6.789	31	12,120	44	13	Georgia	5.365	87	3,841	89	2
Mexico	6.766	32	10,000	54	22	Iran	5.343	88	7,630	65	-23
Barbados	6.702	33	16,632	36	3	Macedonia	5.337	89	7,499	66	-23
Czech Republic	6.629	34	17,600	35	1	Guatemala	5.321	90	4,050	85	-5
Costa Rica	6.624	35	9,000	56	21	Honduras	5.250	91	2,740	98	7
Malaysia	6.608	36	10,450	51	15	South Africa	5.245	92	10,810	50	-42
Hungary	6.534	37	16,047	37	0	Pakistan	5.229	93	2,340	101	8
Israel	6.488	38	21,310	29	-9	Bosnia and Hercegovina	5.218	94	7,020	70	-24
Brazil	6.470	39	8,760	58	19	Ghana	5.174	95	2,560	100	5
Argentina	6.469	40	13,350	42	2	Kazakhstan	5.082	96	8,090	63	-33
Qatar	6.462	41	33,840	6	-35	Syria	5.052	97	3,810	91	-6
Thailand	6.436	42	8,140	62	20	Ukraine	5.032	98	6,500	73	-25
Sri Lanka	6.417	43	3,810	91	48	Moldova	5.009	99	2,280	102	3
Philippines	6.403	44	4,580	82	38	Belarus	4.978	100	7,200	68	-32
Slovakia	6.381	45	15,513	38	-7	Uganda	4.879	101	1,450	108	7
Uruguay	6.368	46	8,869	57	11	Turkmenistan	4.870	102	7,142	69	-33
Panama	6.361	47	6,760	71	24	Kyrgyz Republic	4.846	103	2,044	103	0
Poland	6.309	48	12,825	43	-5	Botswana	4.810	104	10,400	52	-52
Croatia	6.301	49	11,870	46	-3	Russia	4.796	105	9,810	55	-50
Turkey	6.286	50	8,209	61	11	Uzbekistan	4.767	106	1,808	104	-2
Trinidad and Tobago	6.278	51	11,720	48	-3	Tajikistan	4.754	107	1,226	109	2
Ecuador	6.272	52	4,030	86	34	Nigeria	4.505	108	960	110	2
Peru	6.216	53	5,730	77	24	Tanzania	4.495	109	672	111	2
Colombia	6.176	54	7,330	67	13	Haiti	4.090	110	1,470	107	-3
Kuwait	6.171	55	14,550	40	-15	Zimbabwe	3.892	111	1,500	106	-5
El Salvador	6.164	56	3,780	93	37						