

Statistical Appendix for Chapter 2 of World Happiness Report 2020

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1 Data Sources and Variable Definitions

- Happiness score or subjective well-being (variable name *ladder*): The survey measure of SWB is from the Feb 28, 2020 release of the Gallup World Poll (GWP) covering years from 2005 to 2019. Unless stated otherwise, it is the national average response to the question of life evaluations. The English wording of the question is “Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?” This measure is also referred to as *Cantril life ladder*, or just *life ladder* in our analysis.
- The statistics of GDP per capita (variable name *gdp*) in purchasing power parity (PPP) at constant 2011 international dollar prices are from the November 28, 2019 update of the World Development Indicators (WDI). The GDP figures for Taiwan, Syria, Palestine, Venezuela, and Djibouti, up to 2017, are from the Penn World Table 9.1.
 - GDP per capita in 2019 are not yet available as of December 2019. We extend the GDP-per-capita time series from 2018 to 2019 using country-specific forecasts of real GDP growth in 2019 first from the OECD Economic Outlook No 106 (Edition November 2019) and then, if missing, forecasts from World Bank’s Global Economic Prospects (Last Updated: 06/04/2019). The GDP growth forecasts are adjusted for population growth with the subtraction of 2017-18 population growth as the projected 2018-19 growth.
- Healthy Life Expectancy (HLE). Healthy life expectancies at birth are based on the data extracted from the World Health Organization’s (WHO) Global Health Observatory data repository. The data at the source are available for the years 2000, 2005, 2010, 2015 and 2016. To match this report’s sample period (2005-2019), interpolation and extrapolation are used.

- Social support (or having someone to count on in times of trouble) is the national average of the binary responses (either 0 or 1) to the GWP question “If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?”
- Freedom to make life choices is the national average of responses to the GWP question “Are you satisfied or dissatisfied with your freedom to choose what you do with your life?”
- Generosity is the residual of regressing national average of response to the GWP question “Have you donated money to a charity in the past month?” on GDP per capita.
- Corruption Perception: The measure is the national average of the survey responses to two questions in the GWP: “Is corruption widespread throughout the government or not” and “Is corruption widespread within businesses or not?” The overall perception is just the average of the two 0-or-1 responses. In case the perception of government corruption is missing, we use the perception of business corruption as the overall perception. The corruption perception at the national level is just the average response of the overall perception at the individual level.
- Positive affect is defined as the average of three positive affect measures in GWP: happiness, laugh and enjoyment in the Gallup World Poll waves 3-7. These measures are the responses to the following three questions, respectively: “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Happiness?”, “Did you smile or laugh a lot yesterday?”, and “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Enjoyment?” Waves 3-7 cover years 2008 to 2012 and a small number of countries in 2013. For waves 1-2 and those from wave 8 on, positive affect is defined as the average of laugh and enjoyment only, due to the limited availability of happiness.
- Negative affect is defined as the average of three negative affect measures in GWP. They are worry, sadness and anger, respectively the responses to “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Worry?”, “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Sadness?”, and “Did you experience the following feelings during A LOT OF THE DAY yesterday? How about Anger?”
- Gini of household income reported in the Gallup World Poll (variable name *giniIncGallup*). The income variable is described in Gallup’s “WORLDWIDE RESEARCH METHODOLOGY AND CODEBOOK” (Updated July 2015) as “Household Income International Dollars [...] To calculate income, respondents are asked to report their household income in local currency. Those respondents who have difficulty answering the question are presented a set of ranges in local

currency and are asked which group they fall into. Income variables are created by converting local currency to International Dollars (ID) using purchasing power parity (PPP) ratios.” The gini measure is generated using STATA command *ineqdec0* by WP5-year with sample weights.

- GINI index from the World Bank (variable name *giniIncWB* and *giniIncWBavg*) from the World Development Indicators. The variable labeled at the source as “GINI index (World Bank estimate)”, series code “SI.POV.GINI”. According to the source, the data source is “World Bank, Development Research Group. Data are based on primary household survey data obtained from government statistical agencies and World Bank country departments.” The variable *giniIncWB* is an unbalanced panel of yearly index. The data availability is patchy at the yearly frequency. The variable *giniIncWBavg* is the average of *giniIncWB* in the period 2000-2017. The average does not imply that a country has the gini index in all years in that period. In fact, most do not.

2 Coverage, Summary Statistics and Regression Tables

WP5 is GWP’s coding of countries including some sub-country territories such as Hong Kong. Not all the countries and territories appear in all the years. Our analysis does not cover all of the country/territories that have valid happiness scores. Tables 1-5 show the WP5-year pairs that are covered.

The 2017-2019 ranking of happiness scores includes 153 countries/territories that have the happiness scores in the 2017-2019 period.

To appear in regression analysis that uses data from outside the GWP survey, a WP5-year needs to have the necessary external information (GDP, healthy life expectancy, etc). The regression analysis thus does not necessarily cover all of the countries/territories in the GWP. Nor does it necessarily cover all the countries/territories that are ranked by their happiness scores in this report. The underlying principle is that we always use the largest available sample. For different kind of analysis/ranking, the largest available samples can be different.

Regions: Some of the analysis includes dummy indicator for regions, namely Western Europe, Central and Eastern Europe, Commonwealth of Independent States, Southeast Asia, South Asia, East Asia, Latin America and Caribbean, North America and ANZ, Middle East and North Africa, and Sub-Saharan Africa. A later set of tables list individual countries by their region grouping.

3 Imputed Missing Values in Our Exercise of Explaining Ladder Scores with Six Factors

We do not make use of any imputed missing values in any of our headline results including the happiness rankings and all the regression outputs. The only place where we make use of imputation is when we try to decompose a country’s average ladder score into components explained by six hypothesized underlying determinants (GDP per person, healthy life expectancy, social support, perceived freedom to make life choice, generosity and perception of corruption). A small number of countries have missing values in one or more of these factors. The most prominent is about the perception of corruption in businesses and governments. In several countries, the relevant questions were not asked in the Gallup World Poll. For these countries we impute the missing values using the “control of corruption” indicator from the Worldwide Governance Indicators (WGI) project. Specifically, the imputed value is calculated as the predicted value using estimates from a model that regresses Gallup World Poll’s perception of corruption on WGI’s control of corruption. In all, 9 countries, listed in a later table, have the measure of corruption perception imputed in this way.

In a few cases, countries are missing one or more of the happiness factors over the survey period 2017-2019, but the information is available in earlier years; for example they may have GDP statistics in 2015 but not in the period from 2017 to 2019. In this case we use the most recent information as if they are the 2017-2019 information. There is a limit of 3 years for how far back we go in search of those missing values.

A few territories/countries do not have data on healthy life expectancy in the World Health Organization’s (WHO) Global Health Observatory data repository. For Hong Kong, we calculate the health life-to-life expectancy ratio using estimates reported in “Healthy life expectancy in Hong Kong Special Administrative Region of China,” by C.K. Law, & P.S.F. Yip, published at the *Bulletin of the World Health Organization*, 2003, 81 (1). The same ratio information for Swaziland in the period 2005-2010 can be found in “Healthy life expectancy for 187 countries, 1990 - 2010: a systematic analysis for the Global Burden Disease Study 2010,” by Joshua A Salomon et al, *The Lancet*, Volume 380, Issue 9859. We then multiply the ratios for Hong Kong and Swaziland, respectively, with their life expectancy time series in the WDI to get the health life expectancy up to 2017. The time series is then extrapolated to 2019. The Lancet article also provides information for Taiwan and the Palestinian Territories. But the WDI does not provide life expectancy data for these two regions. For these two, we use their 2010 healthy life expectancy data as if they are the 2017-2019 value. For Kosovo, we adjust its time series of life expectancy (available in the World Development Indicators) to a time series of health life expectancy by assuming that its health life-to-life expectancy ratio equals to the world average.

Northern Cyprus is missing GDP per capita, Healthy, life expectancy, as well as the measure of Generosity; we use the statistics of Cyprus instead.

Table 1: Number of ladder (WP16) observations for WP5-years - Part 1

Country/territory (ID)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
United States (1)		1001	1225	1004	1003	1005	1008	2094	1005	2048	1019	1032	1013	1004	1026
Egypt (2)	999		1024	1105	2112	2053	5296	4186	1149	1000	1000	1000	1000	1000	2070
Morocco (3)						1006	1001	3000	1007		2050	1008	1006	1001	1015
Lebanon (4)	996	1000		1000	2010	2027	2007	2013	1000	1000	1000	1000	1000	1000	1040
Saudi Arabia (5)	1004		1006	1150	2052	2038	2022	1077	2036	2035	1012	1000	1002	1003	1045
Jordan (6)	1000		1016	1007	2016	2000	2000	2000	1000	1000	1000	1000	1012	1002	1001
Syria (7)				1209	2100	2035	2041	2043	1022		1002				
Turkey (8)	995		1001	1004	999	1000	1001	2000	1000	2003	1002	1001	1000	1000	2059
Pakistan (9)	1001		1502	2484	3122	1030	1000	3012	1000	1000	1000	1000	1600	1000	
Indonesia (10)		1180	1000	1050	1080	1080	1000	3000	1000	1000	1000	1000	1000	1000	2192
Bangladesh (11)		1048	1200	1000	1000	1000	1000	3000	1000	1000	1000	1000	1000	1000	3072
United Kingdom (12)	1037		1204	1001	1002	1000	9239	13408	750	2000	1000	1000	1000	1000	1025
France (13)	1002	1220		1006	1000	1004	1001	2005	751	2000	1000	1000	1000	1000	1025
Germany (14)	1001		1221	3016	2010	1007	9105	13269	751	2014	1000	2000	1000	1000	1025
Netherlands (15)	1000		1000	1000		1001	1000	1000	751	2002	1003	1000	1001	1002	1029
Belgium (16)	1003		1022	1002		1003	1002	1001	1006	2004	1037	1000	1001	1011	1025
Spain (17)	1000		1004	1009	1005	1000	1006	2003	1004	2000	1000	1000	1000	1000	1025
Italy (18)	1002		1008	1008	1005	1000	1005	2007	1004	2000	1000	1000	1000	1000	1025
Poland (19)	1000		1000		1000	2000	1029	1000	1000	1000	1000	1000	1000	1000	1080
Hungary (20)	1025		1010		1008	1008	1014	1004	1019	1003	1000	1000	1000	1000	1080
Czech Republic (21)	1001		1072			2082	1000	1005	1001	1008	1000	1000	1000	1000	
Romania (22)	1022		1000		1000	1000	1008	1000	1000	998	1001	1001	1001	1002	1080
Sweden (23)	1000		1001	1000	1002	1002	1006	1000	750	2001	1000	1000	1000	1001	1025
Greece (24)	1002		1000		1000	1000	1000	1000	1003	1000	1000	1000	1000	1000	1080
Denmark (25)	1004		1009	1001	1000	1000	1005	1001	753	2002	1005	1000	1000	1000	1025
Iran (26)	1300		1004	1040			1003	3507	1000	2009	1001	1000	1000	1002	1058
Hong Kong S.A.R. of China (27)		800		751	755	756	1028	1006		2017		1005	1007		1004
Singapore (28)		1095	1000	2551	1005	1001	1000		1000	1000	1000	1000	1000	1000	1040
Japan (29)			1150	3000	1000	1000	1000	2000	1001	2006	1003	1003	1002	1003	1023
China (30)	1000	3730	3733	3712	3833	4151	4220	9413	4244	4696	4265	4373	4141	3649	3709
India (31)		2100	3186	2000	3010	6000	3518	10080	5540	3000	3000	3000	3000	3000	6643
Venezuela (32)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Brazil (33)	1029		1038	1032	1031	1043	1042	1002	2006	1007	1004	1001	1000	1000	3001

Table 2: Number of ladder (WP16) observations for WP5-years - Part 2

Country/territory (ID)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mexico (34)	1007		999	1000	1000	1000	1000	2000	1000	1017	1031	1000	1000	1034	1001
Nigeria (35)		1000	1000	1000	1000	1000	1000	2000	1002		1000	1000	1000	1000	3000
Kenya (36)		1000	1000	2200	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1001
Tanzania (37)		1000	1000	1000	1000	1000	1000	1000	1008	1008	1000	1000	1000	1000	1000
Israel (38)		1002	1001	1001	1000	1000	1000	1000	1000	1000	1000	1000	1000	1010	
Palestinian Territories (39)		1000	1000	1000	2014	2000	2000	2000	1000	1000	1000	1000	1000	1000	1090
Ghana (40)		1000	1000	1000	1000	1000	1000	1000	1008	1000	1000	1000	1000	1000	1010
Uganda (41)		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Benin (42)		1000		1000			1000	1000	1000	1000	1000	1000	1000	1000	1000
Madagascar (43)		1000		1000			1000	1000	1008	1008	1000	1000	1000	1000	1000
Malawi (44)		1000	1000		1000		1000	1000	1000	1000	1000	1000	1000	1000	1000
South Africa (45)		1001	1000	1000	1000	1000	1000	2000	1000	1000	1000	1000	1000	1000	1060
Canada (46)	1355		1010	1005	1011	1007	1013	2003	1021	2025	1011	1016	1005	1009	1031
Australia (47)	1000		1205	1005		1000	1010	1002	1002	2002	1001	1004	1003	1001	1047
Philippines (48)		1200	1000	1000	1000	1000	1000	2000	1000	1000	1000	1000	1000	1000	2090
Sri Lanka (49)		1033	1000	1000	1000	1030	1000	2031	1030	1062	1062		1104	1109	1083
Vietnam (50)		1023	1015	1016	1008	1000	1000	2000	1017	1000	1000	1039	1002	1012	2000
Thailand (51)		1410	1006	1038	1019	1000	1000	2000	1000	1000	1000	1000	1000	1000	2000
Cambodia (52)		1000	1000	1024	1000	1000	1000	1000	1000	1000	1000	1000	1600	1000	1000
Laos (53)		1001	1000	1000			1000	1000					1000	2504	1070
Myanmar (54)								1020	1020	1020	1020	1020	1600	1000	1100
New Zealand (55)		1028	750	750		750	1000	1008	500	2001	1007	1004	1001	1001	1042
Angola (56)							1000	1000	1000	1000					
Botswana (57)		1000		1000		1000	1000	1000	1000	1000	1000	1000	1000	1002	1114
Ethiopia (60)								1500	1000	1004	1000	1000	1000	1000	2222
Mali (61)		1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1130
Mauritania (62)			1000	1000	1984	2000	2000	1000	1008	1000	1000	1000	1000	1000	1100
Mozambique (63)		1000	1000	1000			1000				1000		1000	1000	1000
Niger (64)		1000	1000	1000	1000	1000	1000	1000	1008	1008	1000	1000	1000	1000	1000
Rwanda (65)		1504		1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000
Senegal (66)		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Zambia (67)		1001	1000	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000
South Korea (68)		1100	1000	1000	1000	1000	1001	2000	1000	2000	1000	1000	1000	1015	1016

Table 3: Number of ladder (WP16) observations for WP5-years - Part 3

Country/territory (ID)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Taiwan Province of China (69)	1002			1000		1000	1001	1000	1000	2000	1000	1000	1000	1000	1030
Afghanistan (70)				1010	2000	1000	1000	2000	1000	1000	1000	1000	1000	1000	1127
Belarus (71)	1092	1114		1091	1077	1013	1007	1052	1032	1036	1034	1039	1053	1061	1128
Georgia (72)	1000	1000		1080	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Kazakhstan (73)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Kyrgyzstan (74)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Moldova (75)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Russia (76)	2011	2949		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Ukraine (77)	1102	1066		2019	2042	4000	2000	3000	2000	2000	2000	2000	2000	2000	1080
Burkina Faso (78)	1000	1000		1074	1081	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Cameroon (79)	1000	1000		1000	1000	1200	1000	1000	1008	1000	1000	1000	1000	1000	1000
Sierra Leone (80)	1000	1000		1000	1000	1000	1000	1000	1008	1008	1000	1000	1000	1000	1133
Zimbabwe (81)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1082
Costa Rica (82)	1002	1002		1000	1000	1006	1000	1000	1000	1000	1000	1000	1000	1000	1000
Albania (83)		981		1000	1000	1000	1006	1029	1035	999	1000	999	1000	1000	1080
Algeria (84)						1000	2001	2027	1002	1002	1000	1001	1016	1000	1100
Argentina (87)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1060
Armenia (88)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Austria (89)	1004			1001		2000	1004	1001	1000	2000	1000	1000	1000	1000	1025
Azerbaijan (90)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Bahrain (92)					2128	2032	2010	1000	1002	1005	2004	1010	1064		
Belize (94)			502							504					
Bhutan (95)									1000	1020	1020				
Bolivia (96)	1000	1000		1003	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Bosnia and Herzegovina (97)			2002		1002	1000	1009	1005	1010	1001	1000	1000	1000	1000	1080
Bulgaria (99)			1003			2000	1006	1000	1000	1000	1000	1000	1000	1001	1080
Burundi (100)				1000	1000		1000			1000				1000	
Central African Republic (102)			1000			1000	1000					1000	1000		
Chad (103)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1111
Chile (104)	1007	1023		1108	1009	1007	1009	1003	1001	1032	1040	1008	1040	1000	1060
Colombia (105)	1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Comoros (106)					2000	2000	2000	1000						1000	1000
Congo (Kinshasa) (107)					1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

Table 4: Number of ladder (WP16) observations for WP5-years - Part 4

Country/territory (ID)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Congo Brazzaville (108)				1000			1000	500	1000	1000	1000	1000	1000	1000	1090
Croatia (109)			1000		1009	1029	1029	1000	1000	1000	1000	1000	1000	1000	1080
Cuba (110)	1000														
Cyprus (111)	1000				502	1005	1005	500	500	2000	1029	1006	1008	1026	1043
Djibouti (112)				1000	2000	1000	1000								
Dominican Republic (114)				1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1078
Ecuador (115)	1067	1061	1001	1001	1000	1000	1003	1003	1000	1000	1000	1000	1000	1000	1000
El Salvador (116)	1000	1001	1000	1000	1006	1001	1000	1000	1000	1000	1000	1000	1000	1000	1080
Estonia (119)	1003	1001	1001	601	608		1007	1004	1010	1000	1000	1000	1000	1000	1080
Finland (121)	1010			1005		1000	1000	1000	750	2001	1000	1000	1000	1000	1025
Gabon (122)							1000	1000	1008	1008	1000	1000	1000	1000	1070
Guatemala (124)	1021	1000	1000	1000	1015	1014	1000	1000	1000	1000	1000	1000	1000	1000	1100
Guinea (125)							1000	1000	1008	1000	1000	1000	1000	1000	1140
Guyana (127)			501												
Haiti (128)	505			500		504	504	504	504	504	504	504	504	500	
Honduras (129)	1000	1000	1000	1000	1002	1000	1002	1000	1000	1000	1000	1000	1000	1000	1000
Iceland (130)				502				1002	502		596	529	500		504
Iraq (131)				990	2001	2000	2000	2000	1003	2010	1009	1011	1000	1000	
Ireland (132)				1001	500	1001	1000	1000	1000	2000	1000	1000	1000	1000	1025
Ivory Coast (134)					1000				1008	1000	1000	1000	1000	1000	1000
Jamaica (135)	543						506		504	504			504		
Kuwait (137)	1000				2002	2004	2000	1000	1008	1013	2000	1000	1000		2023
Latvia (138)	1000	1017		513	515		1006	1001	1000	1002	1001	1019	1002	1021	1080
Lesotho (139)							1000					1000	1000		1000
Liberia (140)			1000	1000		1000				1000	1000	1000	1000	1000	1000
Libya (141)								1002			1006	1001	1007	1004	1040
Lithuania (143)															
Luxembourg (144)	1015	1007		506	500	1001	1000	1000	1000	1000	1000	1000	1000	1000	1080
North Macedonia (145)					500	1002	1000	1001	500	2000	1000	1000	1000	1000	1025
Malaysia (146)			1042		1008	1000	1018	1025	1020	1000	1024	1024	1008	1008	1080
Maldives (147)	1012	1233	1000		1011	1000	1000	1000	1000	2008	1002			1000	1060
Malta (148)					508	1008	1004	1004	500	2013	1002	1011	1004	1010	1027
Mauritius (150)							1000			1000		1000	1000	1000	1059

Table 5: Number of ladder (WP16) observations for WP5-years - Part 5

Country/territory (ID)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Mongolia (153)			1000	1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1070
Montenegro (154)			834		1003	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Namibia (155)			1000							1000			1000	1005	1002
Nepal (157)		1002	1000	1003	1002	1000	1000	2000	1050	1050	1000	1000	1000	1000	2095
Nicaragua (158)		1001	1000	1000	1012	1000	1003	1000	1000	1000	1000	1000	1000	1000	1080
Norway (160)		1001		1000				1004		2000	1005	2000	1000	1000	1025
Oman (161)							2016								
Panama (163)		1005	1000	1004	1018	1000	1000	1001	1000	1000	1000	1000	1000	1000	1080
Paraguay (164)		1001	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	2000		1079
Peru (165)		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Portugal (166)		1007		1002		2002	1000	1001	1001	2020	1021	1008	1000	1003	1026
Puerto Rico (167)		500								500					
Qatar (168)					2028	1000	1032	2000			1000				
Serbia (173)			1556		1008	1000	1001	1023	1030	1000	1000	1000	1000	1000	1080
Slovakia (175)		1018				1007	1012	1007	1004	1000	1000	1000	1000	1000	1080
Slovenia (176)		1009			500	1002	1001	1000	1001	2020	1002	1000	1000	1000	1025
Somalia (178)										1000	1000	1191			
Sudan (181)					1784	1808	2000	1000		1000					
Suriname (182)								504							
Eswatini (183)							1000							1000	1110
Switzerland (184)		1000			1003			1000		2010	501	1000	1000	1000	1025
Tajikistan (185)		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	3000	1080
The Gambia (186)													1000	1000	1120
Togo (187)		1000		1000			1000			1000	1000	1000	1000	1000	1130
Trinidad and Tobago (189)		508		502			504		504				504		
Tunisia (190)					1006	2085	2034	2053	1053	1056	1000	1001	1001	1001	1000
Turkmenistan (191)					1000		1000	1000	1000	1000	1000	1000	1000	1000	1089
United Arab Emirates (193)		1013			2054	2066	2036	2016	1000	1002	2903	1855	1850	1857	1413
Uruguay (194)		1004	1004	1005	1000	1000	1000	1009	1000	1000	1000	1000	1000	1000	1080
Uzbekistan (195)		1000		1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1080
Yemen (197)			1000		2000	2000	2000	2000	1000	1000	1000	1000	1000	1000	1140
Kosovo (198)			1046	1047	1000	1017	1047	1024	1000	1001	1000	1000	1000	1000	1088
Somaliland region (199)					2000	2000	2000	1000							
Northern Cyprus (202)								500	502	2004	1000	1000		1000	1050
South Sudan (205)										1000	1000	1000	1000		

Figure 1: County-by-country trajectory plots - part 1

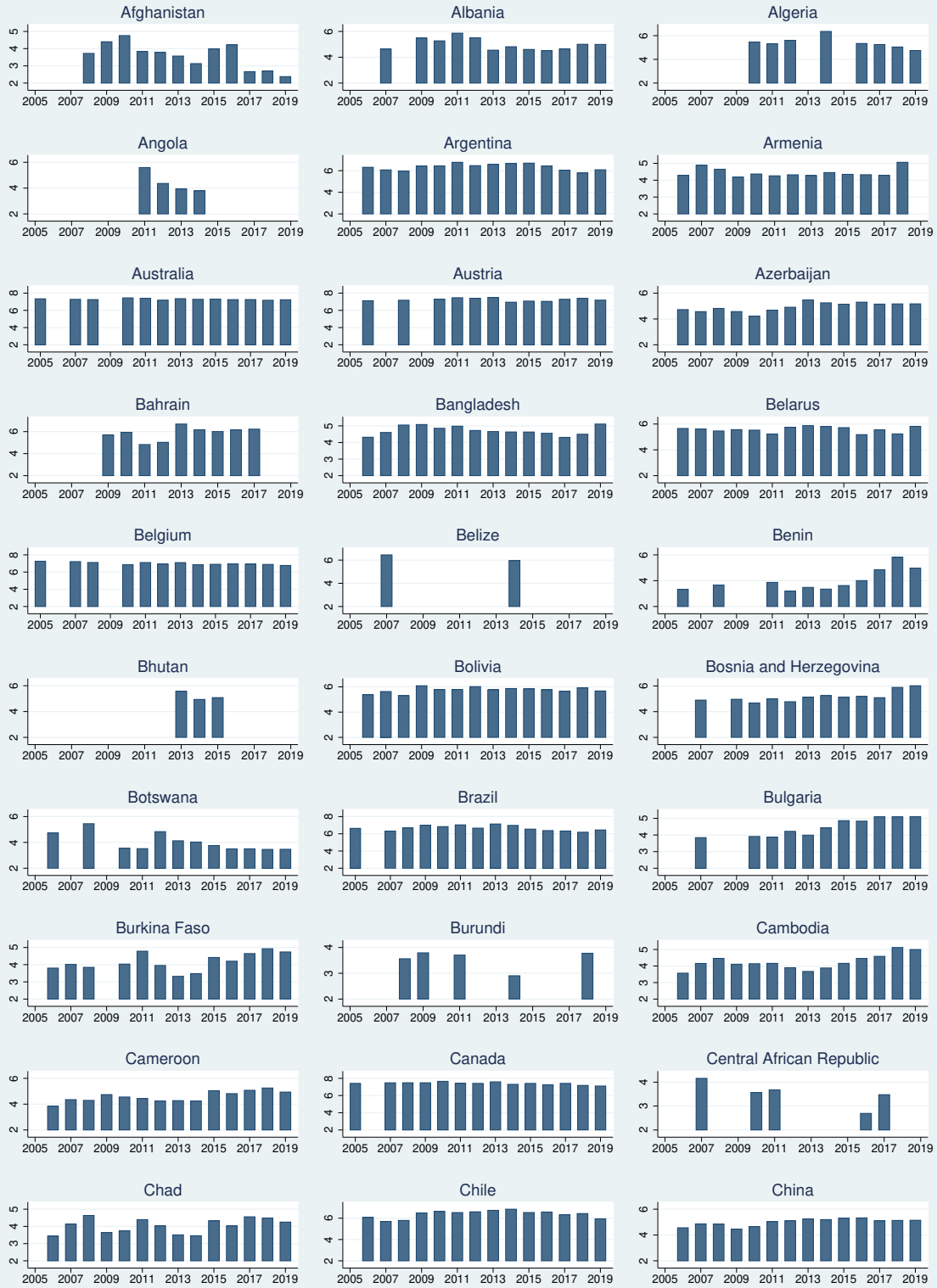


Figure 2: County-by-country trajectory plots - part 2



Figure 3: County-by-country trajectory plots - part 3

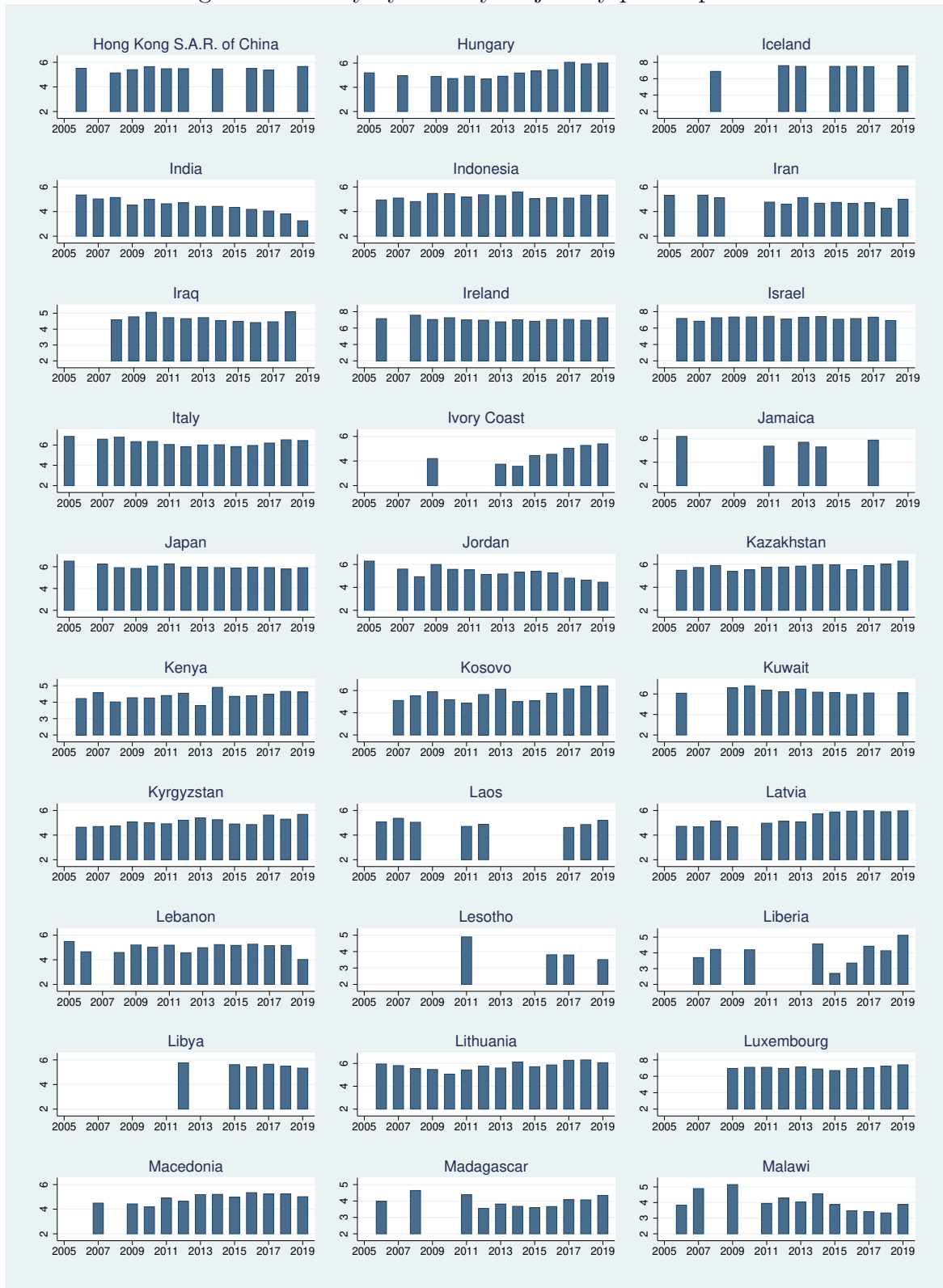


Figure 4: County-by-country trajectory plots - part 4



Figure 5: County-by-country trajectory plots - part 5



Figure 6: County-by-country trajectory plots - part 6

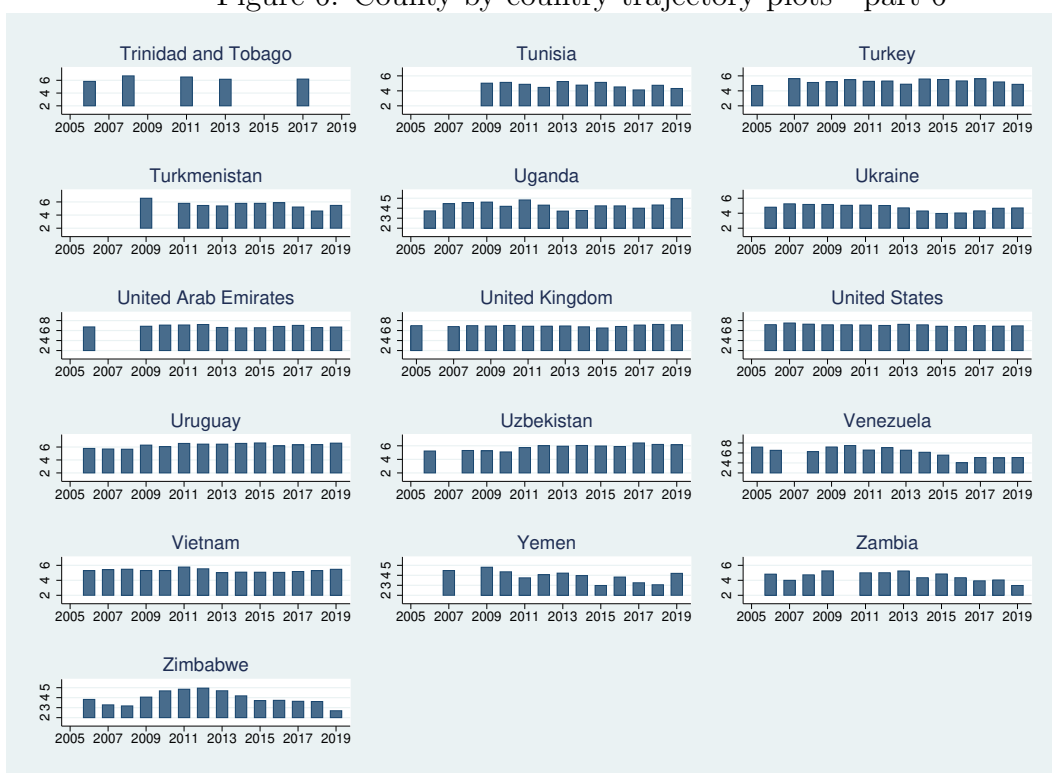


Table 6: Summary statistics for country-year observations with valid happiness scores
- Fullest sample

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Ladder	5.45	1.12	2.38	8.02	1848
Positive affect	0.71	0.11	0.32	0.94	1827
Negative affect	0.27	0.09	0.08	0.70	1833
Log GDP per capita	9.24	1.17	6.46	11.73	1819
Social support	0.81	0.12	0.29	0.99	1835
Healthy life expectancy at birth	63.17	7.55	32.3	77.10	1796
Freedom to make life choices	0.74	0.14	0.26	0.99	1817
Generosity	0	0.16	-0.33	0.68	1765
Perceptions of corruption	0.75	0.19	0.04	0.98	1745

Table 7: Summary statistics for country-year observations with valid happiness scores
- Period from 2005 to 2008

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Ladder	5.44	1.13	2.81	8.02	328
Positive affect	0.71	0.1	0.36	0.89	324
Negative affect	0.25	0.07	0.09	0.47	326
Log GDP per capita	9.10	1.19	6.58	11.48	328
Social support	0.81	0.13	0.29	0.98	326
Healthy life expectancy at birth	61.45	8.43	40.3	74.2	324
Freedom to make life choices	0.71	0.15	0.26	0.97	319
Generosity	0.02	0.17	-0.31	0.48	293
Perceptions of corruption	0.77	0.18	0.06	0.98	313

Table 8: Summary statistics for country-year observations with valid happiness scores
- Period from 2008 to 2010

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Ladder	5.46	1.11	2.81	7.97	348
Positive affect	0.71	0.11	0.36	0.9	341
Negative affect	0.24	0.08	0.08	0.47	343
Log GDP per capita	9.18	1.18	6.46	11.7	346
Social support	0.81	0.12	0.29	0.98	343
Healthy life expectancy at birth	62.29	7.96	32.3	74.8	340
Freedom to make life choices	0.70	0.15	0.26	0.97	341
Generosity	0.01	0.16	-0.31	0.53	345
Perceptions of corruption	0.76	0.19	0.04	0.98	337

Table 9: Summary statistics for country-year observations with valid happiness scores
- Period from 2017 to 2019

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Ladder	5.5	1.11	2.38	7.86	427
Positive affect	0.71	0.11	0.32	0.9	423
Negative affect	0.29	0.09	0.09	0.6	423
Log GDP per capita	9.30	1.16	6.49	11.46	410
Social support	0.81	0.12	0.32	0.98	426
Healthy life expectancy at birth	64.53	6.86	45.2	77.10	414
Freedom to make life choices	0.79	0.12	0.37	0.99	424
Generosity	-0.02	0.16	-0.33	0.63	408
Perceptions of corruption	0.73	0.19	0.07	0.96	402

Table 10: Regression reported in Table 2.1 of WHR 2019, and replication using updated data

	WHR2019	Current
	(1)	(2)
lngdp	0.318 (0.066)***	0.31 (0.066)***
countOnFriends	2.422 (0.381)***	2.362 (0.363)***
Health life expectancy	0.033 (0.01)***	0.036 (0.01)***
freedom	1.164 (0.3)***	1.199 (0.298)***
Generosity	0.635 (0.277)**	0.661 (0.275)**
corrupt	-.540 (0.294)*	-.646 (0.297)**
Year 2005	0.447 (0.094)***	0.398 (0.082)***
Year 2006	-.026 (0.062)	-.004 (0.059)
Year 2007	0.237 (0.061)***	0.242 (0.061)***
Year 2008	0.32 (0.059)***	0.341 (0.058)***
Year 2009	0.217 (0.058)***	0.229 (0.057)***
Year 2010	0.141 (0.047)***	0.148 (0.047)***
Year 2011	0.147 (0.048)***	0.162 (0.048)***
Year 2012	0.13 (0.041)***	0.134 (0.042)***
Year 2013	0.046 (0.042)	0.032 (0.041)
Year 2015	0.01 (0.041)	-.0002 (0.04)
Year 2016	-.039 (0.048)	-.041 (0.048)
Year 2017	0.043 (0.055)	0.037 (0.055)
Year 2018	0.081 (0.064)	0.052 (0.062)
Year 2019		0.044 (0.065)
Obs.	1516	1627
e(N-clust)	157	156
e(r2-a)	0.74	0.751

Notes: 1) Column 1 reports estimates from a pooled OLS regression based on data used in the WHR 2019 (sample period 2005-2018). Column 2 replicates the regression with updated data. Note that WHR 2019 regression includes Kosovo that uses imputed healthy life expectancy. WHR 2020 no longer includes Kosovo in the regression analysis. Whether Kosovo is included in the regression or not has virtually no impacts on the reported estimates. 2).Standard errors in parentheses. *, **, and *** indicate statistical significance at 10 percent, 5 percent and 1 percent levels. All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” indicates the number of

Table 11: (Table 2.1 of WHR 2020): Regressions to Explain Average Happiness across Countries (Pooled OLS with year fixed effects)

	Ladder	PosAffect	NegAffect	LadderAgain
	(1)	(2)	(3)	(4)
Log GDP per capita	0.31 (0.066)***	-.009 (0.01)	0.008 (0.008)	0.324 (0.065)***
Social support	2.362 (0.363)***	0.247 (0.048)***	-.336 (0.052)***	2.011 (0.389)***
Healthy life expectancy at birth	0.036 (0.01)***	0.001 (0.001)	0.002 (0.001)	0.033 (0.009)***
Freedom to make life choices	1.199 (0.298)***	0.367 (0.041)***	-.084 (0.04)**	0.522 (0.287)*
Generosity	0.661 (0.275)**	0.135 (0.03)***	0.024 (0.028)	0.39 (0.273)
Perceptions of corruption	-.646 (0.297)**	0.02 (0.027)	0.097 (0.024)***	-.720 (0.294)**
Positive affect				1.944 (0.355)***
Negative affect				0.379 (0.425)
Year 2005	0.398 (0.082)***	-.011 (0.009)	0.023 (0.008)***	0.413 (0.081)***
Year 2006	-.004 (0.059)	0.01 (0.009)	-.003 (0.009)	-.014 (0.059)
Year 2007	0.242 (0.061)***	0.017 (0.009)*	-.030 (0.007)***	0.23 (0.06)***
Year 2008	0.341 (0.058)***	0.022 (0.007)***	-.042 (0.007)***	0.32 (0.062)***
Year 2009	0.229 (0.057)***	0.017 (0.008)**	-.025 (0.008)***	0.209 (0.057)***
Year 2010	0.148 (0.047)***	0.011 (0.007)	-.028 (0.006)***	0.14 (0.048)***
Year 2011	0.162 (0.048)***	0.001 (0.008)	-.024 (0.006)***	0.172 (0.05)***
Year 2012	0.134 (0.042)***	0.013 (0.006)**	-.018 (0.006)***	0.119 (0.044)***
Year 2013	0.032 (0.041)	0.01 (0.005)*	-.009 (0.006)	0.02 (0.041)
Year 2015	-.0002 (0.04)	-.003 (0.005)	0.002 (0.004)	0.008 (0.039)
Year 2016	-.041 (0.048)	-.005 (0.005)	0.016 (0.005)***	-.035 (0.046)
Year 2017	0.037 (0.055)	-.014 (0.006)**	0.019 (0.006)***	0.059 (0.052)
Year 2018	0.052 (0.062)	-.011 (0.007)	0.024 (0.006)***	0.067 (0.059)
Year 2019	0.044 (0.065)	-.008 (0.008)	0.021 (0.007)***	0.054 (0.062)
Obs.	1627	1624	1626	1623
e(N-clust)	156	156	156	156
e(r2-a)	0.751	0.475	0.3	0.768

Notes: 1). Standard errors in parentheses. *, **, and *** indicate statistical significance at 10 percent, 5 percent and 1 percent levels. All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” indicates the number of countries. 2). See section “Data Sources and Variable Definitions” for more information.

Table 12: Regressions to Explain Average Happiness across Countries (Pooled OLS without year fixed effects)

	Ladder	PosAffect	NegAffect	LadderAgain
	(1)	(2)	(3)	(4)
Log GDP per capita	0.321 (0.065)***	-.007 (0.009)	0.005 (0.008)	0.335 (0.065)***
Social support	2.433 (0.36)***	0.263 (0.046)***	-.361 (0.052)***	1.951 (0.384)***
Healthy life expectancy at birth	0.034 (0.009)***	0.0006 (0.001)	0.002 (0.001)**	0.032 (0.009)***
Freedom to make life choices	1.032 (0.28)***	0.343 (0.037)***	-.040 (0.037)	0.356 (0.27)
Generosity	0.716 (0.272)***	0.144 (0.029)***	0.007 (0.027)	0.429 (0.272)
Perceptions of corruption	-.655 (0.29)**	0.019 (0.026)	0.099 (0.024)***	-.702 (0.291)**
Positive affect				1.997 (0.365)***
Negative affect				0.111 (0.397)
year-1				
year-2				
year-3				
year-4				
year-5				
year-6				
year-7				
year-8				
year-9				
year-11				
year-12				
year-13				
year-14				
year-15				
Obs.	1627	1624	1626	1623
e(N-clust)	156	156	156	156
e(r2-a)	0.745	0.471	0.251	0.764

Notes: 1). Standard errors in parentheses. *, **, and *** indicate statistical significance at 10 percent, 5 percent and 1 percent levels. All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” indicates the number of countries. 2). See section “Data Sources and Variable Definitions” for more information.

Table 13: Interaction of social environment with risk and support factors for life evaluations in the Gallup World Poll

	c1	ESSsubset	Others
	(1)	(2)	(3)
Female	0.161 (0.014)***	0.092 (0.021)***	0.185 (0.016)***
Age	-.041 (0.003)***	-.043 (0.005)***	-.042 (0.003)***
Age squared divided by 100	0.039 (0.003)***	0.04 (0.004)***	0.041 (0.004)***
Secondary up to three years tertiary education	0.285 (0.019)***	0.29 (0.037)***	0.292 (0.022)***
Completed 4 yrs of education beyond high school and/or 4-yr degree	0.58 (0.024)***	0.553 (0.051)***	0.594 (0.027)***
wp134 freedom in your life	0.388 (0.017)***	0.531 (0.03)***	0.344 (0.019)***
wp108 donated money	0.244 (0.012)***	0.25 (0.017)***	0.243 (0.014)***
Logarithm of per-capita GDP, PPP	0.841 (0.713)	1.257 (0.56)**	0.873 (0.813)
Indicator of high insitutional trust	0.264 (0.053)***	0.529 (0.056)***	0.245 (0.054)***
wp23 health problems	-.423 (0.024)***	-.657 (0.025)***	-.349 (0.025)***
Interactive: healthproblem*TID	0.063 (0.022)***	0.137 (0.03)***	0.033 (0.024)
Separated, divorced or widowed	-.208 (0.013)***	-.208 (0.02)***	-.193 (0.017)***
Interactive: sepdivwid*TID	0.087 (0.027)***	0.05 (0.033)	0.07 (0.033)**
Unemployed	-.389 (0.025)***	-.666 (0.031)***	-.321 (0.025)***
Interactive: unemployed*TID	0.02 (0.039)	0.08 (0.058)	0.001 (0.045)
Bottom quartile in income distribution within country-year	-.407 (0.02)***	-.459 (0.022)***	-.380 (0.025)***
Interactive: lowinc*TID	0.038 (0.021)*	0.089 (0.028)***	0.019 (0.025)
wp27 count on to help	0.677 (0.024)***	0.774 (0.037)***	0.668 (0.027)***
Interactive: countOnFriends*TID	0.015 (0.042)	-.231 (0.044)***	0.026 (0.041)
Top quartile in income distribution within country-year	0.454 (0.013)***	0.444 (0.023)***	0.453 (0.016)***
Interactive: highinc*TID	-.067 (0.021)***	-.171 (0.023)***	-.030 (0.026)
Obs.	1024684	252628	772056
e(N-clust)	144	32	112
R ²	0.28	0.319	0.23

Notes: 1). Standard errors in parentheses. *, **, and *** indicate statistical significance at 10 percent, 5 percent and 1 percent levels. 2). All standard errors are cluster-adjusted at the country level. The row “e(N-clust)” shows the number of countries (also **clusters**) in the sample.

Table 14: Summary statistics for the regression showing interaction of social environment with risks and supports for life evaluations in the Gallup World Poll

Variable	Mean	Std. Dev.	Min.	Max.	N
wp16 life today	5.49	2.37	0	10	1794412
Female	0.53	0.5	0	1	1822829
Age	41.31	17.61	13	99	1816492
Age squared divided by 100	20.17	16.41	1.69	98.01	1816492
Secondary up to three years tertiary education	0.51	0.5	0	1	1807788
Completed 4 yrs of education beyond high school and/or 4-yr degree	0.17	0.37	0	1	1807788
wp134 freedom in your life	0.75	0.43	0	1	1637183
wp108 donated money	0.3	0.46	0	1	1675497
Logarithm of per-capita GDP, PPP	9.32	1.14	6.46	11.73	1788476
Indicator of high insitutional trust	0.26	0.44	0	1	1196143
wp23 health problems	0.25	0.43	0	1	1700710
Interactive: healthproblem*TID	0.06	0.25	0	1	1170940
Separated, divorced or widowed	0.13	0.34	0	1	1811394
Interactive: sepdivwid*TID	0.03	0.18	0	1	1189030
Unemployed	0.06	0.24	0	1	1755394
Interactive: unemployed*TID	0.01	0.12	0	1	1163881
Bottom quartile in income distribution within country-year	0.28	0.45	0	1	1772277
Interactive: lowinc*TID	0.07	0.26	0	1	1161378
wp27 count on to help	0.81	0.4	0	1	1673618
Interactive: countOnFriends*TID	0.22	0.41	0	1	1178290
Top quartile in income distribution within country-year	0.28	0.45	0	1	1772277
Interactive: highinc*TID	0.07	0.26	0	1	1161378

Table 15: Bi-variate correlation coefficients for the regression showing interaction of social environment with risks and supports for life evaluations in the Gallup World Poll

Variables	ladder	TID	confidencePolice	confjudicial	confnatgov	confelect	corruptBusiness	healthproblem	sepdvwid	unemployed	lowinc	countOnFriends
ladder	1.000											
TID	0.078	1.000										
confidencePolice	0.098	0.389	1.000									
confjudicial	0.082	0.607	0.317	1.000								
confnatgov	0.041	0.607	0.289	0.476	1.000							
confelect	0.113	0.560	0.269	0.393	0.435	1.000						
corruptBusiness	-0.129	-0.315	-0.141	-0.194	-0.179	-0.217	1.000					
healthproblem	-0.155	-0.014	-0.008	-0.022	0.003	-0.014	0.043	1.000				
sepdvwid	-0.045	-0.013	0.019	-0.026	-0.017	-0.006	0.010	0.157	1.000			
unemployed	-0.076	-0.033	-0.045	-0.024	-0.029	-0.037	0.027	-0.018	-0.036	1.000		
lowinc	-0.166	0.009	0.001	0.003	0.008	-0.004	0.017	0.136	0.051	0.051	1.000	
countOnFriends	0.237	0.025	0.064	0.030	0.003	0.043	-0.030	-0.111	-0.018	-0.038	-0.110	1.000
highinc	0.164	-0.004	-0.004	-0.001	-0.003	0.007	-0.018	-0.107	-0.111	-0.045	-0.384	0.097

Table 16: List of countries in regression column heading ESSsubset

Country	Country code in GWP	Number of observations
Austria	89	9392
Belgium	16	8075
Bulgaria	99	7006
Croatia	109	6344
Cyprus	111	5974
Czech Republic	21	7671
Denmark	25	6123
Estonia	119	5332
Finland	121	8779
France	13	8958
Germany	14	8565
Greece	24	9304
Hungary	20	7855
Iceland	130	2516
Ireland	132	9234
Israel	38	8327
Italy	18	9847
Lithuania	143	7149
Luxembourg	144	8013
Netherlands	15	8595
Norway	160	5317
Poland	19	7193
Portugal	166	9507
Russia	76	13875
Slovakia	175	7297
Slovenia	176	9593
Spain	17	8071
Sweden	23	7837
Switzerland	184	6472
Turkey	8	9624
Ukraine	77	7255
United Kingdom	12	7528

Figure 7: Ranking of Happiness: 2017-19 (Part 1)

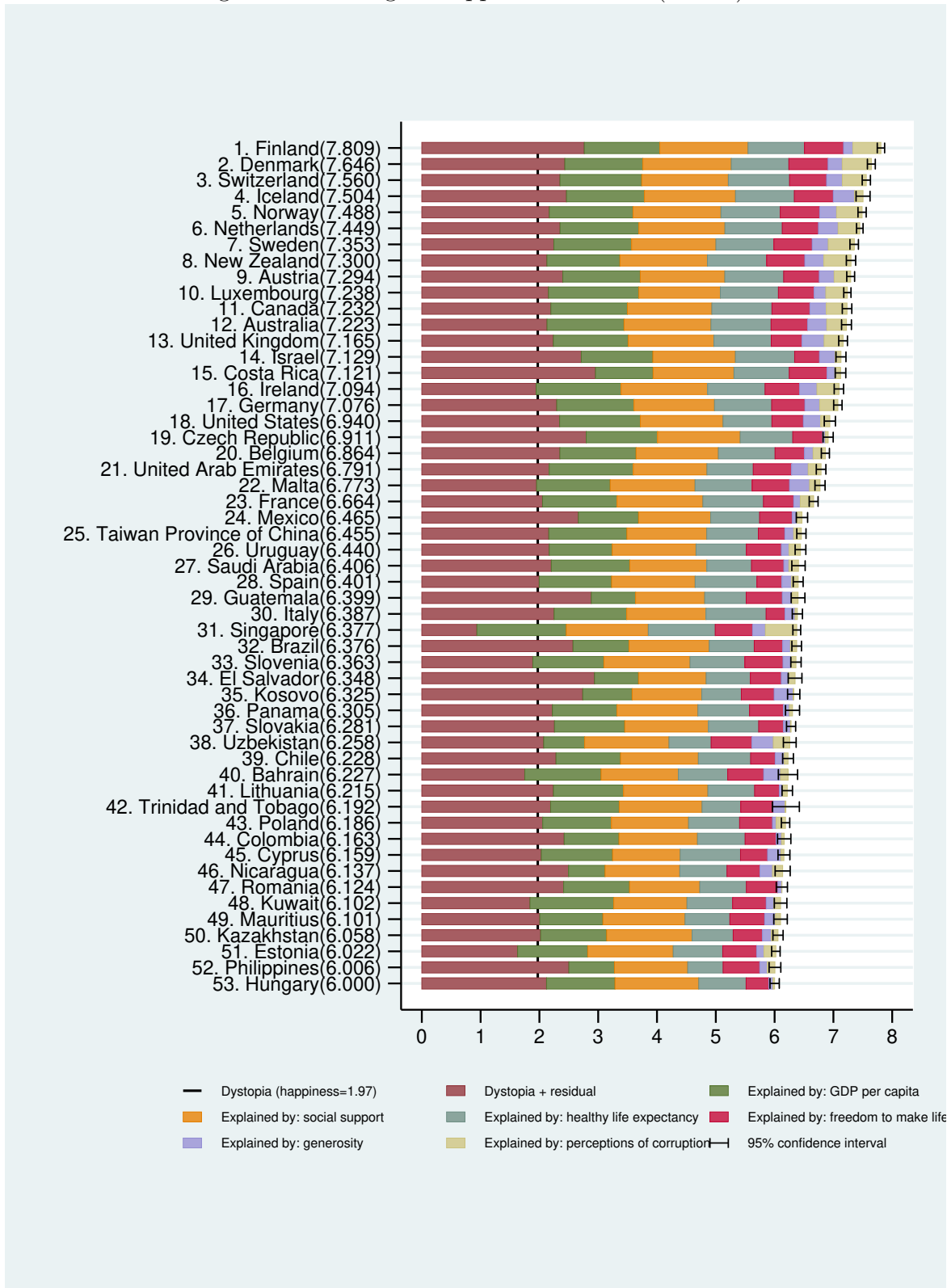


Figure 8: Ranking of Happiness: 2017-19 (Part 2)

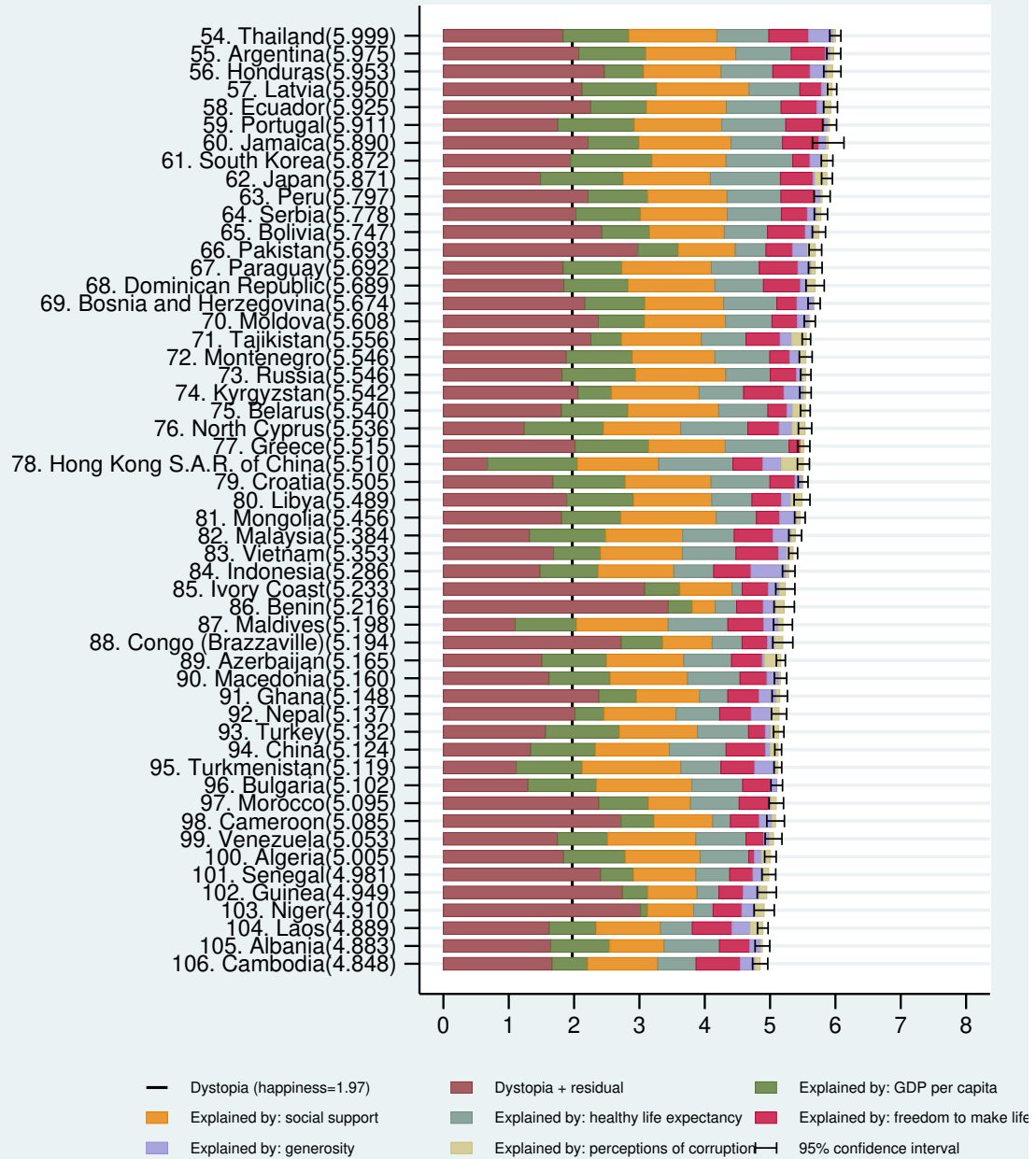


Figure 9: Ranking of Happiness: 2017-19 (Part 3)

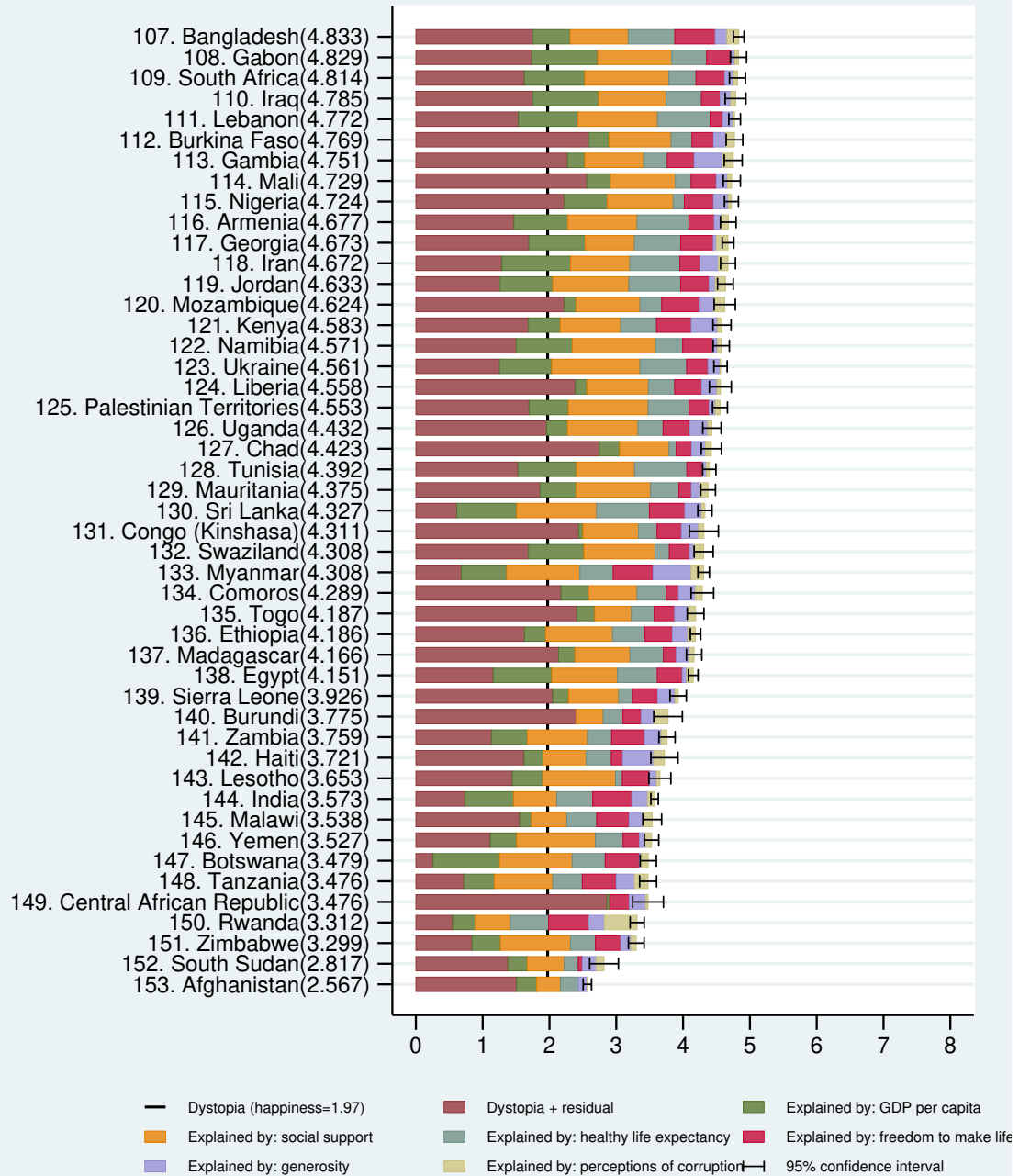


Figure 10: Ranking of Happiness: 2017-19 (Part 1)

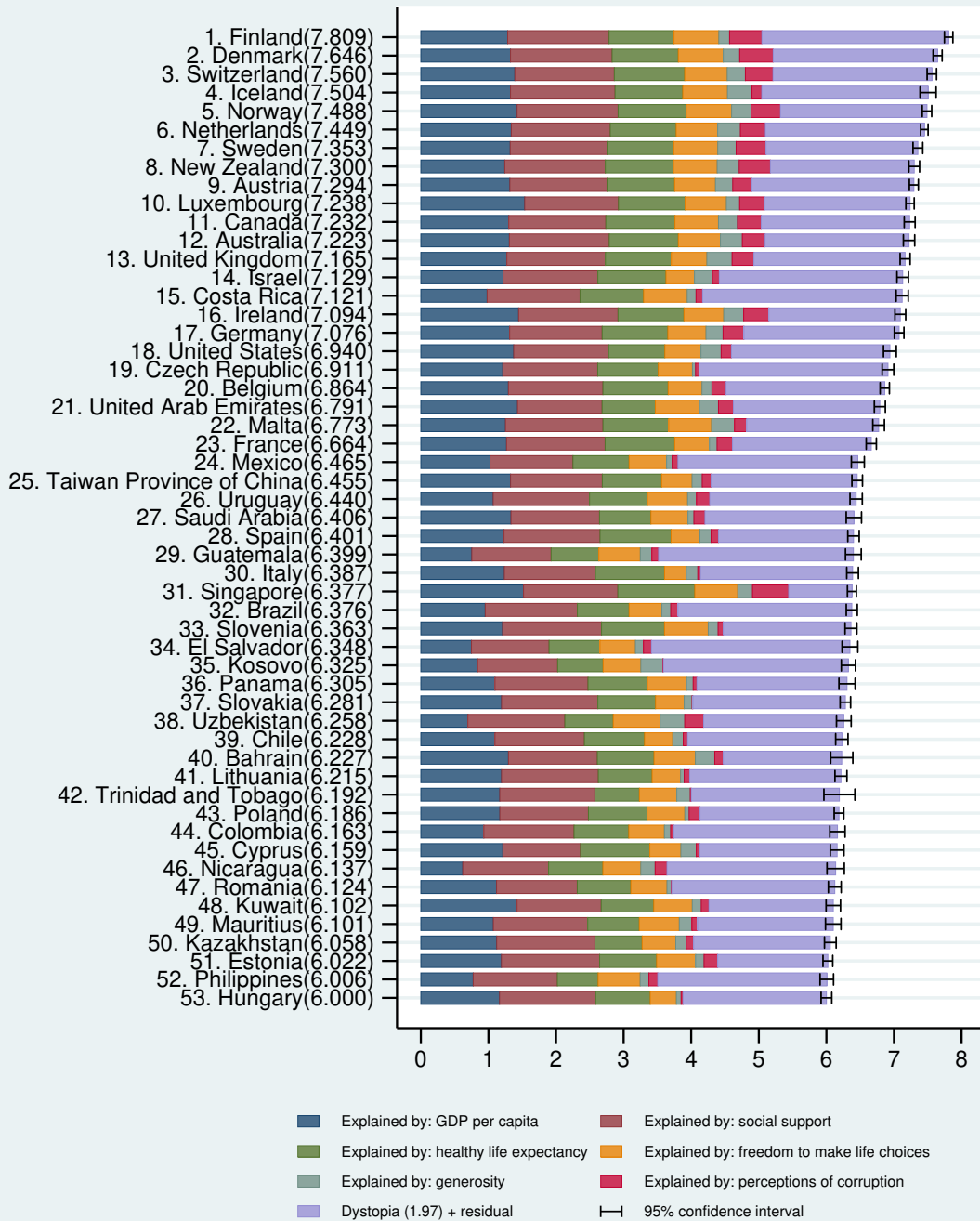


Figure 11: Ranking of Happiness: 2017-19 (Part 2)

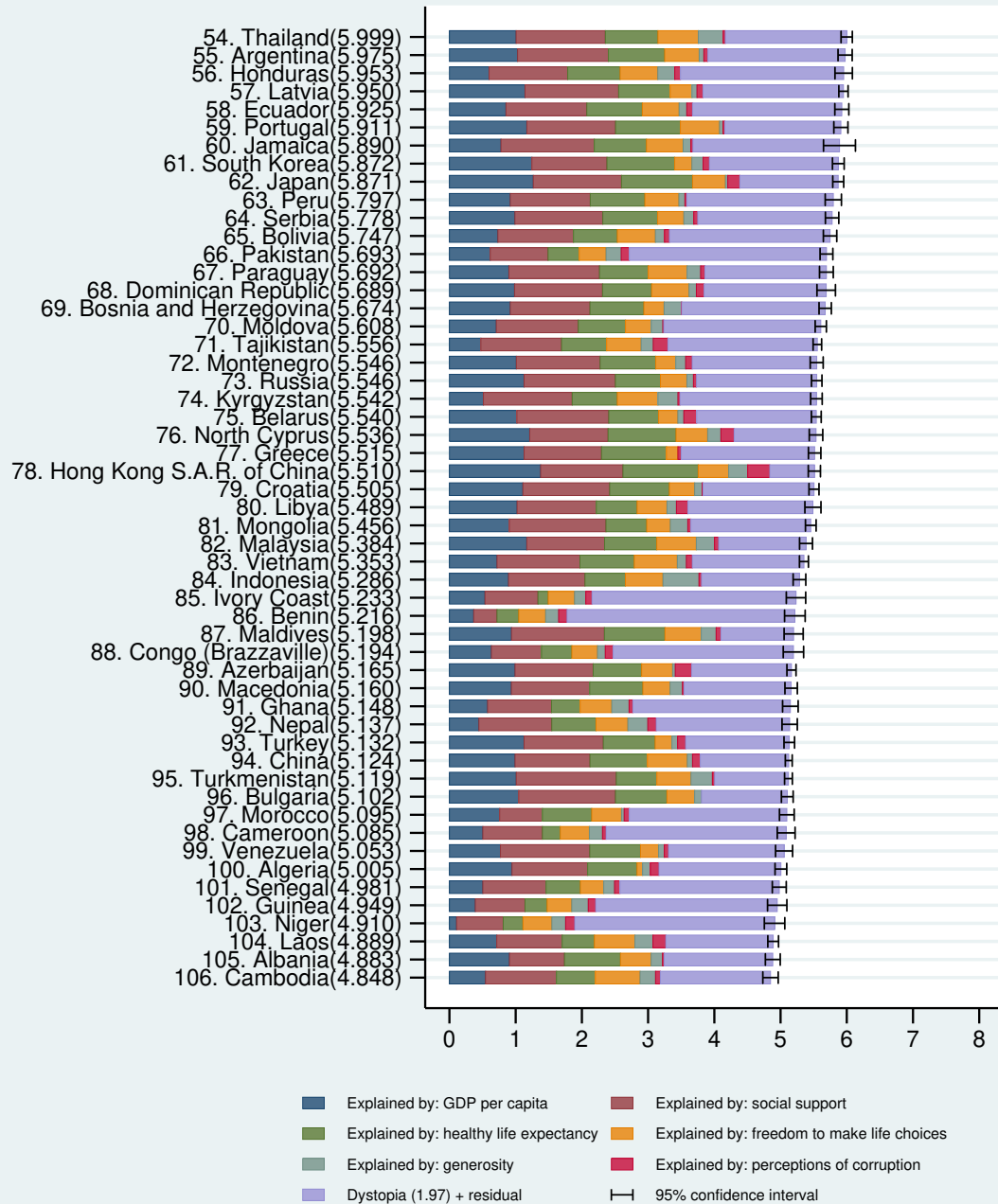


Figure 12: Ranking of Happiness: 2017-19 (Part 3)

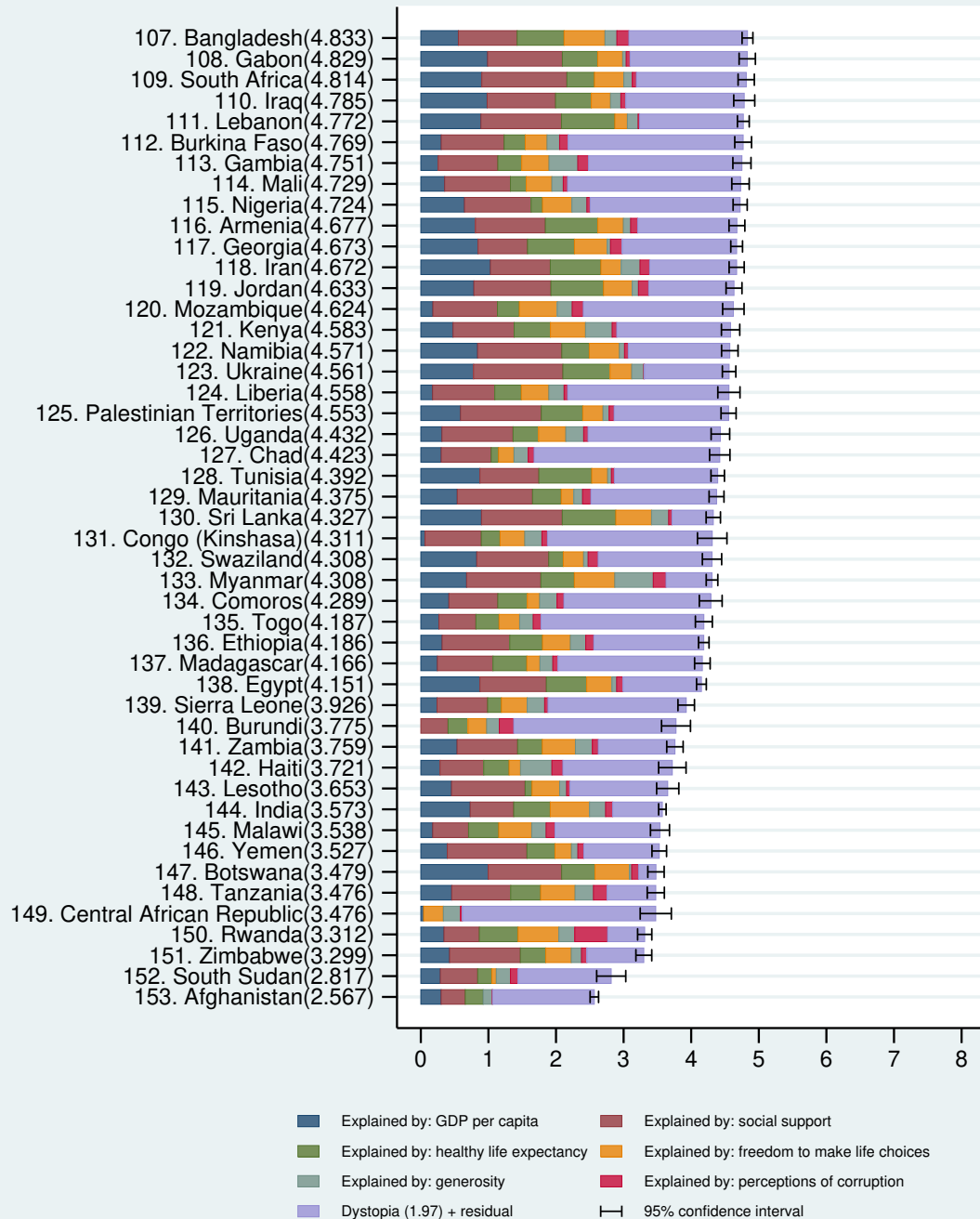


Table 17: Countries that used imputed corrupt based on WGI control of corruption indicators

Country name	Imputation indicator: corrupt is imputed based on WGI's control of corruption in
Egypt	1
Saudi Arabia	1
Jordan	1
China	1
Bahrain	1
Kuwait	1
Maldives	1
Turkmenistan	1
United Arab Emirates	1

Table 18: Countries/territories that are not covered in the decomposition exercise due to missing factors; an empty table means all countries are covered

Country name	Country	Missing factors
--------------	---------	-----------------

Note: Any countries/territories that are missing per-capita GDP automatically miss Generosity, because we adjust the latter to filter out the influence of per-capita GDP. In addition, any countries/territories that are missing the variable of corruption perception are indeed missing the perception on both business and government.

Figure 13: Changes in Happiness: from 2008-2012 to 2017-19 (Part 1)

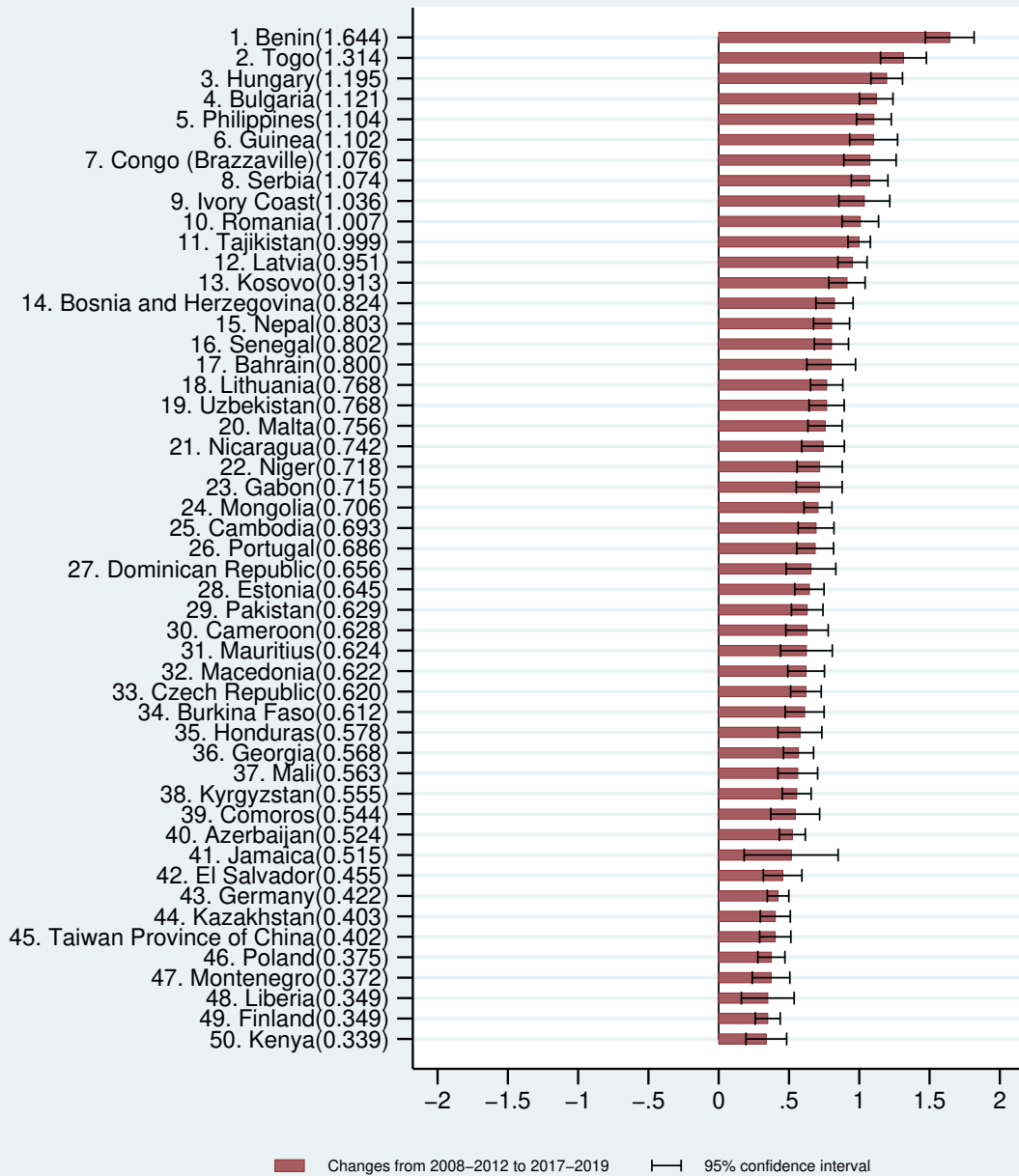


Figure 14: Changes in Happiness: from 2008-2012 to 2017-19 (Part 2)



Figure 15: Changes in Happiness: from 2008-2012 to 2017-19 (Part 3)

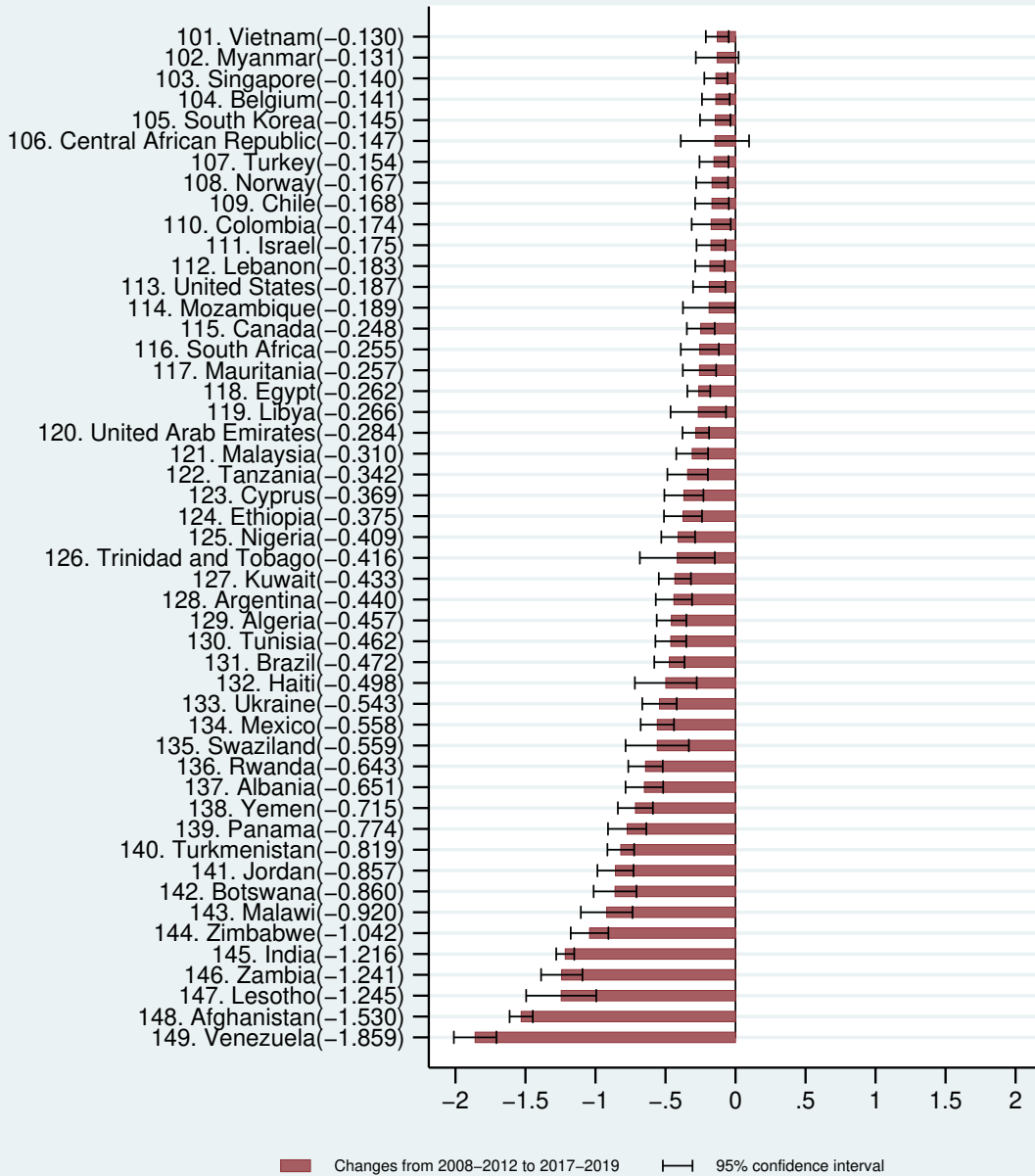


Figure 16: Changes in Negative Affect and Components: from 2008-2012 to 2017-19
(Part 1)



Figure 17: Changes in Negative Affect and Components: from 2008-2012 to 2017-19
(Part 2)

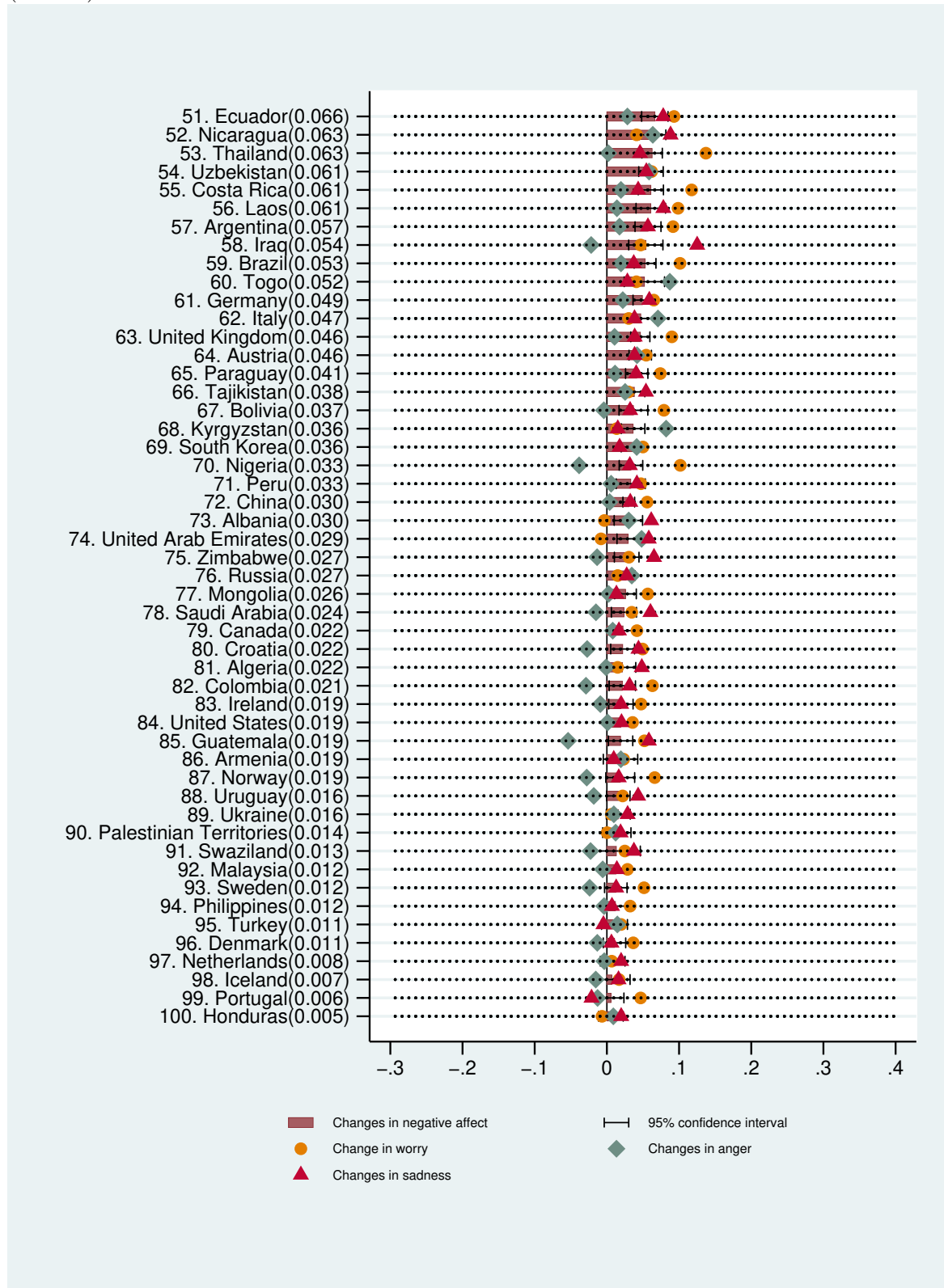


Figure 18: Changes in Negative Affect and Components: from 2008-2012 to 2017-19
(Part 3)



Table 19: Countries/territories that are in the 2017-2019 happiness ranking, but do not have ladder observations in the 2008-2012 period

Country name
Gambia
Maldives
Namibia
South Sudan

Ranking of the Six Factors Used to Explain Happiness Scores

The next set of figures are rankings of countries by the six underlying factors used to explain international differences in happiness scores, namely GDP per person, healthy life expectancy, social support, perceived freedom to make life choice, generosity and perception of corruption. The rankings are based on national averages over the period from 2017 to 2019. The ranking figures do not show imputed data. As we explain when describing our imputation algorithm, we do not use the imputed values in any of our headline results including the happiness rankings. The only place where we use them is when we try to decompose a country's average happiness score into components explained by the six factors. The imputation involves only a small number of countries. Here, we avoid relying on the imputation to generate the rankings. If a country is missing the information about corruption perceptions, for example, they won't show up in the corruption ranking, thus the ranking for corruption will cover a smaller number of countries than the ranking of overall happiness.

Figure 19: Ranking of Natural Log of Per-Capita GDP: 2017-19; bars show natural logs, dollar values are shown on the Y axis after country names (Part 1)

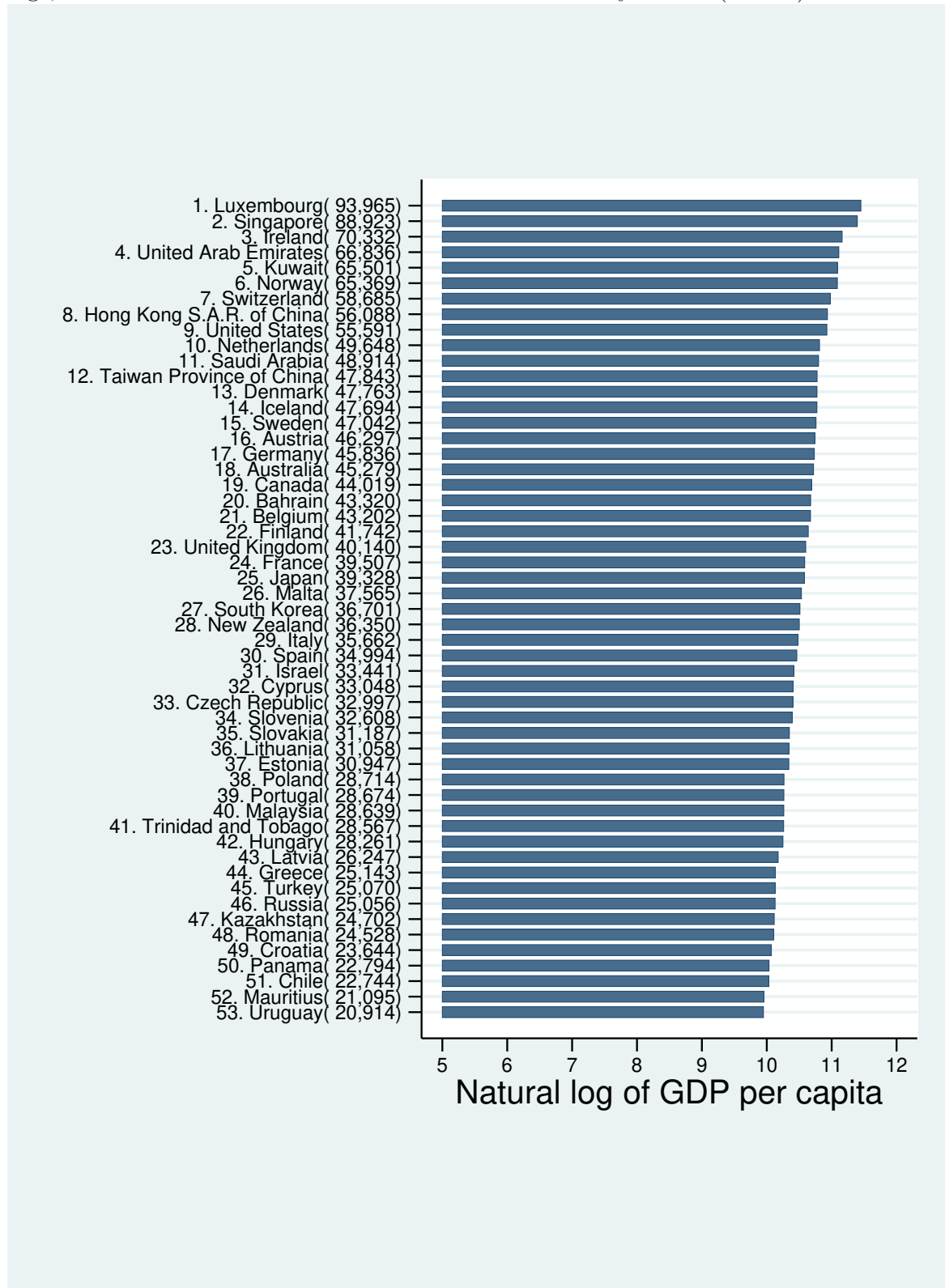


Figure 20: Ranking of Natural Log of Per-Capita GDP: 2017-19; bars show natural logs, dollar values are shown on the Y axis after country names (Part 2)

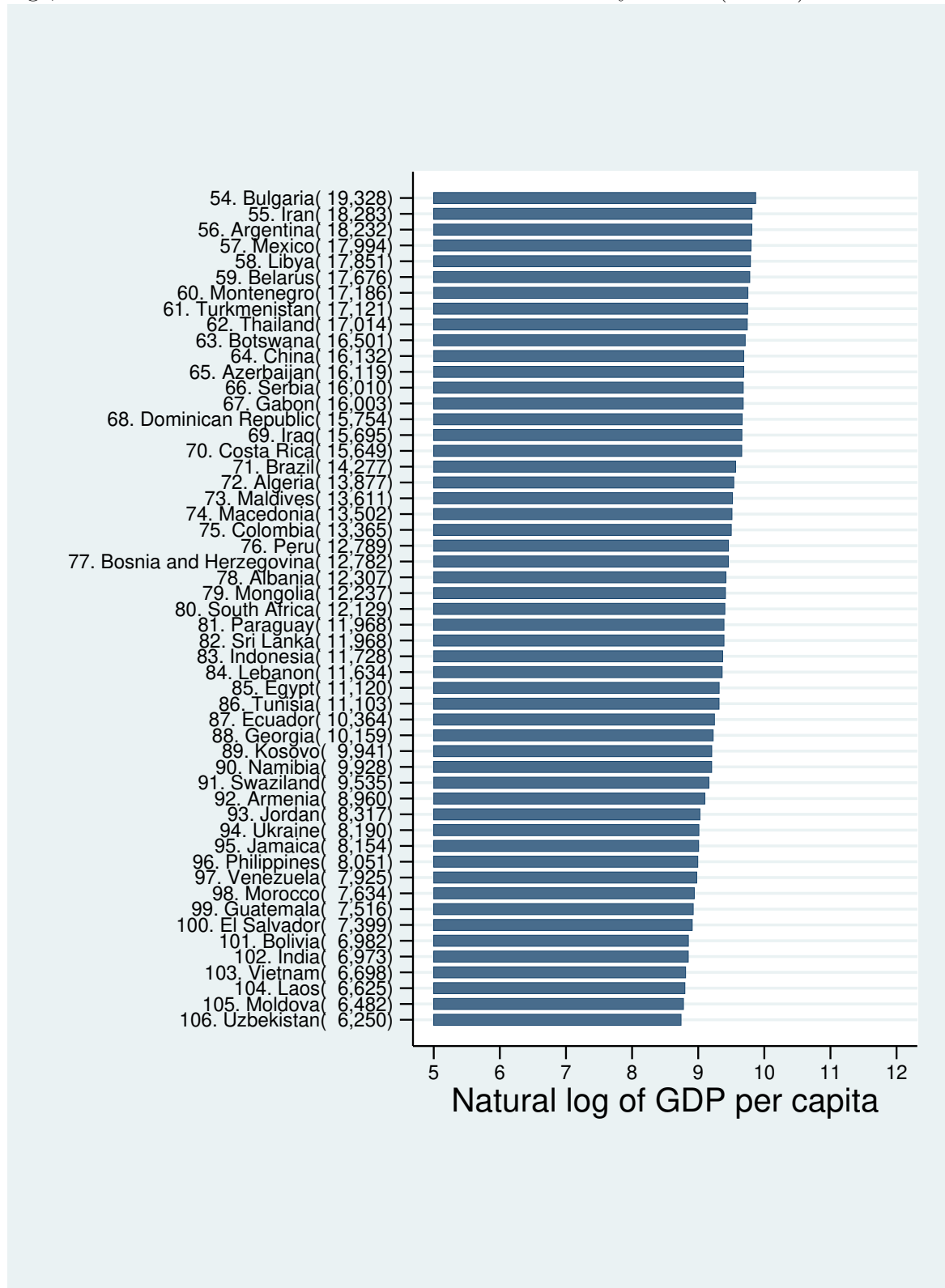


Figure 21: Ranking of Natural Log of Per-Capita GDP: 2017-19; bars show natural logs, dollar values are shown on the Y axis after country names (Part 3)

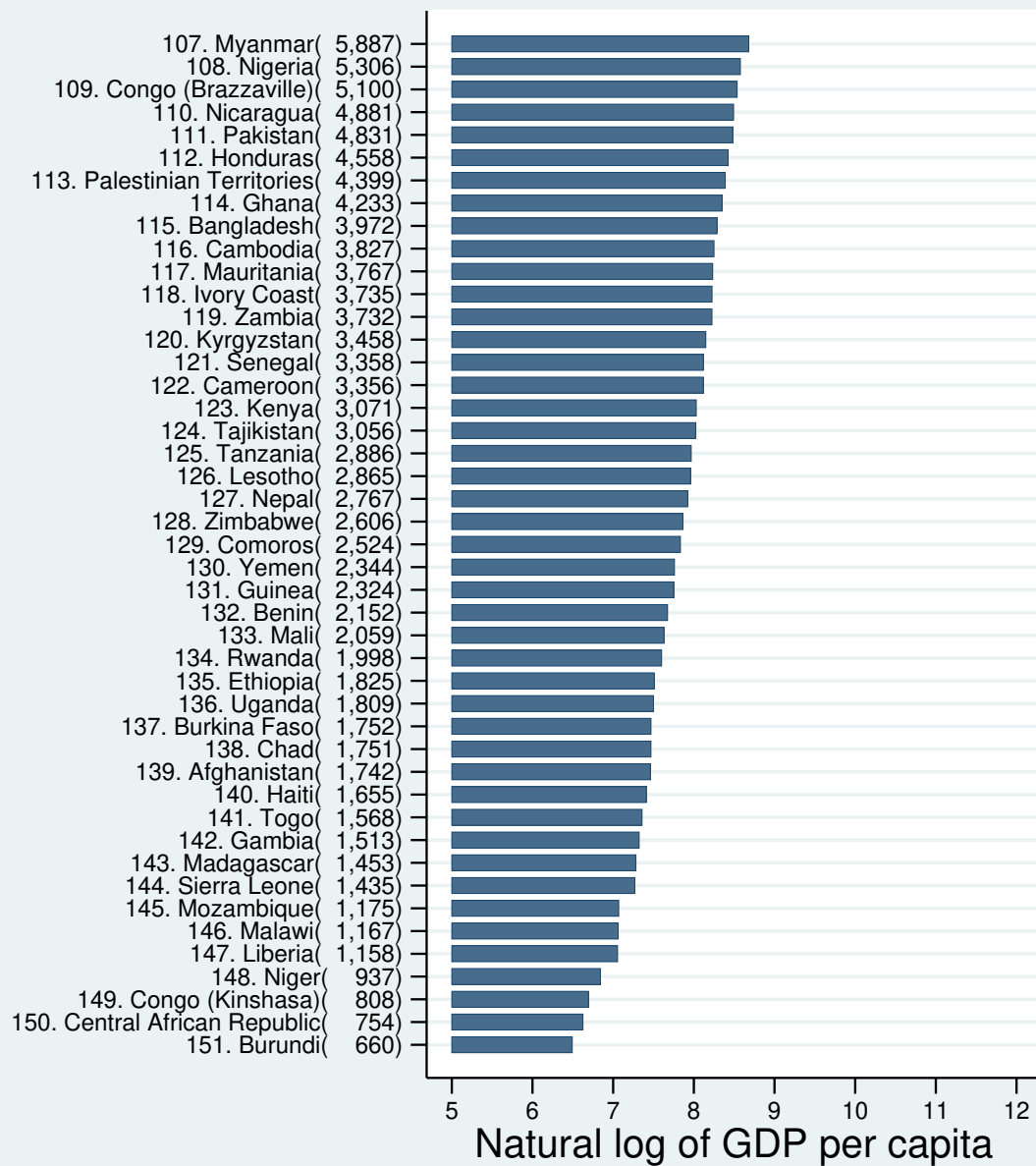


Figure 22: Ranking of Social Support: 2017-19 (Part 1)

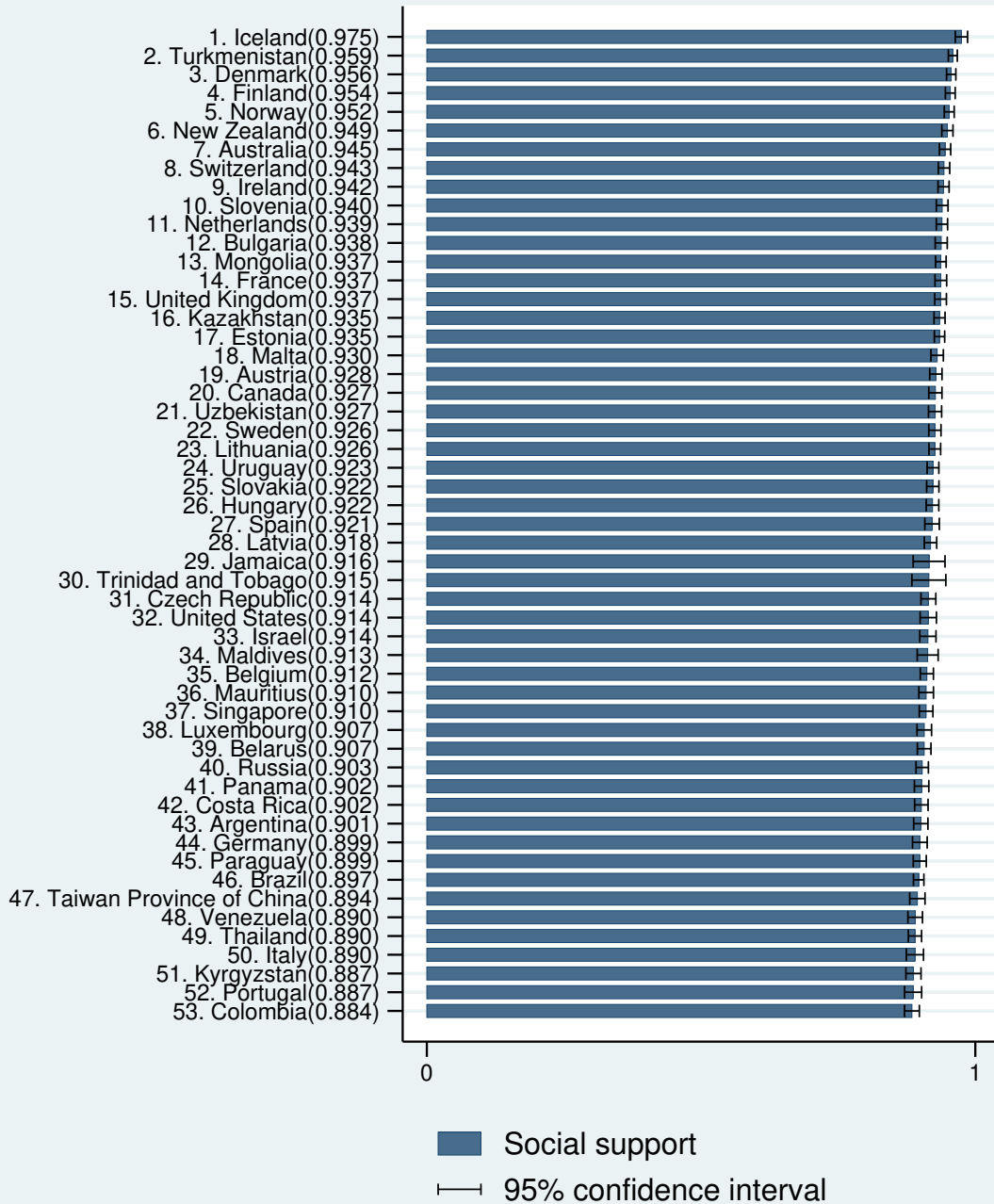


Figure 23: Ranking of Social Support: 2017-19 (Part 2)

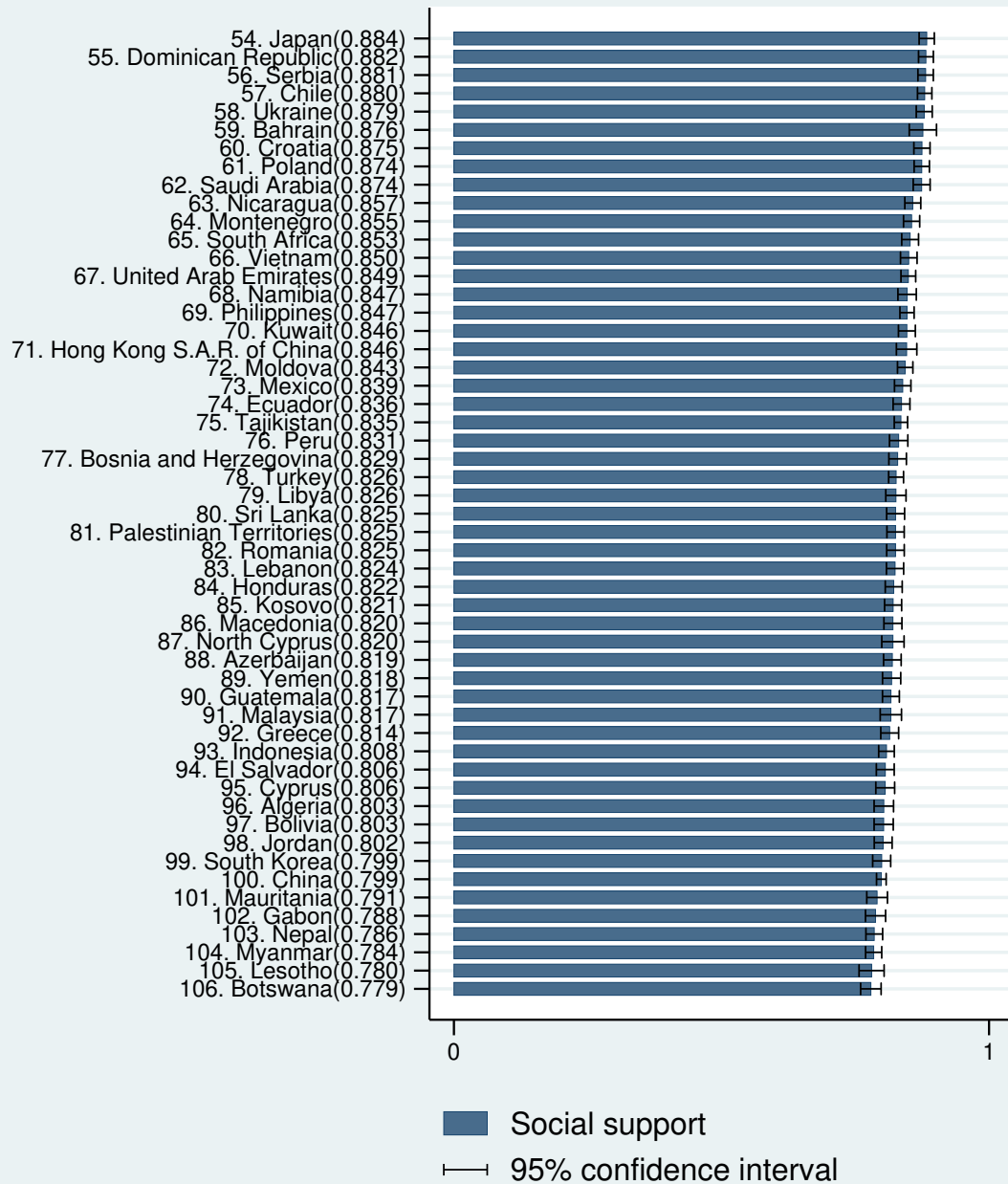


Figure 24: Ranking of Social Support: 2017-19 (Part 3)

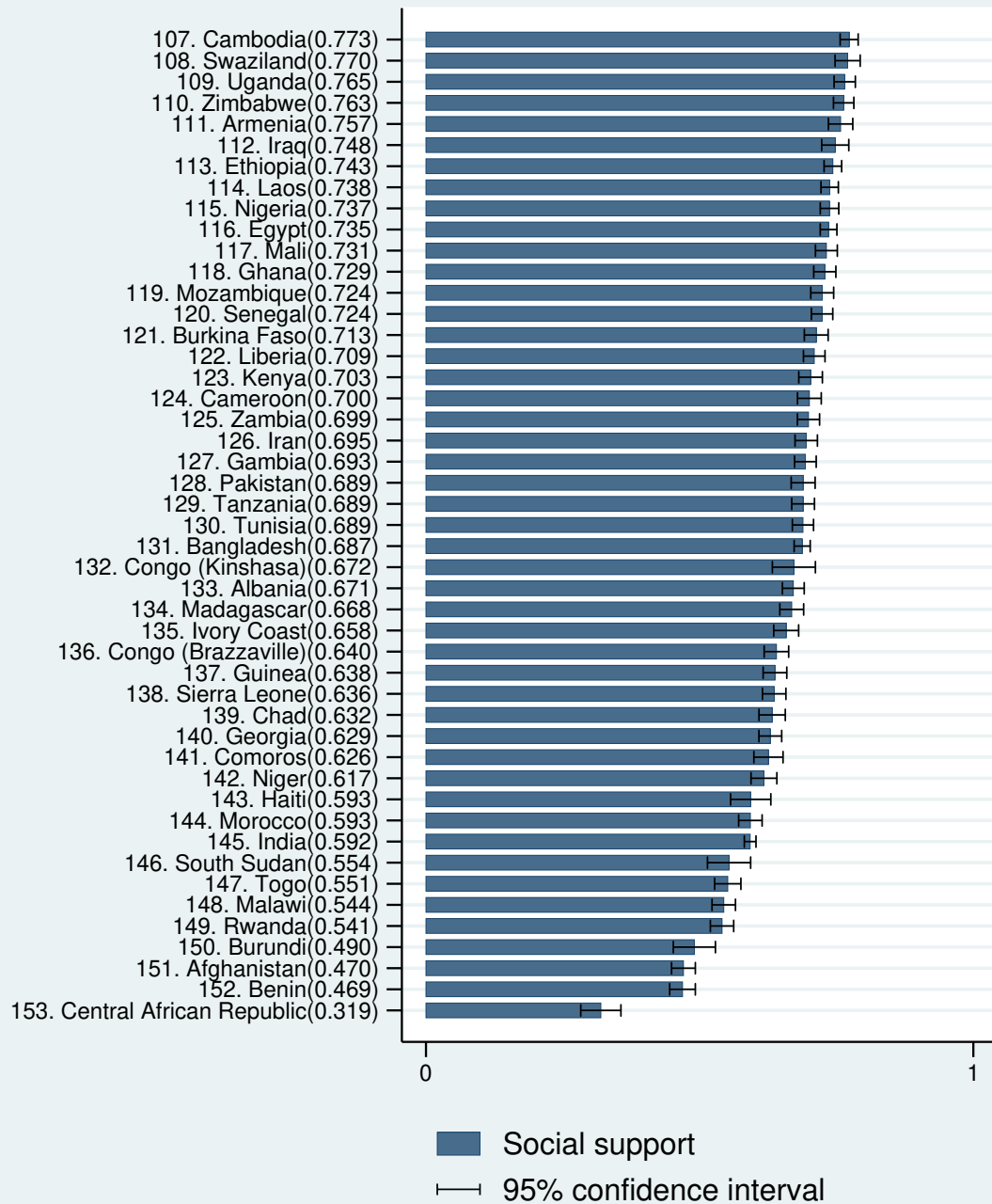


Figure 25: Ranking of Healthy Life Expectancy: 2017-19 (Part 1)

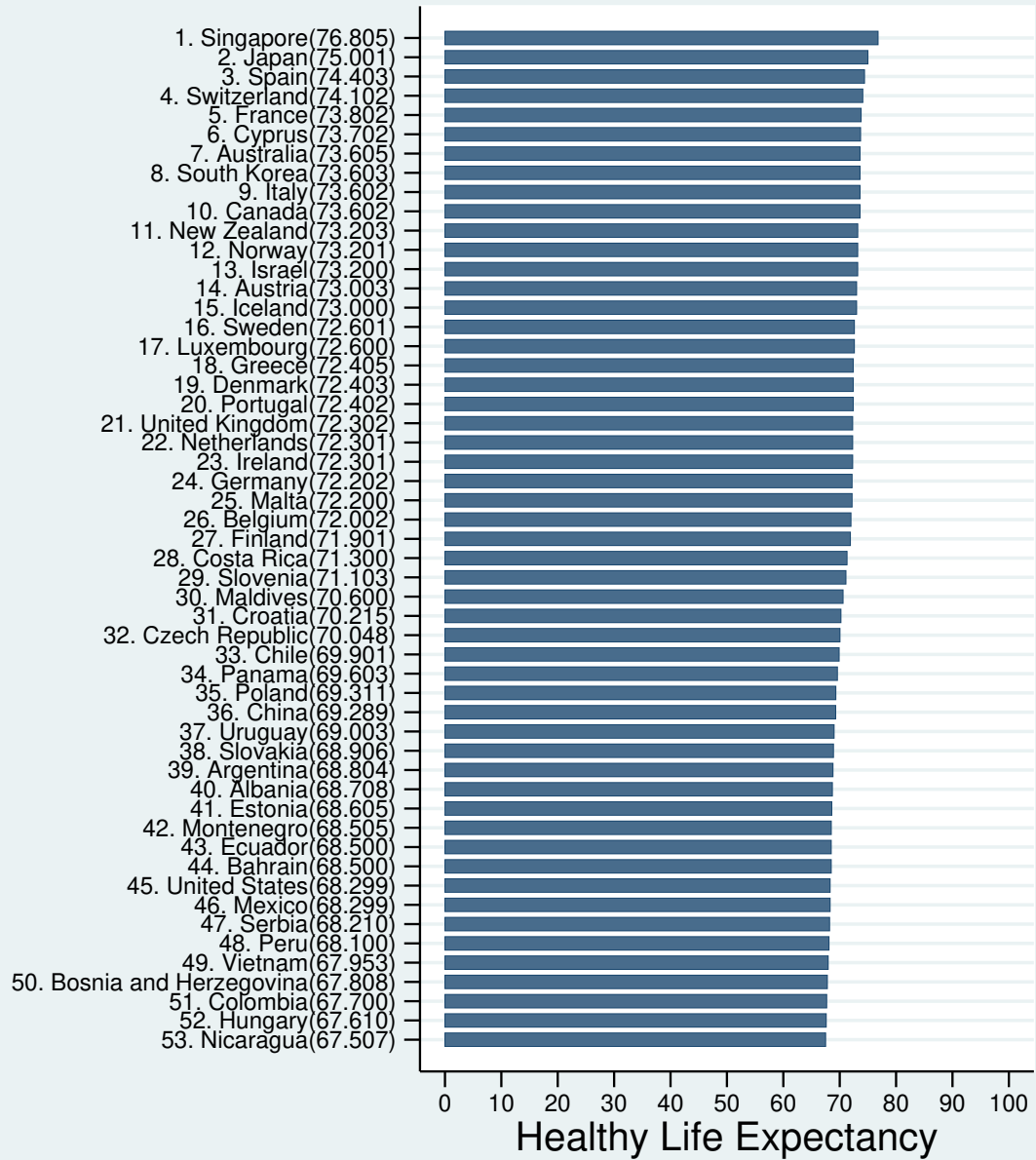


Figure 26: Ranking of Healthy Life Expectancy: 2017-19 (Part 2)

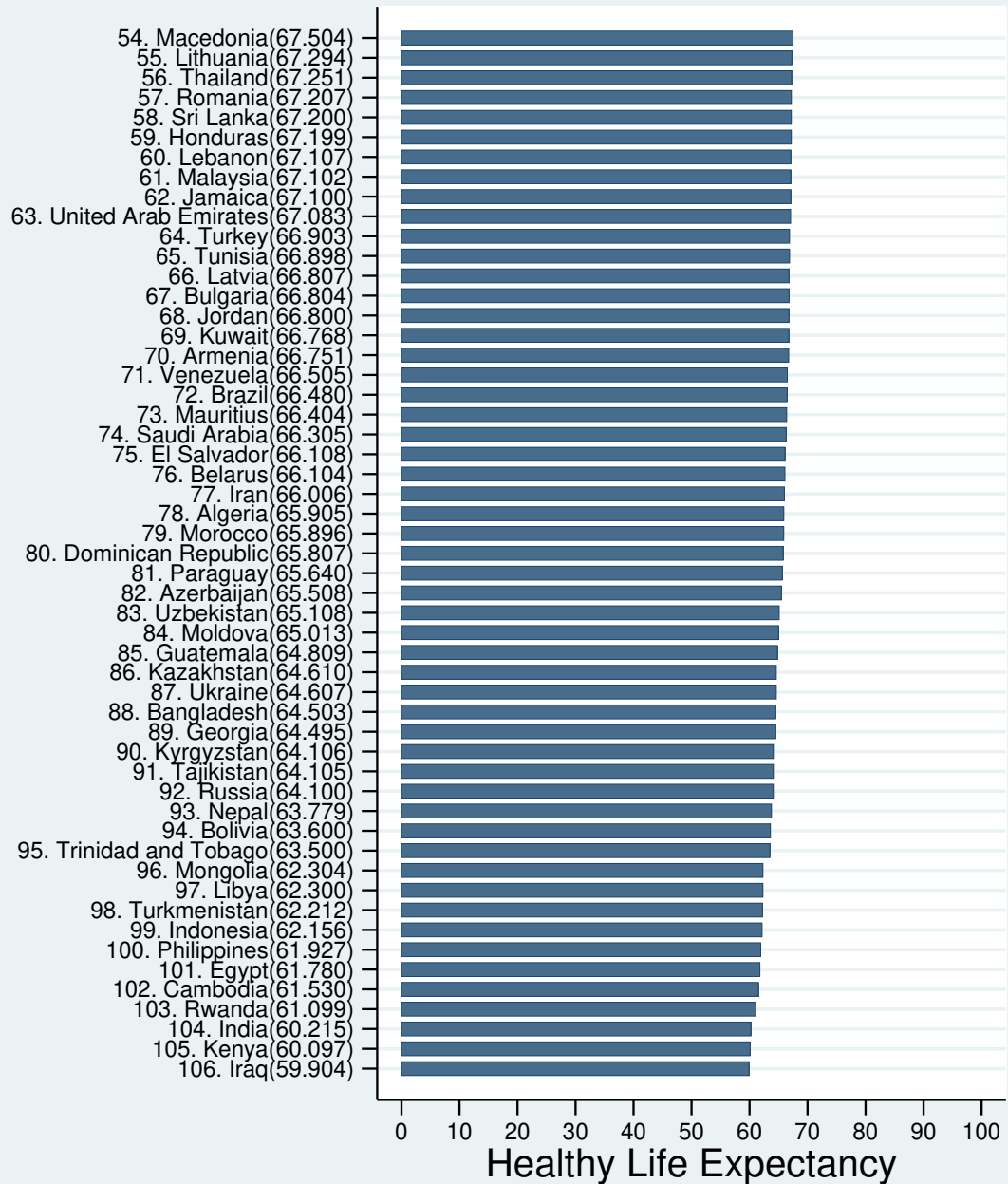


Figure 27: Ranking of Healthy Life Expectancy: 2017-19 (Part 3)

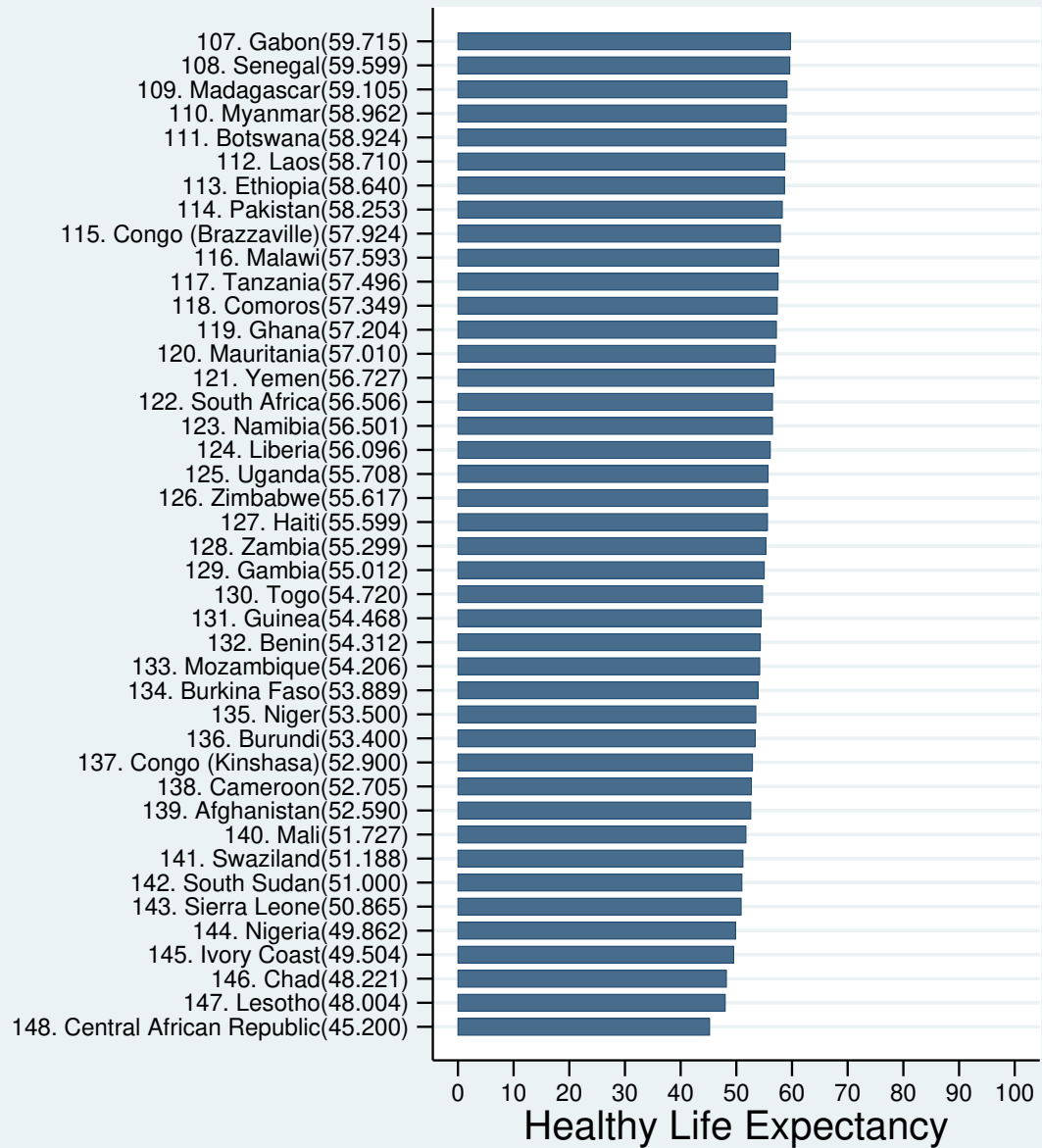


Figure 28: Ranking of Freedom to Make Life Choices: 2017-19 (Part 1)

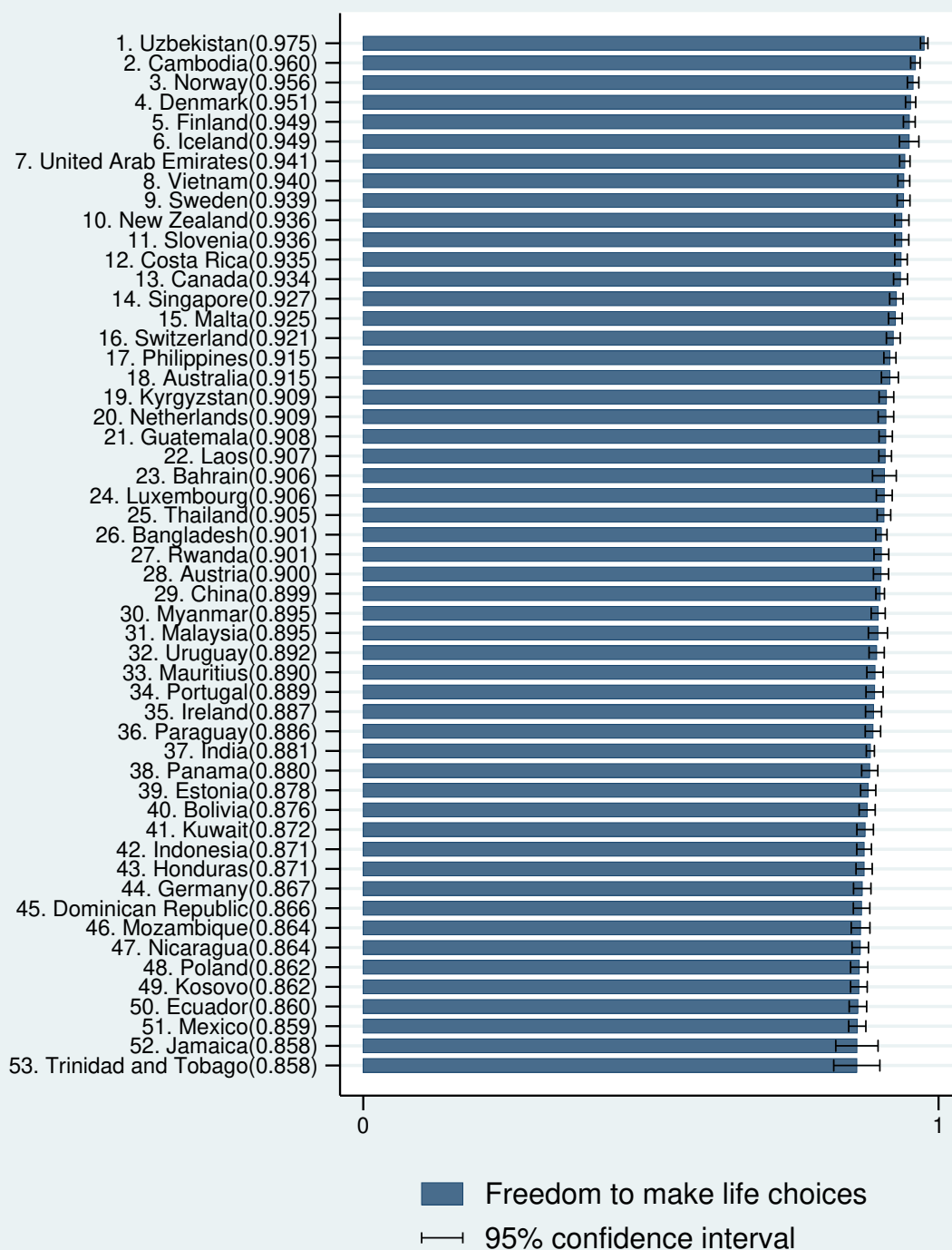


Figure 29: Ranking of Freedom to Make Life Choices: 2017-19 (Part 2)

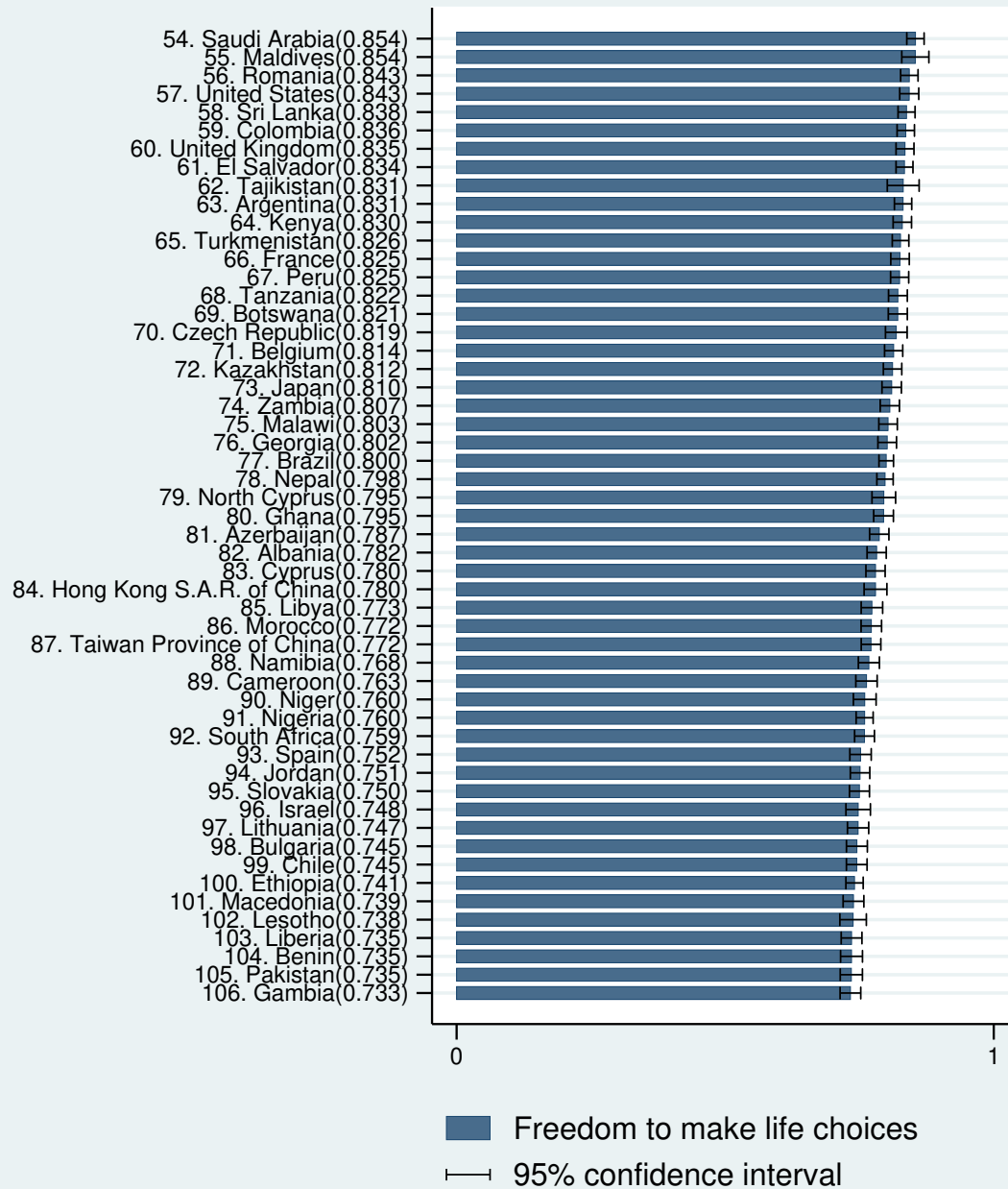


Figure 30: Ranking of Freedom to Make Life Choices: 2017-19 (Part 3)

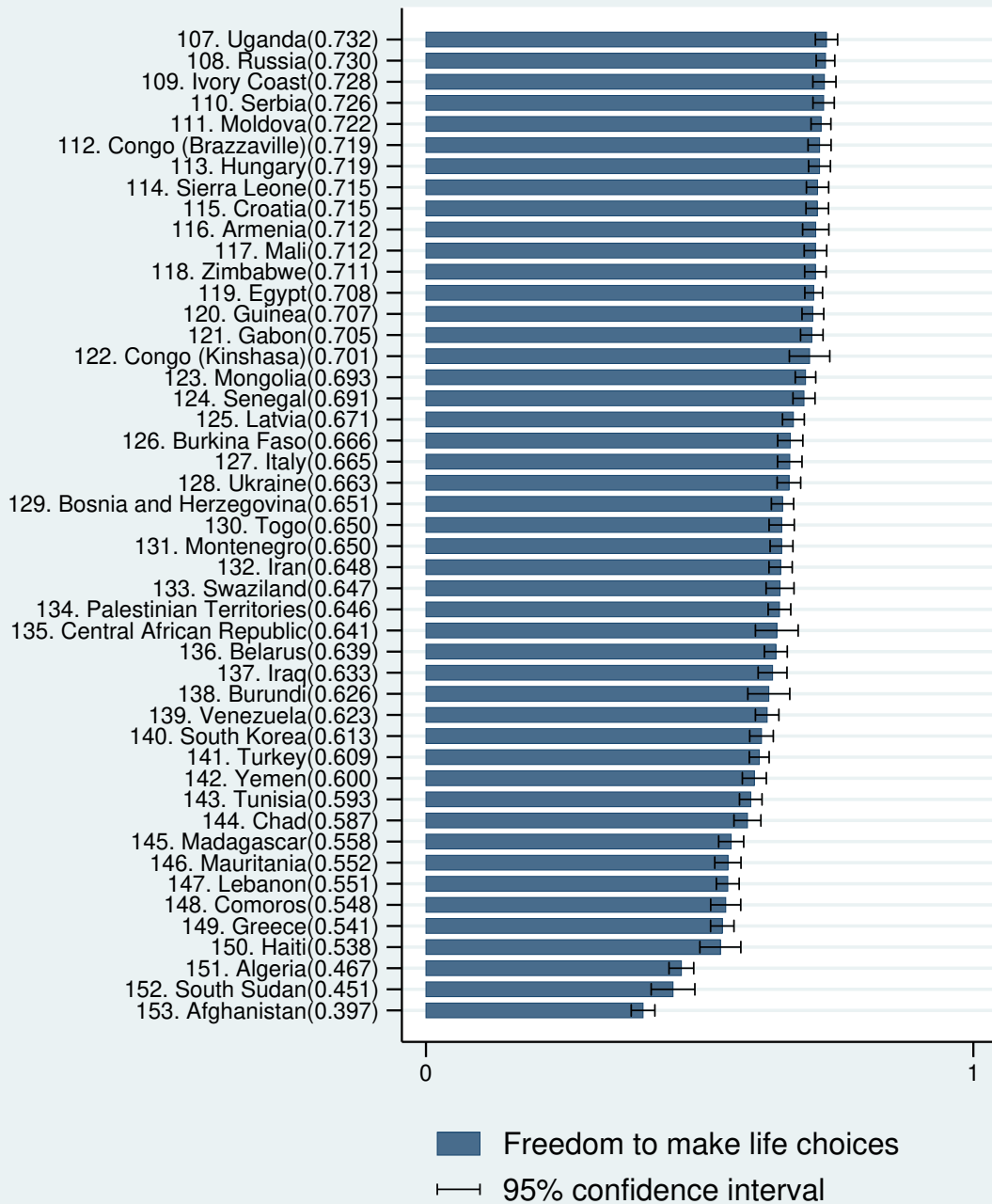


Figure 31: Ranking of Generosity – % Who Donated to Charity in the Past Month – Without Adjusting for Per-Capita Income: 2017-19 (Part 1)

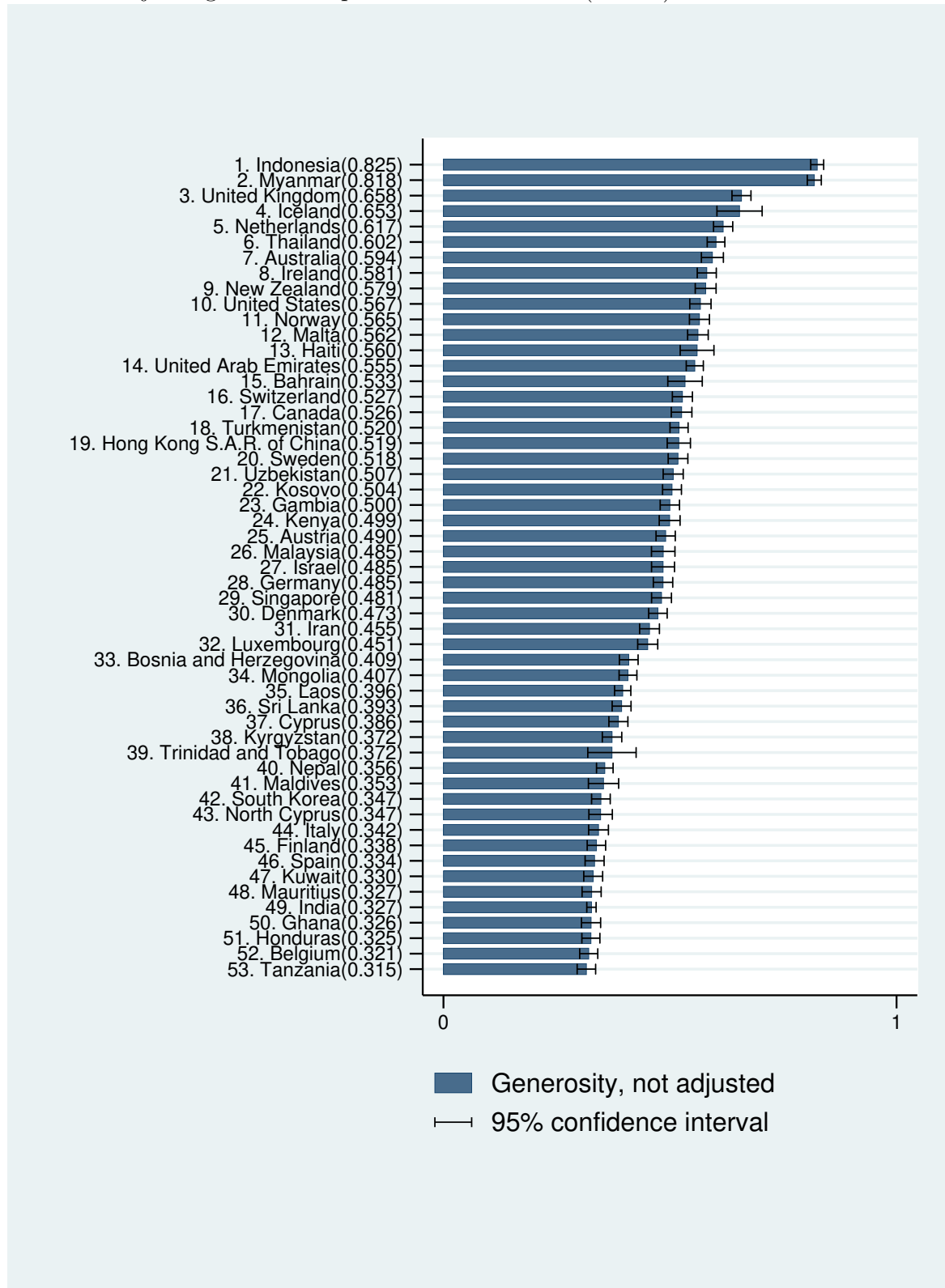


Figure 32: Ranking of Generosity – % Who Donated to Charity in the Past Month – Without Adjusting for Per-Capita Income: 2017-19 (Part 2)

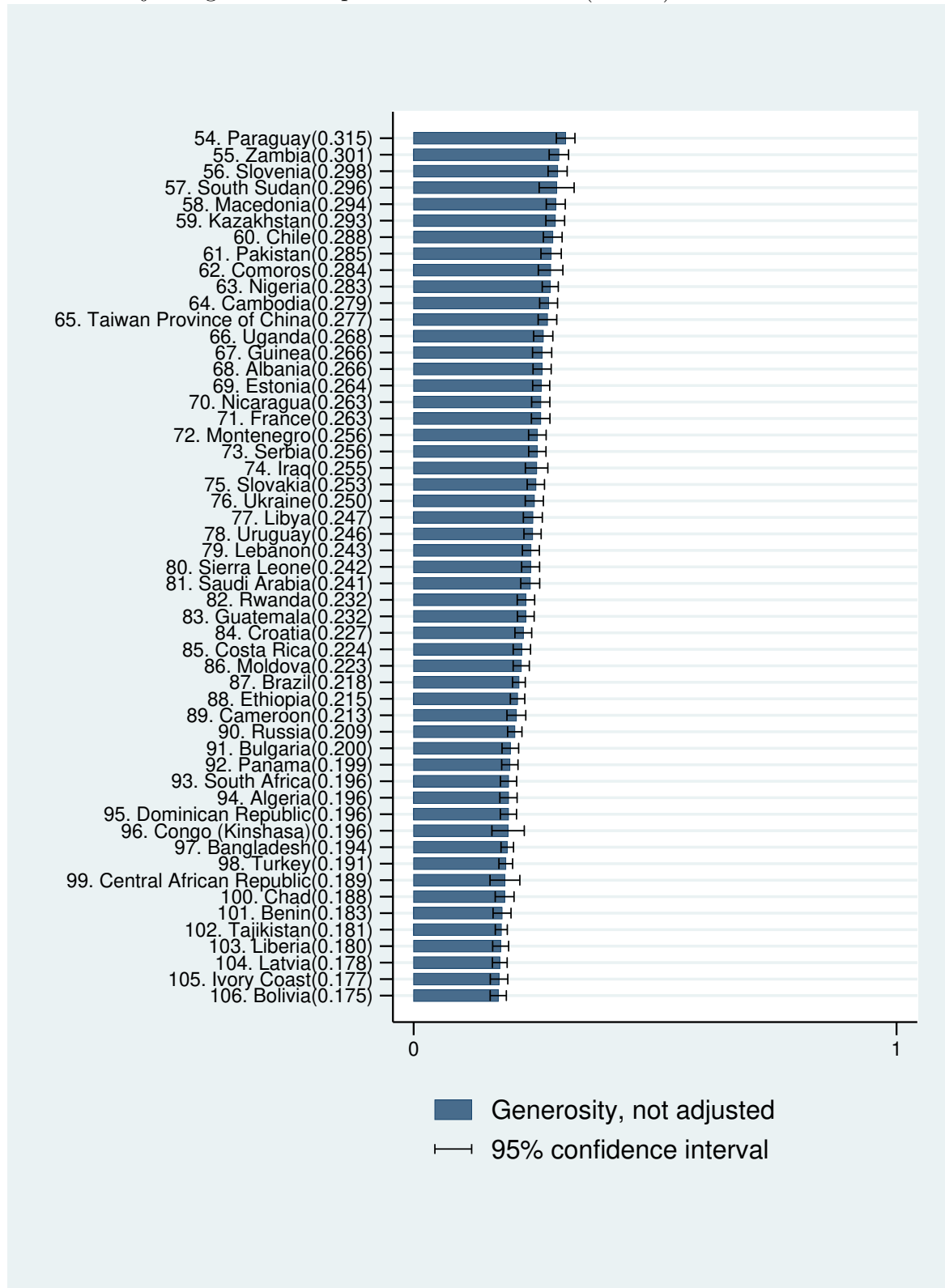


Figure 33: Ranking of Generosity – % Who Donated to Charity in the Past Month – Without Adjusting for Per-Capita Income: 2017-19 (Part 3)

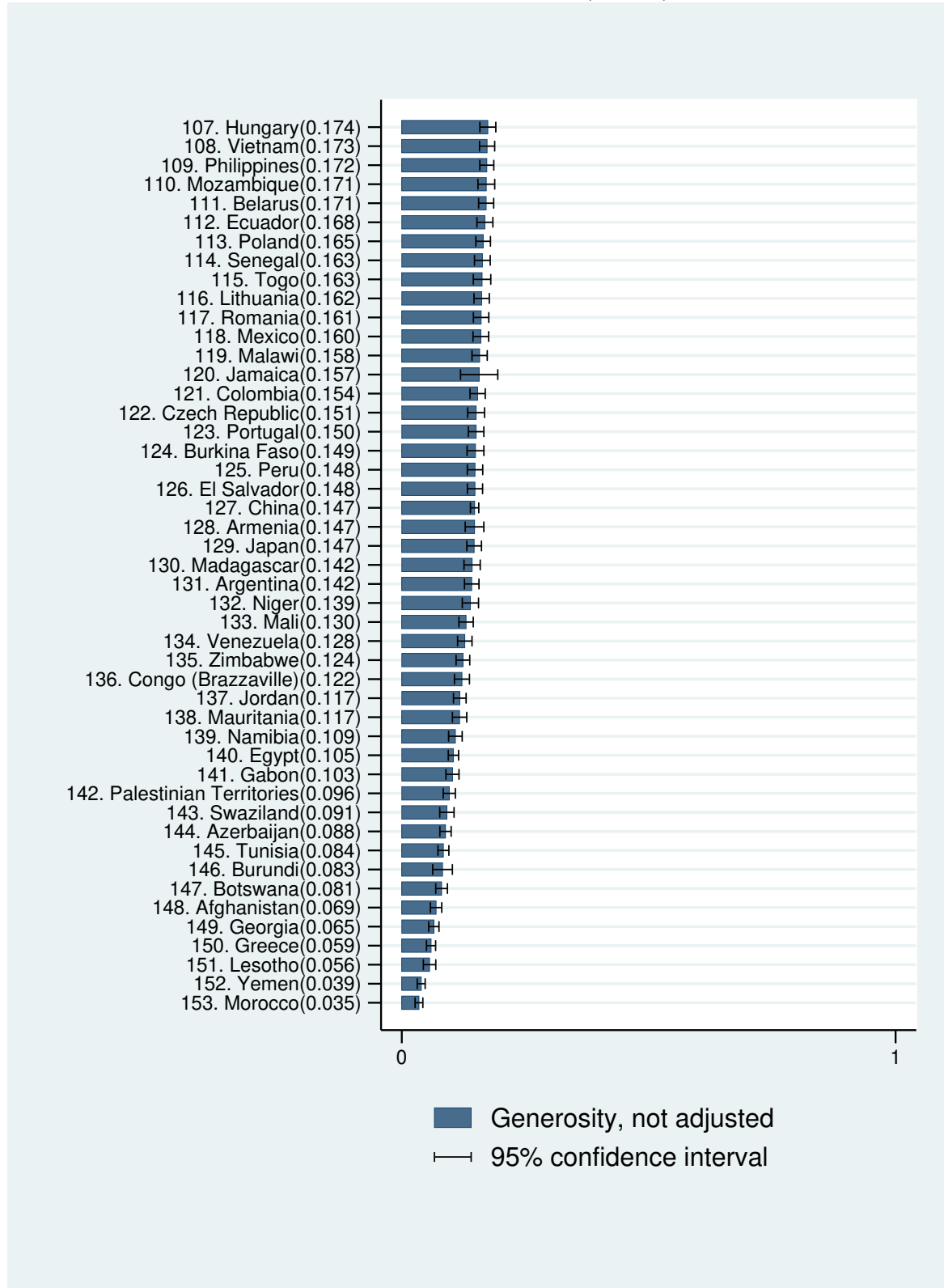


Figure 34: Ranking of Perceptions of Corruption: 2017-19 (Part 1)

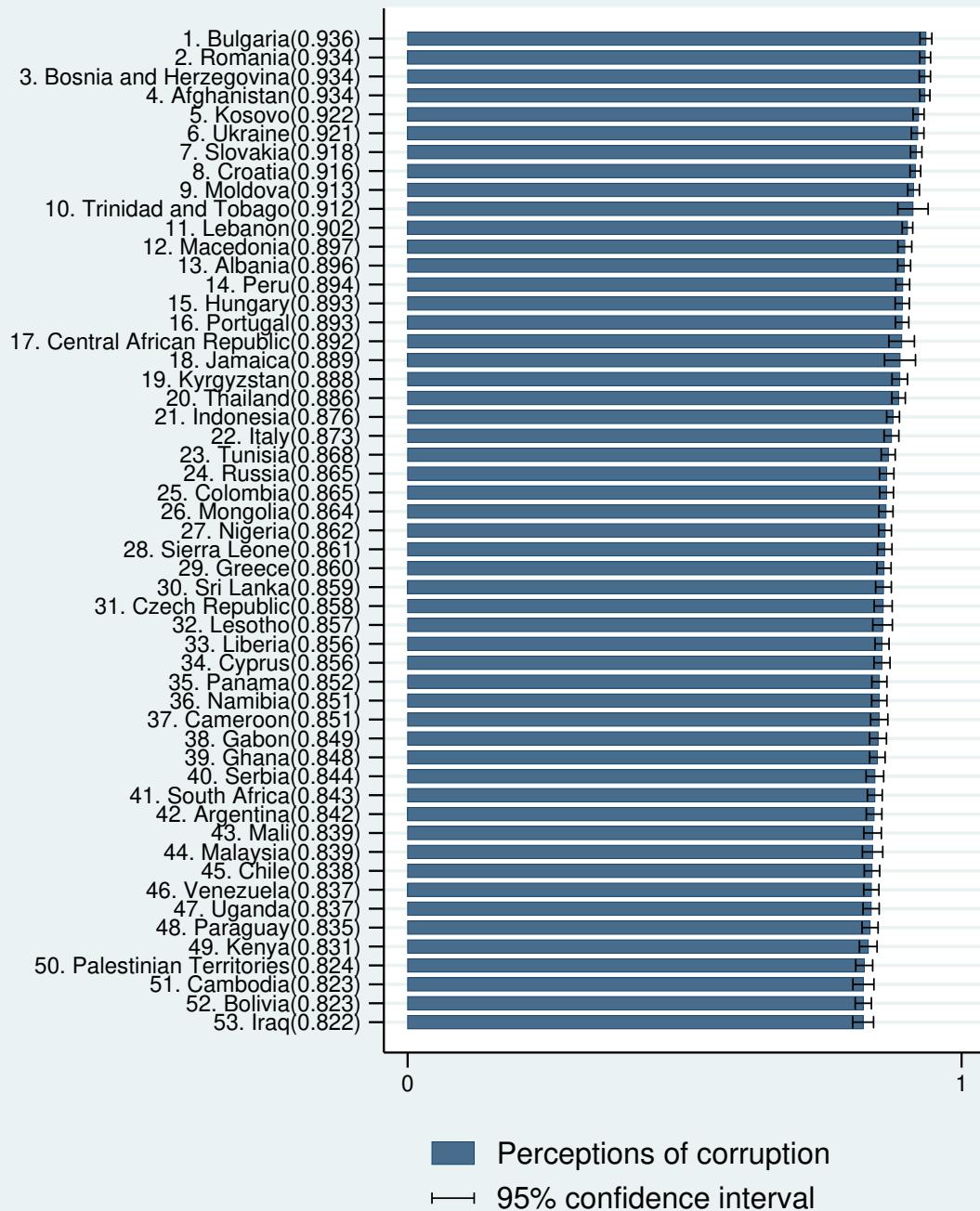


Figure 35: Ranking of Perceptions of Corruption: 2017-19 (Part 2)

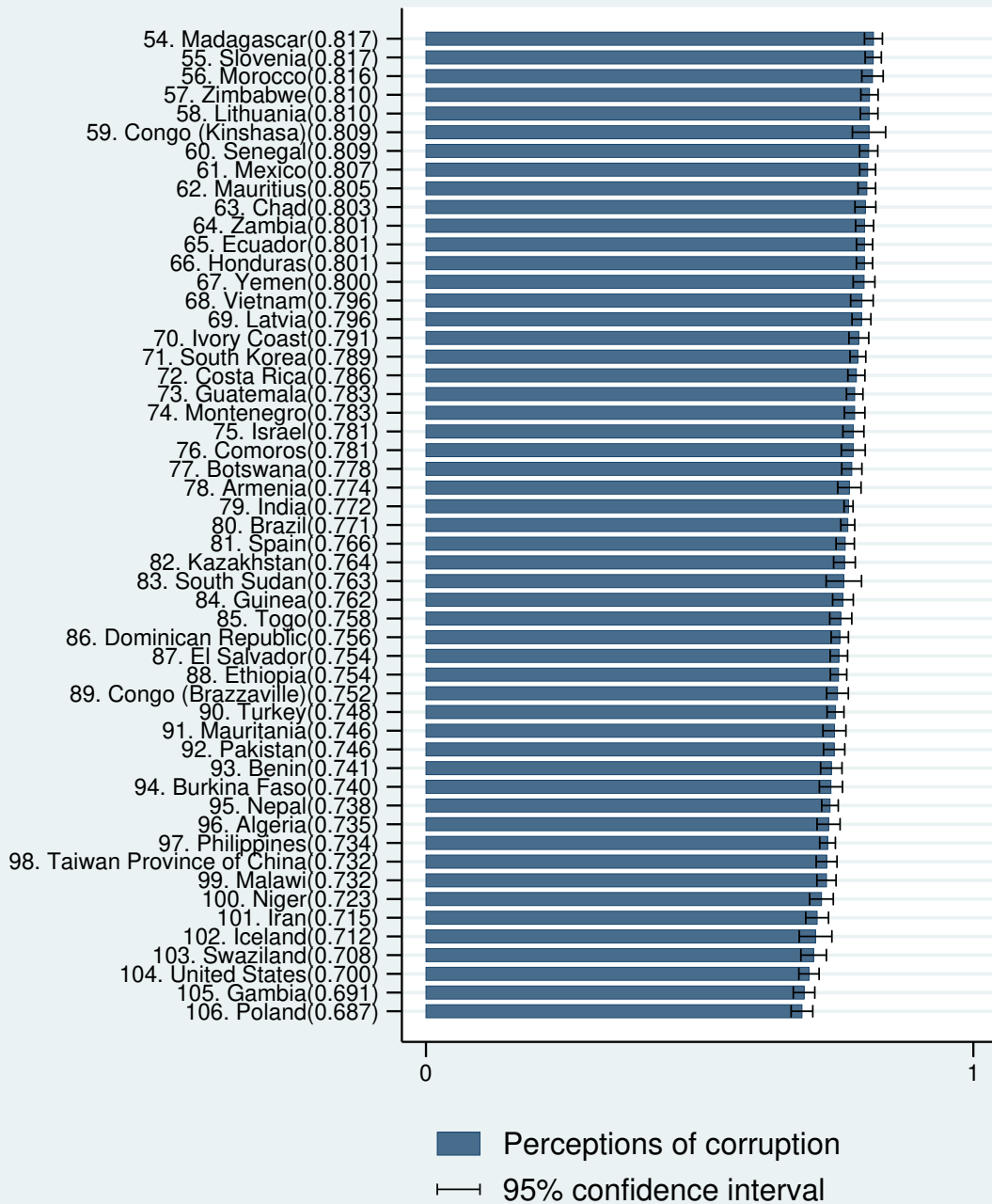


Figure 36: Ranking of Perceptions of Corruption: 2017-19 (Part 3)

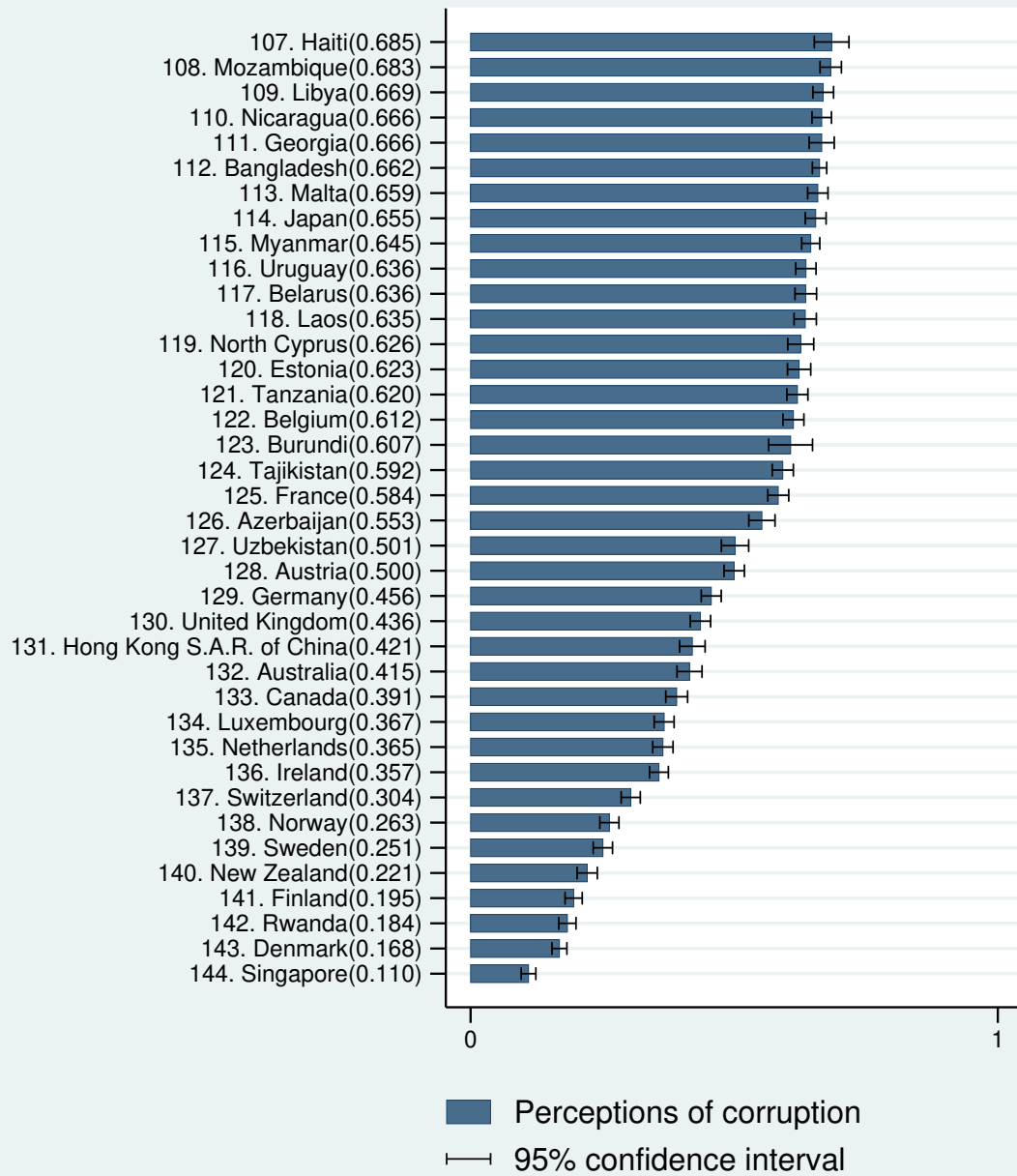


Figure 37: Ranking of Positive Affect: 2017-19 (Part 1)

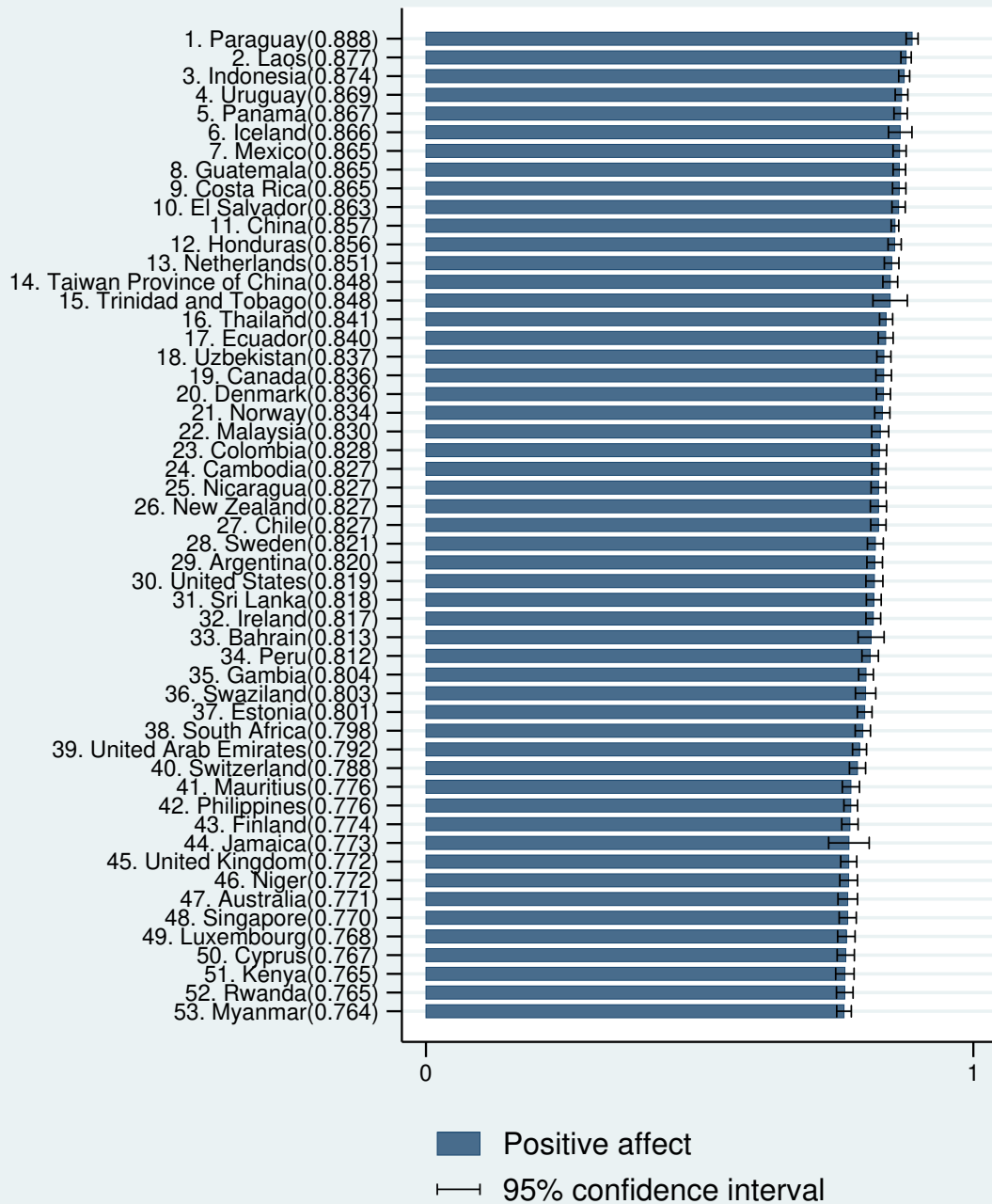


Figure 38: Ranking of Positive Affect: 2017-19 (Part 2)

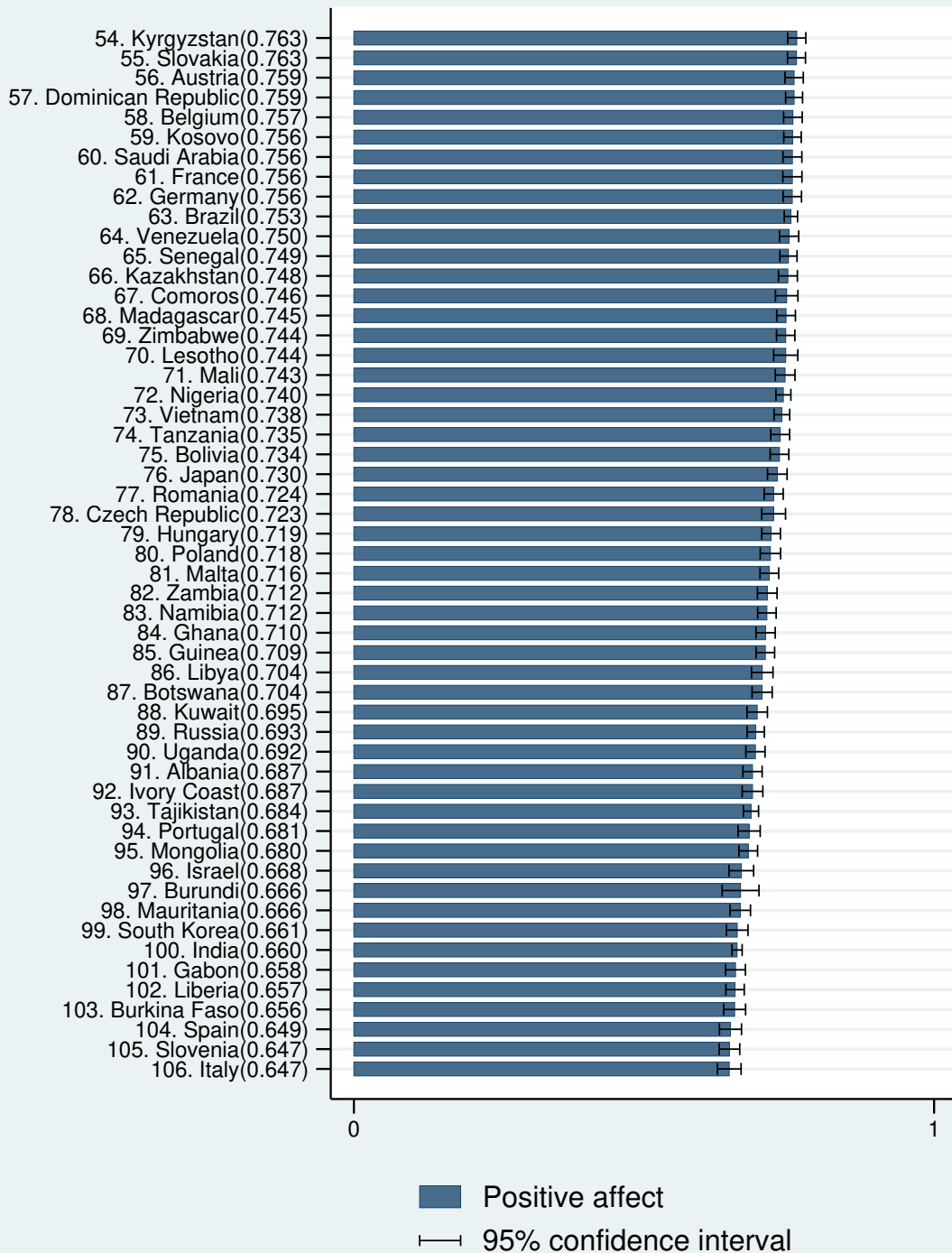


Figure 39: Ranking of Positive Affect: 2017-19 (Part 3)

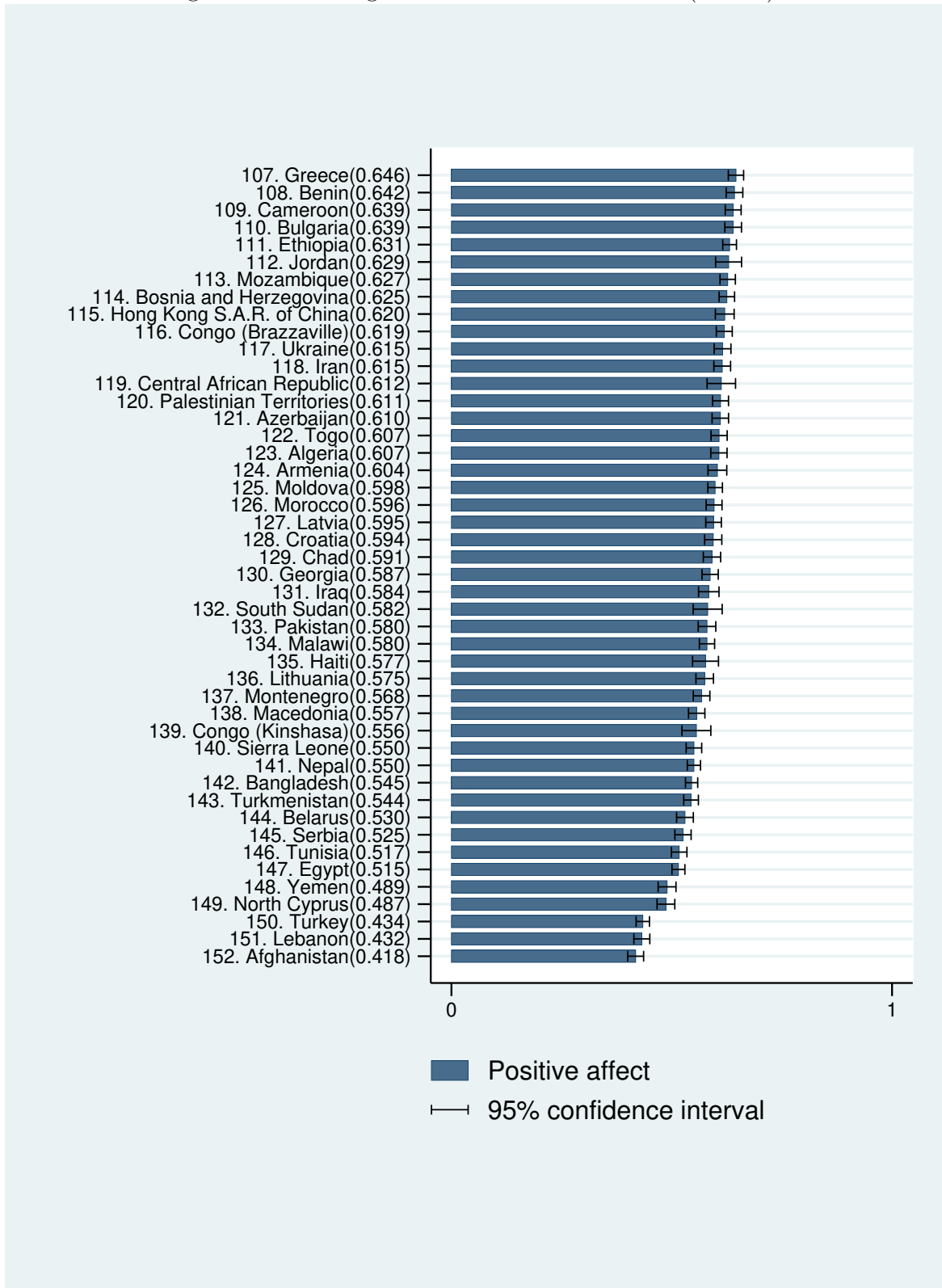


Figure 40: Ranking of Negative Affect: 2017-19 (Part 1)

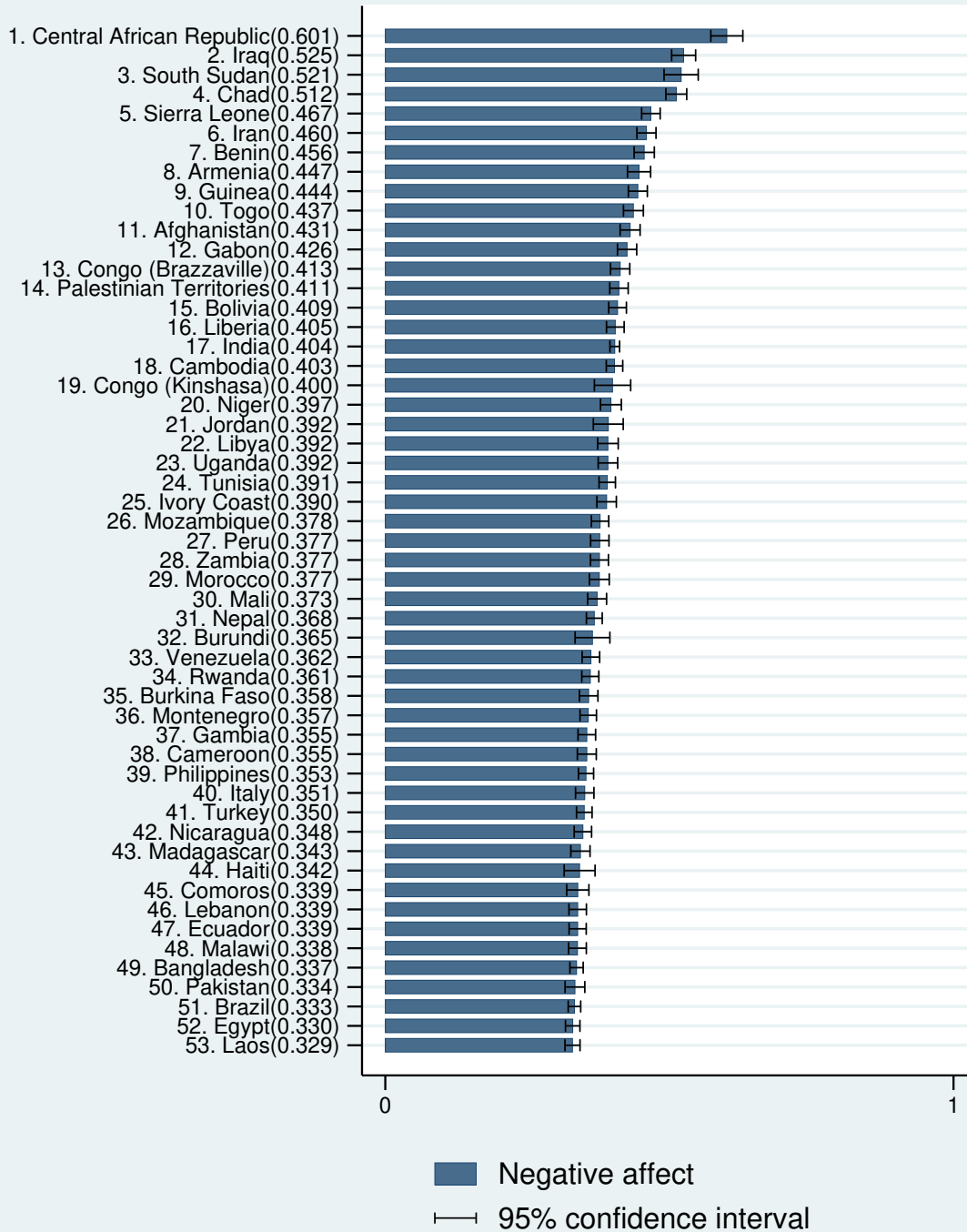


Figure 41: Ranking of Negative Affect: 2017-19 (Part 2)

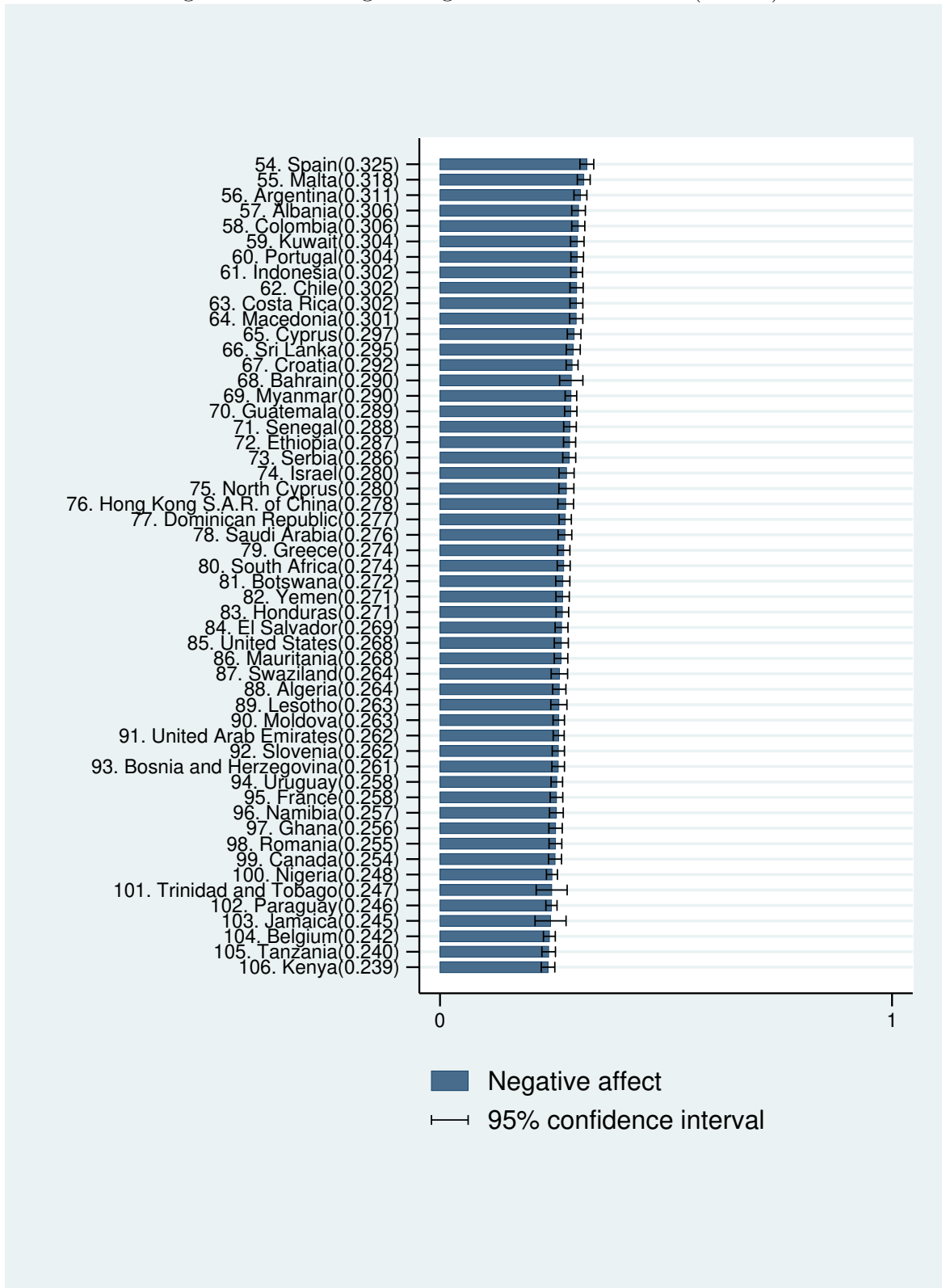


Figure 42: Ranking of Negative Affect: 2017-19 (Part 3)

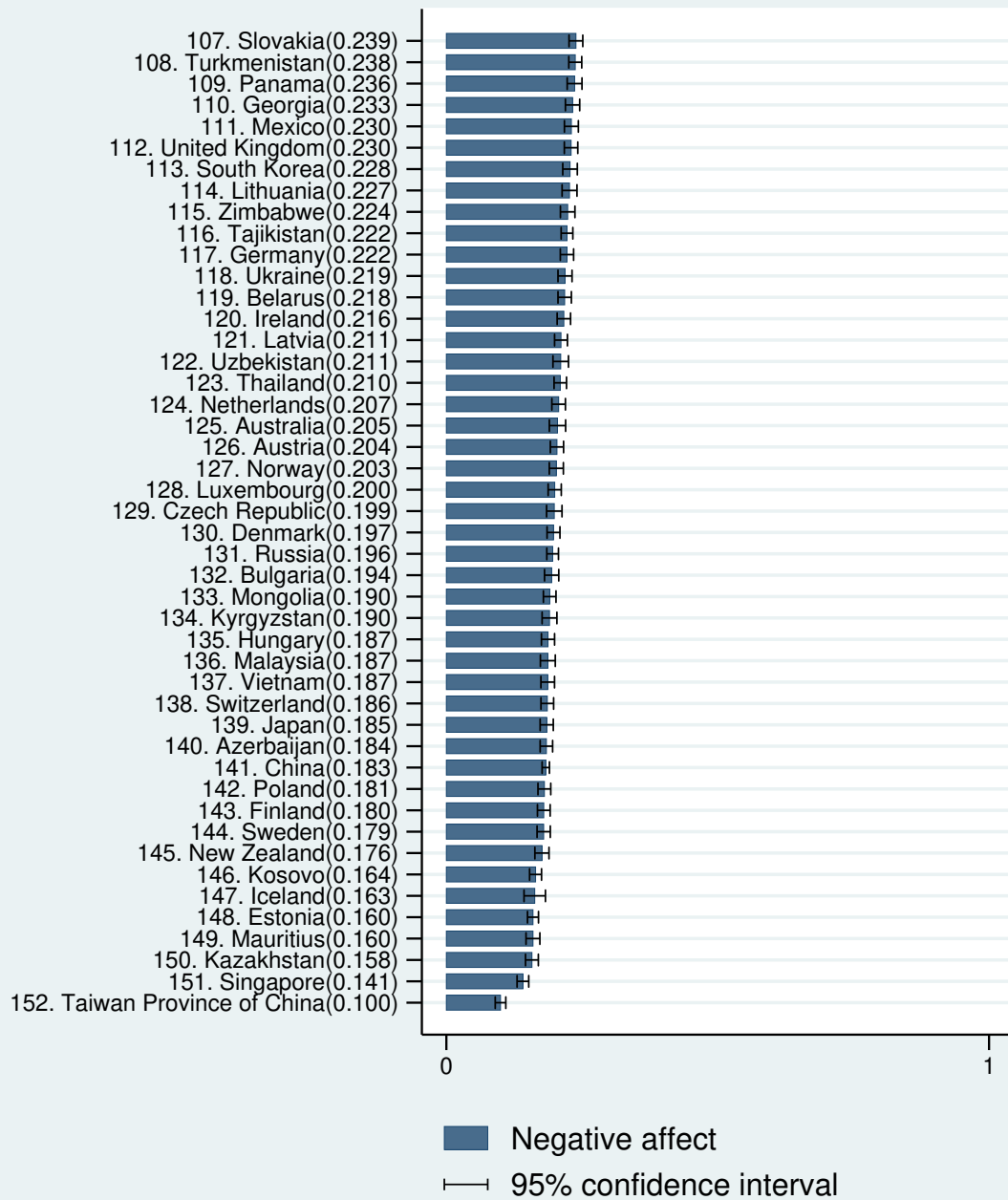
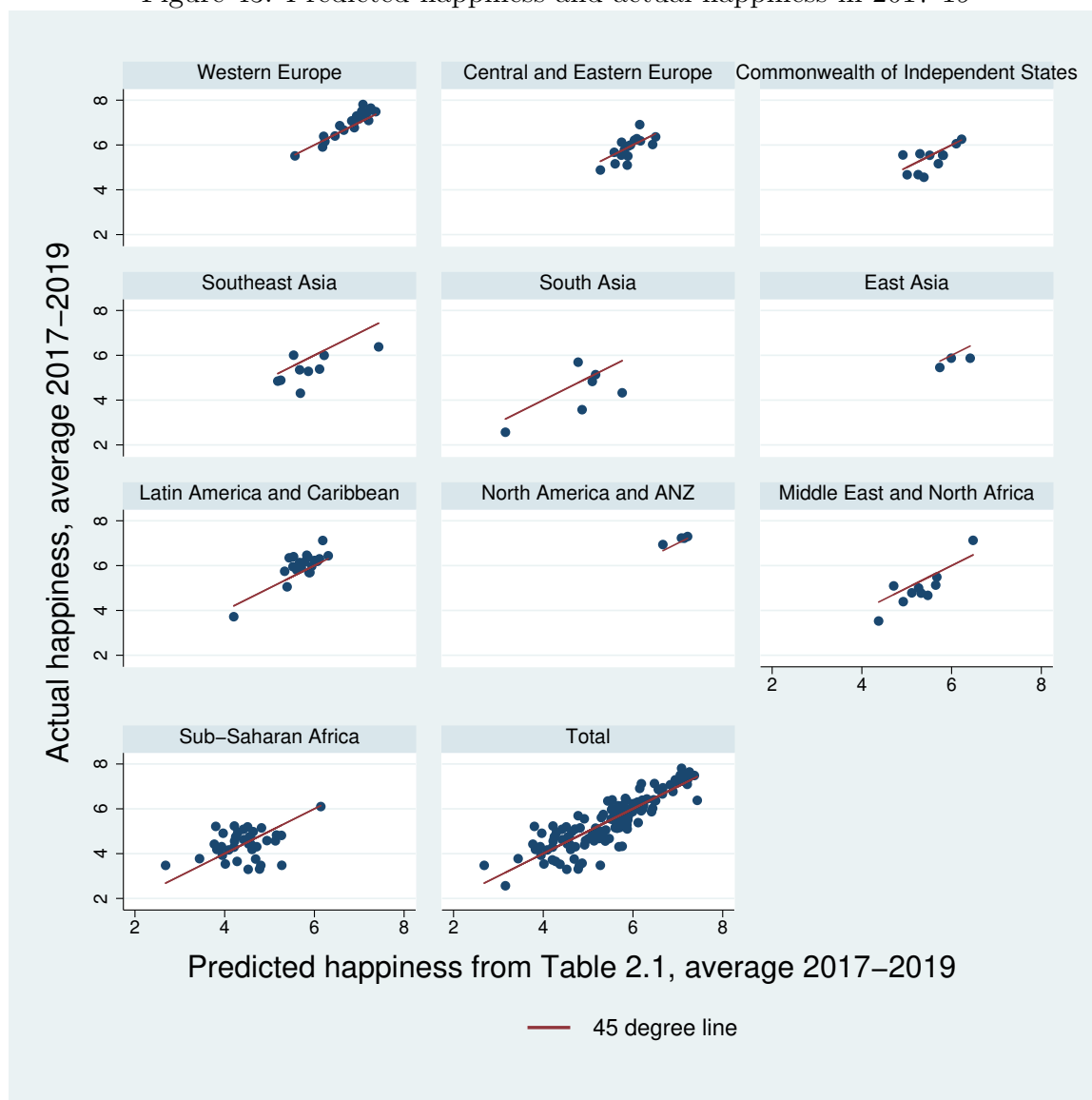


Figure 43: Predicted happiness and actual happiness in 2017-19



Note: These average actual (predicted) happiness scores by country/territory for the 2017-2019 period are weighted averages of the yearly averages by county/territory used in (predicted by) column (1)'s regression in Table 12. The yearly weights are the sums of Gallup-assigned individual weights by country/territory in that year.

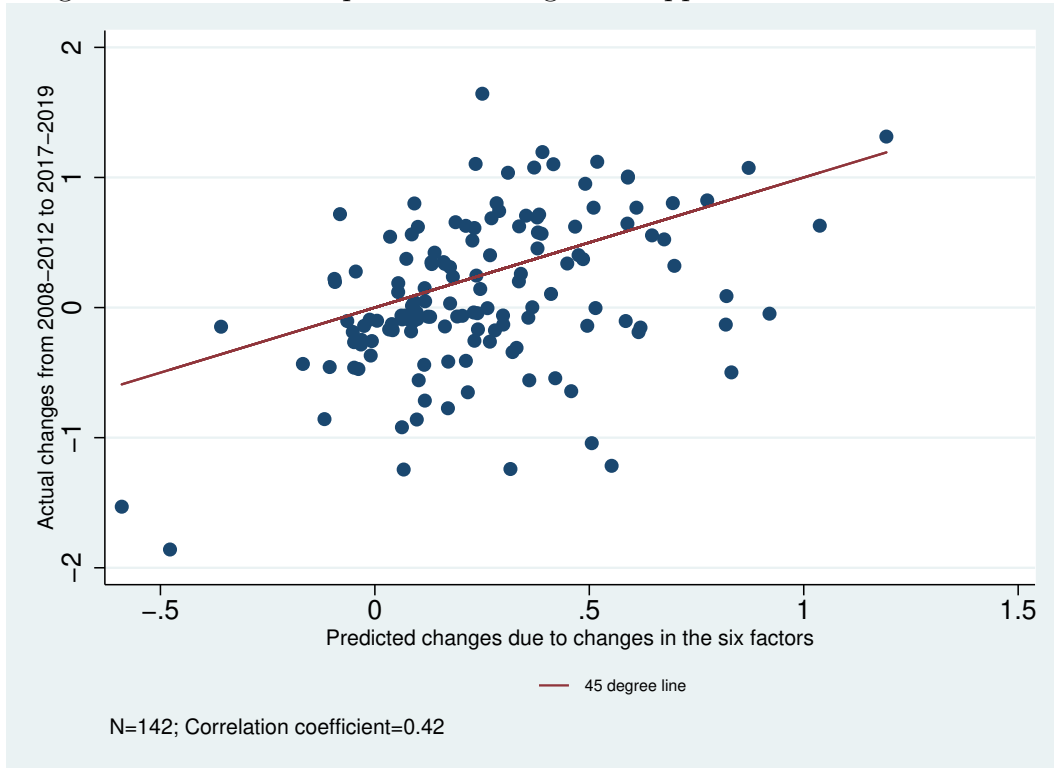
Table 20: Decomposing the happiness difference between a hypothetical average country and Dystopia

	Average country	Dystopia	Explained excess happiness over Dystopia due to	Share of explained excess happiness over Dystopia due to
Happiness	5.47	1.97		
Logged GDP per capita	9.3	6.49	.87	.25
Social support	.81	.32	1.16	.33
Healthy life expectancy	64.45	45.2	.69	.2
Freedom to make life choices	.78	.4	.46	.13
Generosity	-.01	-.3	.19	.05
Perceptions of corruption	.73	.94	.13	.04
Sum of explained excess over Dystopia			3.5	1

Table 21: Decomposing the happiness difference between the group of top 10 countries/territories and the group of bottom 10 countries/territories in the ranking of happiness scores

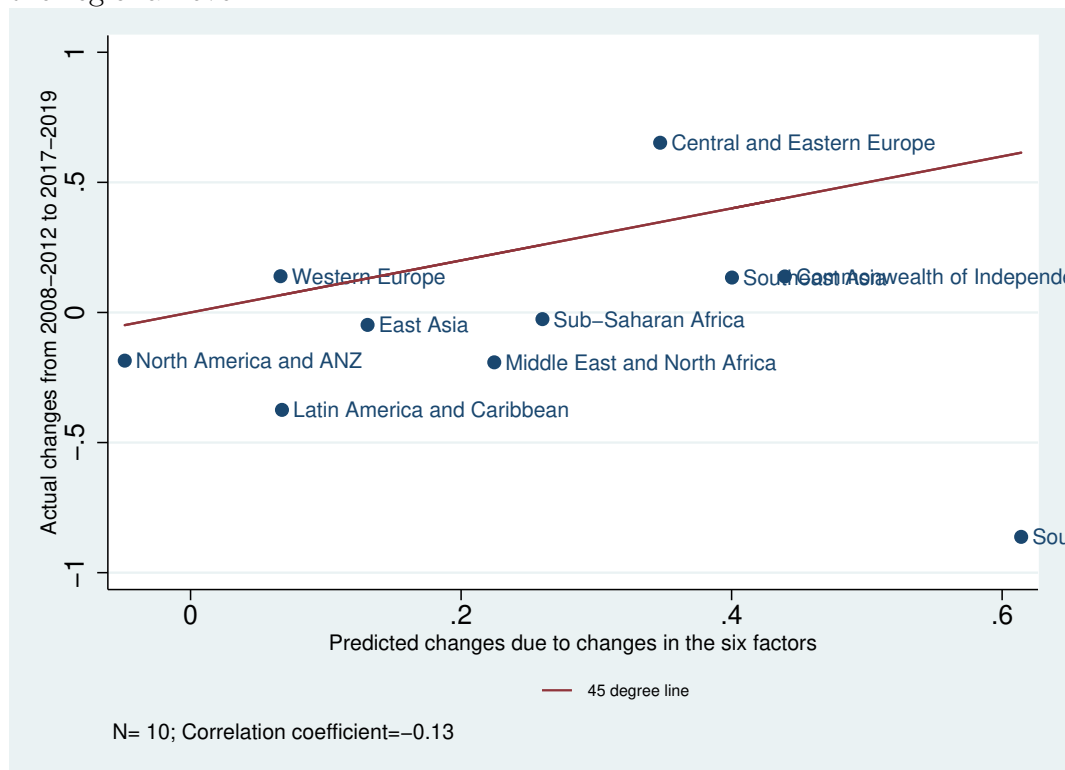
	Top 10	Bottom 10	Difference in happiness due to	Share of explained difference due to
Happiness	7.46	3.31		
Logged GDP per capita	10.85	7.83	.94	.32
Social support	.94	.61	.79	.27
Healthy life expectancy	72.83	55.65	.62	.21
Freedom to make life choices	.93	.7	.27	.09
Generosity	.11	-.02	.09	.03
Perceptions of corruption	.33	.73	.25	.09
Total explained difference in happiness			2.96	1
Total difference in happiness			4.16	

Figure 44: Actual and predicted changes in happiness from 2008-2012 to 2017-19



Note: Defining predicted changes in happiness due to changes in the six factors: Step 1. Take periodical averages (2008-2012 and 2017-19, respectively) of the six factors in the survey data. Step 2. Take difference between the two periods for each of the factors. Step 3. Multiply the differences with corresponding coefficients on the factors in Table 2.1. Step 4. Take the summation of the products from the previous step. The resulted sum is predicted change in ladder due to changes in the six factors.

Figure 45: Actual and predicted changes in happiness from 2008-2012 to 2017-19 at the regional level



Note: This plot at the regional level shows weighted averages of the actual and predicted changes shown in figure 44. The weights for deriving the regional averages are average population from 2005 to 2018.

Table 22: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for the full world sample

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.503	5.408	
Logged GDP per capita	9.301	9.163	.043
Social support	.809	.801	.018
Healthy life expectancy	64.439	61.936	.09
Freedom to make life choices	.783	.706	.092
Generosity	-.021	-.004	-.012
Perceptions of corruption	.733	.764	.02
Sum of explained changes in happiness			.252
Total changes in happiness			.095

Note:

Table 23: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for the top 10 countries/territories in terms of happiness changes

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.379	4.212	
Logged GDP per capita	8.845	8.615	.071
Social support	.737	.665	.17
Healthy life expectancy	60.269	57.611	.096
Freedom to make life choices	.749	.643	.127
Generosity	-.081	-.093	.008
Perceptions of corruption	.814	.88	.043
Sum of explained changes in happiness			.515
Total changes in happiness			1.167

Note: The following countries/territories are in this group: Benin, Bulgaria, Congo (Brazzaville), Guinea, Hungary, Ivory Coast, Philippines, Romania, Serbia, Togo,

Table 24: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for the bottom 10 countries/territories in terms of happiness changes

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	3.986	5.14	
Logged GDP per capita	8.518	8.438	.025
Social support	.722	.773	-.12
Healthy life expectancy	59.115	55.373	.135
Freedom to make life choices	.741	.699	.051
Generosity	-.089	-.032	-.038
Perceptions of corruption	.807	.816	.006
Sum of explained changes in happiness			.059
Total changes in happiness			-1.154

Note: The following countries/territories are in this group: Afghanistan, Botswana, India, Jordan, Lesotho, Malawi, Panama, Venezuela, Zambia, Zimbabwe,

Table 25: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for Western Europe

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	6.978	6.93	
Logged GDP per capita	10.711	10.643	.021
Social support	.917	.925	-.018
Healthy life expectancy	72.854	71.665	.043
Freedom to make life choices	.854	.84	.017
Generosity	.032	.094	-.041
Perceptions of corruption	.517	.595	.05
Sum of explained changes in happiness			.072
Total changes in happiness			.047

Note: The following countries/territories are in this group: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom,

Table 26: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for Central and Eastern Europe

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.856	5.264	
Logged GDP per capita	10.024	9.808	.067
Social support	.878	.843	.083
Healthy life expectancy	68.415	66.604	.065
Freedom to make life choices	.765	.604	.192
Generosity	-.121	-.122	0
Perceptions of corruption	.846	.902	.036
Sum of explained changes in happiness			.444
Total changes in happiness			.592

Note: The following countries/territories are in this group: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Montenegro, Poland, Romania, Serbia, Slovakia, Slovenia,

Table 27: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for Commonwealth of Independent States

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.38	5.048	
Logged GDP per capita	9.158	8.957	.062
Social support	.847	.805	.099
Healthy life expectancy	64.955	62.455	.09
Freedom to make life choices	.78	.657	.148
Generosity	-.062	-.147	.056
Perceptions of corruption	.734	.781	.03
Sum of explained changes in happiness			.486
Total changes in happiness			.332

Note: The following countries/territories are in this group: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Ukraine, Uzbekistan,

Table 28: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for Southeast Asia

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.383	5.272	
Logged GDP per capita	9.367	9.03	.104
Social support	.824	.778	.108
Healthy life expectancy	64.71	62.732	.071
Freedom to make life choices	.913	.826	.103
Generosity	.162	.226	-.042
Perceptions of corruption	.705	.729	.016
Sum of explained changes in happiness			.361
Total changes in happiness			.111

Note: The following countries/territories are in this group: Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam,

Table 29: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for South Asia

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	4.355	4.562	
Logged GDP per capita	8.4	8.109	.09
Social support	.675	.626	.116
Healthy life expectancy	61.09	58.559	.091
Freedom to make life choices	.758	.626	.159
Generosity	.035	.097	-.041
Perceptions of corruption	.785	.832	.03
Sum of explained changes in happiness			.445
Total changes in happiness			-.207

Note: The following countries/territories are in this group: Afghanistan, Bangladesh, India, Nepal, Pakistan, Sri Lanka,

Table 30: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for East Asia

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.914	5.7	
Logged GDP per capita	10.32	10.108	.065
Social support	.879	.864	.034
Healthy life expectancy	70.127	68.71	.051
Freedom to make life choices	.722	.678	.053
Generosity	-.066	-.026	-.027
Perceptions of corruption	.76	.824	.042
Sum of explained changes in happiness			.218
Total changes in happiness			.214

Note: The following countries/territories are in this group: Japan, Mongolia, South Korea, Taiwan Province of China,

Table 31: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for Latin America and Caribbean

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.982	6.066	
Logged GDP per capita	9.303	9.208	.03
Social support	.857	.846	.027
Healthy life expectancy	66.717	64.316	.086
Freedom to make life choices	.831	.749	.097
Generosity	-.072	-.008	-.042
Perceptions of corruption	.802	.787	-.009
Sum of explained changes in happiness			.188
Total changes in happiness			-.084

Note: The following countries/territories are in this group: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, Uruguay, Venezuela,

Table 32: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for North America and ANZ

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	7.173	7.297	
Logged GDP per capita	10.71	10.621	.027
Social support	.934	.942	-.019
Healthy life expectancy	72.177	71.265	.033
Freedom to make life choices	.907	.904	.003
Generosity	.164	.267	-.068
Perceptions of corruption	.432	.447	.01
Sum of explained changes in happiness			-.014
Total changes in happiness			-.124

Note: The following countries/territories are in this group: Australia, Canada, New Zealand, United States,

Table 33: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for Middle East and North Africa

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	5.227	5.426	
Logged GDP per capita	9.714	9.714	0
Social support	.797	.789	.017
Healthy life expectancy	65.314	63.812	.054
Freedom to make life choices	.71	.65	.072
Generosity	-.084	-.075	-.007
Perceptions of corruption	.762	.727	-.022
Sum of explained changes in happiness			.115
Total changes in happiness			-.199

Note: The following countries/territories are in this group: Algeria, Bahrain, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Palestinian Territories, Saudi Arabia, Tunisia, Turkey, United Arab Emirates, Yemen,

Table 34: Decomposing changes in happiness from 2008-2012 to 2017-2019, equal weight for each country/territory, for Sub-Saharan Africa

	Period 2017-2019	Period 2008-2012	Explained changes in happiness due to
Happiness	4.418	4.289	
Logged GDP per capita	7.909	7.775	.042
Social support	.679	.704	-.059
Healthy life expectancy	55.069	50.554	.163
Freedom to make life choices	.725	.66	.077
Generosity	-.004	-.026	.015
Perceptions of corruption	.771	.817	.029
Sum of explained changes in happiness			.267
Total changes in happiness			.129

Note: The following countries/territories are in this group: Benin, Botswana, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, Comoros, Congo (Brazzaville), Congo (Kinshasa), Gabon, Ghana, Guinea, Ivory Coast, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe,

Table 35: Decomposing changes in happiness from 2008-2012 to 2017-2019 by region, weighting countries/territories within a region with their population size

	Changes in average happi- ness	Total ex- plained changes due to the six factors	Changes due to: GDP per capita	Changes due to: Social support	Changes due to: Healthy life ex- pectancy	Changes due to: Free- dom to make life choices	Changes due to: Gen- erosity	Change due to: Percep- tions of corrup- tion
Western Europe	.139	.066	.019	-.027	.044	.004	-.029	.057
Central and Eastern Europe	.652	.347	.074	.032	.067	.161	-.052	.064
Commonwealth of Independent States	.138	.439	.034	.04	.104	.129	.095	.038
Southeast Asia	.134	.4	.101	.086	.058	.113	.011	.032
South Asia	-.862	.614	.122	.101	.097	.222	.013	.059
East Asia	-.048	.131	.04	-.002	.048	.04	-.046	.051
Latin America and Caribbean	-.374	.068	.01	.003	.074	.06	-.038	-.041
North America and ANZ	-.185	-.049	.031	-.022	-.001	-.002	-.048	-.007
Middle East and North Africa	-.192	.225	.024	.055	.063	.087	-.002	-.002
Sub-Saharan Africa	-.026	.26	.043	-.124	.157	.127	.023	.034

Table 36: Number of countries/territories that experienced statistically significant changes in happiness scores from 2008-2012 to 2017-2019

	Total number of coun- tries/territories in sample	Number of significant positive changes	Number of significant negative changes
Western Europe	21	7	6
Central and Eastern Europe	17	15	2
Commonwealth of Independent States	12	8	2
Southeast Asia	9	2	3
South Asia	6	2	2
East Asia	6	3	2
Latin America and Caribbean	21	9	10
North America and ANZ	4	0	2
Middle East and North Africa	17	2	11
Sub-Saharan Africa	36	17	13

Table 37: Decomposing changes in happiness from 2008-2012 to 2017-2019

Variable	Mean	Std. Dev.	Min.	Max.	N
Changes in average happiness	0.095	0.586	-1.859	1.644	142
Total explained changes due to the six factors	0.252	0.275	-0.59	1.193	142
Changes in ladder due to: GDP per capita	0.043	0.053	-0.247	0.136	142
Changes in ladder due to: Social support	0.018	0.148	-0.327	0.61	142
Changes in ladder due to: Healthy life expectancy	0.09	0.077	-0.014	0.643	142
Changes in ladder due to: Freedom to make life choices	0.092	0.116	-0.252	0.446	142
Changes in ladder due to: Generosity	-0.012	0.067	-0.194	0.169	142
Changes in ladder due to: Perceptions of corruption	0.02	0.055	-0.158	0.168	142

Table 38: Countries/territories by Region

Region indicator	Country name
Western Europe	Austria
Western Europe	Belgium
Western Europe	Cyprus
Western Europe	Denmark
Western Europe	Finland
Western Europe	France
Western Europe	Germany
Western Europe	Greece
Western Europe	Iceland
Western Europe	Ireland
Western Europe	Italy
Western Europe	Luxembourg
Western Europe	Malta
Western Europe	Netherlands
Western Europe	North Cyprus
Western Europe	Norway
Western Europe	Portugal
Western Europe	Spain
Western Europe	Sweden
Western Europe	Switzerland
Western Europe	United Kingdom
Central and Eastern Europe	Albania
Central and Eastern Europe	Bosnia and Herzegovina
Central and Eastern Europe	Bulgaria
Central and Eastern Europe	Croatia
Central and Eastern Europe	Czech Republic
Central and Eastern Europe	Estonia
Central and Eastern Europe	Hungary
Central and Eastern Europe	Kosovo
Central and Eastern Europe	Latvia
Central and Eastern Europe	Lithuania
Central and Eastern Europe	Macedonia
Central and Eastern Europe	Montenegro
Central and Eastern Europe	Poland
Central and Eastern Europe	Romania
Central and Eastern Europe	Serbia
Central and Eastern Europe	Slovakia
Central and Eastern Europe	Slovenia
Commonwealth of Independent States	Armenia
Commonwealth of Independent States	Azerbaijan
Commonwealth of Independent States	Belarus
Commonwealth of Independent States	Georgia

Table 39: Countries/territories by Region

Region indicator	Country name
Commonwealth of Independent States	Kazakhstan
Commonwealth of Independent States	Kyrgyzstan
Commonwealth of Independent States	Moldova
Commonwealth of Independent States	Russia
Commonwealth of Independent States	Tajikistan
Commonwealth of Independent States	Turkmenistan
Commonwealth of Independent States	Ukraine
Commonwealth of Independent States	Uzbekistan
Southeast Asia	Cambodia
Southeast Asia	Indonesia
Southeast Asia	Laos
Southeast Asia	Malaysia
Southeast Asia	Myanmar
Southeast Asia	Philippines
Southeast Asia	Singapore
Southeast Asia	Thailand
Southeast Asia	Vietnam
South Asia	Afghanistan
South Asia	Bangladesh
South Asia	Bhutan
South Asia	India
South Asia	Maldives
South Asia	Nepal
South Asia	Pakistan
South Asia	Sri Lanka
East Asia	China
East Asia	Hong Kong S.A.R. of China
East Asia	Japan
East Asia	Mongolia
East Asia	South Korea
East Asia	Taiwan Province of China
Latin America and Caribbean	Argentina
Latin America and Caribbean	Belize
Latin America and Caribbean	Bolivia
Latin America and Caribbean	Brazil
Latin America and Caribbean	Chile
Latin America and Caribbean	Colombia
Latin America and Caribbean	Costa Rica
Latin America and Caribbean	Cuba
Latin America and Caribbean	Dominican Republic
Latin America and Caribbean	Ecuador
Latin America and Caribbean	El Salvador

Table 40: Countries/territories by Region

Region indicator	Country name
Latin America and Caribbean	Guatemala
Latin America and Caribbean	Guyana
Latin America and Caribbean	Haiti
Latin America and Caribbean	Honduras
Latin America and Caribbean	Jamaica
Latin America and Caribbean	Mexico
Latin America and Caribbean	Nicaragua
Latin America and Caribbean	Panama
Latin America and Caribbean	Paraguay
Latin America and Caribbean	Peru
Latin America and Caribbean	Suriname
Latin America and Caribbean	Trinidad and Tobago
Latin America and Caribbean	Uruguay
Latin America and Caribbean	Venezuela
North America and ANZ	Australia
North America and ANZ	Canada
North America and ANZ	New Zealand
North America and ANZ	United States
Middle East and North Africa	Algeria
Middle East and North Africa	Bahrain
Middle East and North Africa	Egypt
Middle East and North Africa	Iran
Middle East and North Africa	Iraq
Middle East and North Africa	Israel
Middle East and North Africa	Jordan
Middle East and North Africa	Kuwait
Middle East and North Africa	Lebanon
Middle East and North Africa	Libya
Middle East and North Africa	Morocco
Middle East and North Africa	Oman
Middle East and North Africa	Palestinian Territories
Middle East and North Africa	Qatar
Middle East and North Africa	Saudi Arabia
Middle East and North Africa	Syria
Middle East and North Africa	Tunisia
Middle East and North Africa	Turkey
Middle East and North Africa	United Arab Emirates
Middle East and North Africa	Yemen
Sub-Saharan Africa	Angola
Sub-Saharan Africa	Benin
Sub-Saharan Africa	Botswana
Sub-Saharan Africa	Burkina Faso

Table 41: Countries/territories by Region

Region indicator	Country name
Sub-Saharan Africa	Burundi
Sub-Saharan Africa	Cameroon
Sub-Saharan Africa	Central African Republic
Sub-Saharan Africa	Chad
Sub-Saharan Africa	Comoros
Sub-Saharan Africa	Congo (Brazzaville)
Sub-Saharan Africa	Congo (Kinshasa)
Sub-Saharan Africa	Djibouti
Sub-Saharan Africa	Ethiopia
Sub-Saharan Africa	Gabon
Sub-Saharan Africa	Gambia
Sub-Saharan Africa	Ghana
Sub-Saharan Africa	Guinea
Sub-Saharan Africa	Ivory Coast
Sub-Saharan Africa	Kenya
Sub-Saharan Africa	Lesotho
Sub-Saharan Africa	Liberia
Sub-Saharan Africa	Madagascar
Sub-Saharan Africa	Malawi
Sub-Saharan Africa	Mali
Sub-Saharan Africa	Mauritania
Sub-Saharan Africa	Mauritius
Sub-Saharan Africa	Mozambique
Sub-Saharan Africa	Namibia
Sub-Saharan Africa	Niger
Sub-Saharan Africa	Nigeria
Sub-Saharan Africa	Rwanda
Sub-Saharan Africa	Senegal
Sub-Saharan Africa	Sierra Leone
Sub-Saharan Africa	Somalia
Sub-Saharan Africa	Somaliland region
Sub-Saharan Africa	South Africa
Sub-Saharan Africa	South Sudan
Sub-Saharan Africa	Sudan
Sub-Saharan Africa	Swaziland
Sub-Saharan Africa	Tanzania
Sub-Saharan Africa	Togo
Sub-Saharan Africa	Uganda
Sub-Saharan Africa	Zambia
Sub-Saharan Africa	Zimbabwe