Statistical Appendix for Chapter 2

April 16, 2015

1   Data Sources and Variable Definitions

- Happiness score or subjective well-being (SWB): The survey measure of SWB is from the December 26, 2014 release of the Gallup World Poll (GWP), which covers the years from 2005 to 2014. 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 in purchasing power parity (PPP) at constant 2011 international dollar prices are from the November 6, 2014 release of the World Development Indicators (WDI). The GDP figures for Taiwan are from the Penn World Table 7.1. Syria and Argentina are missing the GDP numbers in the November-6-2014 WDI but were present in earlier releases. We use the numbers from the earlier release, after adjusting their levels by a factor of 1.17 to take into account changes in the implied prices when switching from the PPP 2005 prices used in the earlier release to the PPP 2011 prices used in the latest release. The factor of 1.17 is the average ratio derived by dividing the US GDP per capita under the 2011 prices with their counterparts under the 2005 prices. The same 1.17 is used to adjust the Taiwanese numbers, which are originally PPP dollars at 2005 constant prices.

    - GPD per capita in 2014 are not yet available as of November 2014. We extend the GDP-per-capita time series from 2013 to 2014 using country-specific forecast of real GDP growth in 2014 from the OECD Economic Outlook (May-2014 release) for OECD countries, and World Bank's Global Economic Prospects (June-2014 release) for the rest of the world. The GDP growth forecast is adjusted for population growth with the subtraction of 2012-13 population growth as the projected 2013-14 growth.

- Corruption Perception: The measure is the national average of the survey responses to two questions in the Gallup World Poll: "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.

- Healthy Life Expectancy (HLE). The time series of healthy life expectancy at birth are calculated by the authors based on data from the World Health Organization (WHO), the World Development Indicators (WDI), and statistics published in journal articles. The challenge is that the healthy life expectancy, unlike the simple life expectancy, is not widely available as time series. In the WHO's Global Health Observatory Data Repository, the statistics of healthy life expectancy are reported only for the years of 2000 and 2012. In our effort to derive the time series of healthy life expectancy for our sample period (2005 to 2014), we use WDI's non-health adjusted life expectancy, which is available as time series up to the year 2012, as the basis of our calculation. Using country-specific ratios of healthy life expectancy to total life expectancy in 2012, available from the WHO, we adjust the time series of total life expectancy to healthy life expectancy by simple multiplication, assuming that the ratio remains constant within each country over the sample period. Three countries/regions are missing due to the lack of health/total life expectancy ratio. One is Hong Kong. We calculate its ratio using relevant estimates 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). Another is Puerto Rico. We set its ratio to the U.S. ratio of 0.886. The third is Kosovo, we set its ratio to the world average 0.868. The estimated life expectancy for Taiwan and the Palestinian Territories are available 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. Once we have the data, we use intrapolation and extrapolation to fill in the missing values (when necessary) and to extend the period to 2014.

- 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 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 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 ques-

tion "Have you donated money to a charity in the past month?" on GDP per capita.

- Positive affect is defined as the average of three positive affect measures: 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 8-9, 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 all waves of Gallop World Poll. 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?"

- Variables in the expanded data set: Confidence in national government. This measure is from the Gallup World Poll. The English wording of the question is "Do you have confidence in each of the following, or not? How about the national government? (WP139)".

- Variables in the expanded data set: "Most people can be trusted" from the Gallup World Poll. The question's English wording is "Generally speaking, would you say that most people can be trusted or that you have to be careful in dealing with people?".

- Variables in the expanded data set: "Most people can be trusted" from the 6-wave World Value Surveys. The question's English wording is "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" The measure is defined as the percentage of respondents saying that most people can be trusted, excluding those who did not provide an answer.

- Variables in the expanded data set: Democratic and delivery quality measures of governance are based on Worldwide Governance Indicators (WGI) project (Kaufmann, Kraay and Mastruzzi). The original data have six dimensions: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption. The indicators are on a scale roughly with mean zero and a standard deviation of 1. We reduce the number of dimensions to two using the simple average of the first two measures as an indicator of democratic quality, and the simple

average of the other four measures as an indicator of delivery quality, following Helliwell and Huang (2008).

2 Coverage, Summary Statistics and Regression Tables

The December 26, 2014 release of the Gallup World Poll (GWP) covers a total of 1,112 WP5-year observations of happiness scores in the period from 2005 to 2014 involving 164 different WP5. 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 1-3 show the WP5-year pairs that are covered. The 2012-2014 ranking of happiness scores includes 151 countries/territories that have the happiness scores in the 2012-2014 period, plus 7 countries/territories that have the happiness score in 2011 but not in 2012-14. Table 8 has the list of those 7 countries. The ranking by changes in the happiness scores from the 2005-2007 period to the 2012-2014 period covers 125 countries/territories. Table 12 has the list of countries/territories that are in the 2012-2014 happiness ranking (including the 7 that use 2011 survey), but are missing the the change ranking because they do not have happiness scores in the 2005-2007 period.

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.

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

WP5	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
001 United States		1001	1225	1004	1003	1005	1008	2094	1005	2048
002 Egypt	999		1024	1105	2112	2053	5296	4186	1149	1000
003 Morocco						1006	1001	3000	1007	
004 Lebanon	996	1000		1000	2010	2027	2007	2013	1000	1000
005 Saudi Arabia	1004		1006	1150	2052	2038	2022	1077	2036	1018
006 Jordan	1000		1016	1007	2016	2000	2000	2000	1000	1000
007 Syria				1209	2100	2035	2041	2043	1022	
008 Turkey	995		1001	1004	999	1000	1001	2000	1000	2003
009 Pakistan	1001		1502	2484	3122	1030	1000	3012	1000	1000
010 Indonesia		1180	1000	1050	1080	1080	1000	3000	1000	1000
011 Bangladesh		1048	1200	1000	1000	1000	1000	3000	1000	1000
012 United Kingdom	1037		1204	1001	1002	1000	9239	13408	750	2000
013 France	1002	1220		1006	1000	1004	1001	2005	751	2000
014 Germany	1001		1221	3016	2010	1007	9105	13269	751	2014
015 Netherlands	1000		1000	1000		1001	1000	1000	751	2002
016 Belgium	1003		1022	1002		1003	1002	1001	1006	2004
017 Spain	1000		1004	1009	1005	1000	1006	2003	1004	2000
018 Italy	1002		1008	1008	1005	1000	1005	2007	1004	2000
019 Poland	1000		1000		1000	2000	1029	1000	1000	1000
020 Hungary	1025		1010		1008	1008	1014	1004	1019	
021 Czech Republic	1001		1072			2082	1000	1005	1001	1008
022 Romania	1022		1000		1000	1000	1008	1000	1000	
023 Sweden	1000		1001	1000	1002	1002	1006	1000	750	2001
024 Greece	1002		1000		1000	1000	1000	1000	1003	1000
025 Denmark	1004		1009	1001	1000	1000	1005	1001	753	2002
026 Iran	1300		1004	1040			1003	3507	1000	1004
027 Hong Kong		800		751	755	756	1028	1006		1007
028 Singapore		1095	1000	2551	1005	1001	1000		1000	1000
029 Japan	1000		1150	3000	1000	1000	1000	2000	1001	1006
030 China		3730	3733	3712	3833	4151	4220	9413	4244	
031 India		2100	3186	2000	3010	6000	3518	10080	5540	3000
032 Venezuela	1000	1000		1000	1000	1000	1000	1000	1000	
033 Brazil	1029		1038	1032	1031	1043	1042	1002	2006	1007
034 Mexico	1007		999	1000	1000	1000	1000	2000	1000	1017
035 Nigeria		1000	1000	1000	1000	1000		2000	1002	
036 Kenya		1000	1000	2200	1000	1000	1000	1000	1000	1000
037 Tanzania		1000	1000	1000	1000	1000	1000	1000	1008	1008
038 Israel		1002	1001	1001	1000	1000	1000	1000	1000	1000
039 Palestinian Territories		1000	1000	1000	2014	2000	2000	2000	1000	1000
040 Ghana		1000	1000	1000	1000	1000	1000	1000	1008	1000
041 Uganda		1000	1000	1000	1000	1000	1000	1000	1000	1000
042 Benin		1000		1000			1000	1000	1000	1000
043 Madagascar		1000		1000			1000	1000	1008	1008
044 Malawi		1000	1000		1000		1000	1000	1000	1000
045 South Africa		1001	1000	1000	1000	1000	1000	2000	1000	
046 Canada	1355		1010	1005	1011	1007	1013	2003	1021	1004
047 Australia	1000		1205	1005		1000	1010	1002	1002	1002
048 Philippines		1200	1000	1000	1000	1000	1000	2000	1000	1000
049 Sri Lanka		1033	1000	1000	1000	1030	1000	2031	1030	1062
050 Vietnam		1023	1015	1016	1008	1000	1000	2000	1017	
051 Thailand		1410	1006	1038	1019	1000	1000	2000	1000	1000
052 Cambodia		1000	1000	1024	1000	1000	1000	1000	1000	1000
053 Laos		1001	1000	5 1000			1000	1000		
054 Myanmar								1020	1020	
055 New Zealand		1028	750	750		750	1000	1008	500	2001

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

WP5	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
056 Angola							1000	1000	1000	1000
057 Botswana		1000		1000		1000	1000	1000	1000	1000
060 Ethiopia								1500	1000	1004
061 Mali		1000		1000	1000	1000	1000	1000	1000	
062 Mauritania			1000	1000	1984	2000	2000	1000	1008	
063 Mozambique		1000	1000	1000			1000			
064 Niger		1000	1000	1000	1000	1000	1000	1000	1008	504
065 Rwanda		1504		1000	1000		1000	1000	1000	1000
066 Senegal		1000	1000	1000	1000	1000	1000	1000	1000	1000
067 Zambia		1001	1000	1000	1000		1000	1000	1000	
068 South Korea		1100	1000	1000	1000	1000	1001	2000	1000	1000
069 Taiwan		1002		1000		1000	1001	1000	1000	2000
070 Afghanistan				1010	2000	1000	1000	2000	1000	1000
071 Belarus		1092	1114	1091	1077	1013	1007	1052	1032	1036
072 Georgia		1000	1000	1080	1000	1000	1000	1000	1000	1000
073 Kazakhstan		1000	1000	1000	1000	1000	1000	1000	1000	1000
074 Kyrgyzstan		1000	1000	1000	1000	1000	1000	1000	1000	1000
075 Moldova		1000	1000	1000	1000	1000	1000	1000	1000	1000
076 Russia		2011	2949	2019	2042	4000	2000	3000	2000	2000
077 Ukraine		1102	1066	1074	1081	1000	1000	1000	1000	1000
078 Burkina Faso		1000	1000	1000		1000	1000	1000	1008	1000
079 Cameroon		1000	1000	1000	1000	1200	1000	1000	1000	1000
080 Sierra Leone		1000	1000	1000		1000	1000		1008	1008
081 Zimbabwe		1000	1000	1000	1000	1000	1000	1000	1000	1000
082 Costa Rica		1002	1002	1000	1000	1006	1000	1000	1000	1000
083 Albania			981		1000	1000	1006	1029	1035	999
084 Algeria						1000	2001	2027		
087 Argentina		1000	1000	1000	1000	1000	1000	1000	1000	1000
088 Armenia		1000	1000	1000	1000	1000	1000	1000	1000	1000
089 Austria		1004		1001		2000	1004	1001	1000	2000
090 Azerbaijan		1000	1000	1000	1000	1000	1000	1000	1000	1000
092 Bahrain					2128	2032	2010	1000	1002	1005
094 Belize			502							
095 Bhutan									1000	1020
096 Bolivia		1000	1000	1003	1000	1000	1000	1000	1000	
097 Bosnia and Herzegovina			2002		1002	1000	1009	1005	1010	
099 Bulgaria			1003			2000	1006	1000	1000	1000
100 Burundi				1000	1000		1000			1000
102 Central African Republic			1000			1000	1000			
103 Chad		1000	1000	1000	1000	1000	1000	1000	1000	1000
104 Chile		1007	1023	1108	1009	1007	1009	1003	1001	
105 Colombia		1000	1000	1000	1000	1000	1000	1000	1000	1000
106 Comoros					2000	2000	2000	1000		
107 Congo (Kinshasa)					1000		1000	1000	1000	1000
108 Congo Brazzaville				1000			1000	500	1000	1000
109 Croatia			1000		1009	1029	1029	1000	1000	1000
110 Cuba		1000								
111 Cyprus		1000			502	1005	1005	500	500	2000
112 Djibouti				1000	2000	1000	1000			
114 Dominican Republic		1000	1000	1000	1000	1000	1000	1000	1000	
115 Ecuador		1067	1061	1001	1000	1000	1003	1003	1000	1000
116 El Salvador		1000	1001	1000	1006	1001	1000	1000	1000	
119 Estonia		1003	1006	601	608		1007	1004	1010	1000
121 Finland		1010		1005		1000	1000	1000	750	2001
122 Gabon							1000	1000	1008	1008
124 Guatemala		1021	1000	1000	1015	1014	1000	1000	1000	1000

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

WP5	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
125 Guinea							1000	1000	1008	1000
127 Guyana			501							
128 Haiti		505		500		504	504	504	504	
129 Honduras		1000	1000	1000	1002	1000	1002	1000	1000	1000
130 Iceland				502				1002	502	
131 Iraq				990	2001	2000	2000	2000	1003	1007
132 Ireland		1000		1001	500	1001	1000	1000	1000	2000
134 Ivory Coast					1000				1008	1000
135 Jamaica		543					506		504	
137 Kuwait		1000			2002	2004	2000	1000	1008	1013
138 Latvia		1000	1017	513	515		1006	1001	1000	
139 Lesotho							1000			
140 Liberia			1000	1000		1000				1000
141 Libya								1002		
143 Lithuania		1015	1007	506	500	1001	1000	1000	1000	1000
144 Luxembourg					500	1002	1000	1001	500	2000
145 Macedonia			1042		1008	1000	1018	1025	1020	1000
146 Malaysia		1012	1233	1000	1011	1000	1000	1000	1000	1000
148 Malta					508	1008	1004	1004	500	2013
150 Mauritius							1000			
153 Mongolia			1000	1000		1000	1000	1000	1000	1000
154 Montenegro			834		1003	1000	1000	1000	1000	1000
155 Namibia			1000							
157 Nepal		1002	1000	1003	1002	1000	1000	2000	1050	1050
158 Nicaragua		1001	1000	1000	1012	1000	1003	1000	1000	1000
160 Norway		1001		1000				1004		2000
161 Oman							2016			
163 Panama		1005	1000	1004	1018	1000	1000	1001	1000	1000
164 Paraguay		1001	1000	1000	1000	1000	1000	1000	1000	
165 Peru		1000	1000	1000	1000	1000	1000	1000	1000	1000
166 Portugal		1007		1002		2002	1000	1001	1001	2020
167 Puerto Rico		500								
168 Qatar					2028	1000	1032	2000		
173 Serbia			1556		1008	1000	1001	1023	1030	1000
175 Slovakia		1018				1007	1012	1007	1004	1000
176 Slovenia		1009			500	1002	1001	1000	1001	2020
181 Sudan					1784	1808	2000	1000		
182 Suriname								504		
183 Swaziland							1000			
184 Switzerland		1000			1003			1000		2010
185 Tajikistan		1000	1000	1000	1000	1000	1000	1000	1000	1000
187 Togo		1000		1000			1000			1000
189 Trinidad & Tobago		508		502			504		504	
190 Tunisia					1006	2085	2034	2053	1053	1056
191 Turkmenistan					1000		1000	1000	1000	1000
193 United Arab Emirates		1013			2054	2066	2036	2016	1000	1002
194 Uruguay		1004	1004	1005	1000	1000	1000	1009	1000	1000
195 Uzbekistan		1000		1000	1000	1000	1000	1000	1000	1000
197 Yemen			1000		2000	2000	2000	2000	1000	1000
198 Kosovo			1046	1047	1000	1017	1047	1024	1000	1001
199 Somaliland region					2000	2000	2000	1000		
202 Northern Cyprus								500	502	2004

Table 4: Summary statistics - Fullest sample

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Ladder	5.44	1.13	2.69	8.02	1111
Positive affect	0.71	0.11	0.36	0.93	1086
Negative affect	0.25	0.08	0.08	0.70	1092
Log GDP per capita	9.15	1.19	6.32	11.8	1077
Social support	0.81	0.12	0.29	0.98	1091
Healthy life expectancy at birth	61.63	8.65	36.36	75.95	1104
Freedom to make life choices	0.72	0.15	0.26	0.97	1080
Generosity	0	0.16	-0.33	0.55	1026
Perceptions of corruption	0.76	0.19	0.04	0.98	1051

Table 5: Summary statistics - Period from 2005 to 2007

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Ladder	5.46	1.12	3.2	8.02	219
Positive affect	0.72	0.1	0.43	0.89	217
Negative affect	0.25	0.07	0.09	0.47	217
Log GDP per capita	9.1	1.2	6.32	11.53	219
Social support	0.83	0.11	0.44	0.98	217
Healthy life expectancy at birth	60.81	8.96	36.36	74.28	219
Freedom to make life choices	0.72	0.15	0.28	0.97	213
Generosity	0.01	0.17	-0.32	0.49	185
Perceptions of corruption	0.77	0.18	0.06	0.98	207

Table 6: Summary statistics - Period from 2012 to 2014

Variable	Mean	Std. Dev.	Min.	Max.	N
Life Ladder	5.42	1.17	2.69	7.78	398
Positive affect	0.71	0.11	0.39	0.92	383
Negative affect	0.27	0.09	0.1	0.70	386
Log GDP per capita	9.21	1.17	6.53	11.76	368
Social support	0.81	0.11	0.44	0.98	386
Healthy life expectancy at birth	62.41	8.34	38.62	75.95	394
Freedom to make life choices	0.72	0.14	0.31	0.96	382
Generosity	0	0.16	-0.31	0.55	353
Perceptions of corruption	0.76	0.18	0.08	0.97	367

Table 7: (Table 2.1 in the text): Regressions to Explain Average Happiness across Countries (Pooled OLS)

	Ladder	PosAffect	NegAffect	LadderAgain
	(1)	(2)	(3)	(4)
Log GDP per capita	0.326	-.005	0.011	0.339
	(0.062)***	(0.009)	(0.008)	(0.061)***
Social support	2.385	0.233	-.220	1.802
	(0.462)***	(0.053)***	(0.047)***	(0.442)***
Healthy life expectancy at birth	0.028	0.0007	0.002	0.026
	(0.008)***	(0.001)	(0.0009)**	(0.008)***
Freedom to make life choices	1.054	0.33	-.106	0.274
	(0.341)***	(0.039)***	(0.046)**	(0.327)
Generosity	0.787	0.169	-.001	0.39
	(0.273)***	(0.034)***	(0.032)	(0.27)
Perceptions of corruption	-.632	0.031	0.092	-.683
	(0.291)**	(0.032)	(0.026)***	(0.272)**
Positive affect				2.343
				(0.444)***
Negative affect				-.172
				(0.525)
Year 2005	0.434	0.0005	0.009	0.439
	(0.101)***	(0.01)	(0.009)	(0.098)***
Year 2006	-.038	0.019	-.004	-.072
	(0.072)	(0.01)*	(0.009)	(0.071)
Year 2007	0.222	0.022	-.028	0.176
	(0.068)***	(0.009)**	(0.007)***	(0.069)**
Year 2008	0.299	0.026	-.037	0.24
	(0.07)***	(0.009)***	(0.007)***	(0.075)***
Year 2009	0.204	0.021	-.026	0.156
	(0.068)***	(0.008)**	(0.008)***	(0.068)**
Year 2010	0.122	0.017	-.031	0.082
	(0.058)**	(0.008)**	(0.007)***	(0.06)
Year 2011	0.152	0.009	-.021	0.131
	(0.056)***	(0.009)	(0.007)***	(0.058)**
Year 2012	0.122	0.016	-.016	0.085
	(0.053)**	(0.008)**	(0.007)**	(0.054)
Year 2013	0.069	0.018	-.010	0.03
	(0.047)	(0.007)***	(0.006)*	(0.049)
Obs.	974	971	973	970
e(N-clust)	156	156	156	156
e(r2-a)	0.739	0.49	0.223	0.765

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.

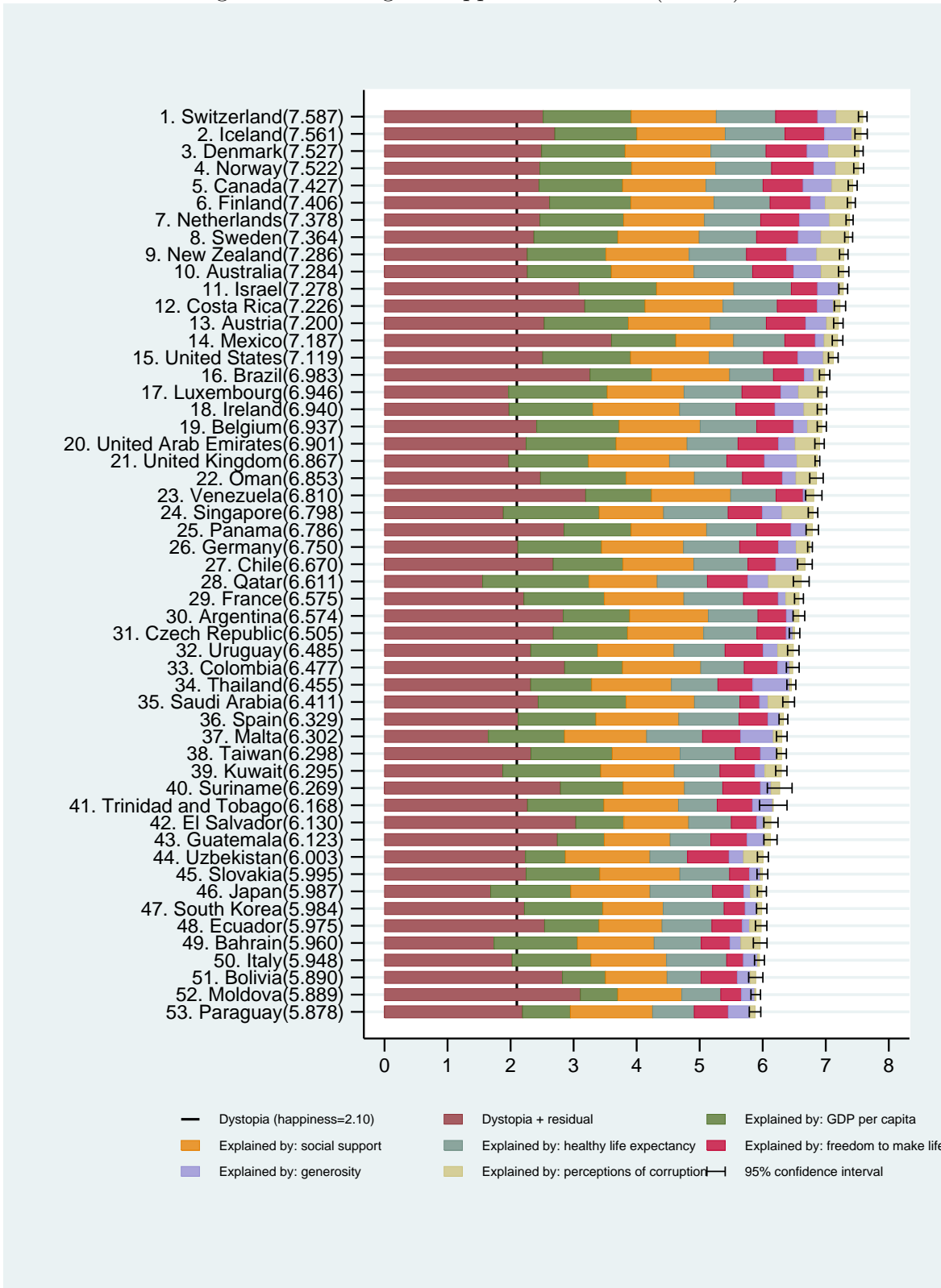Figure 1: Ranking of Happiness: 2012-14 (Part 1)

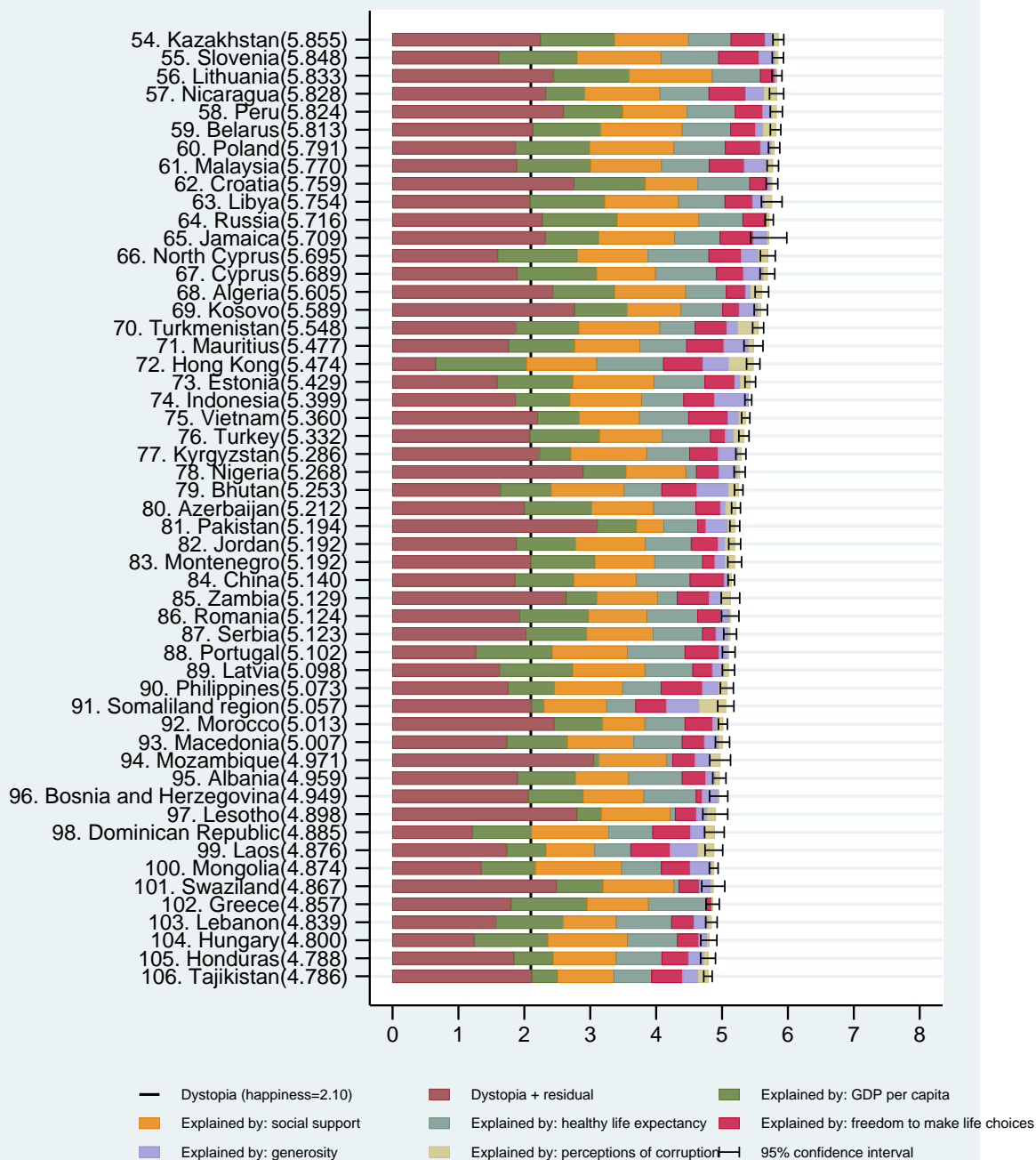Figure 2: Ranking of Happiness: 2012-14 (Part 2)
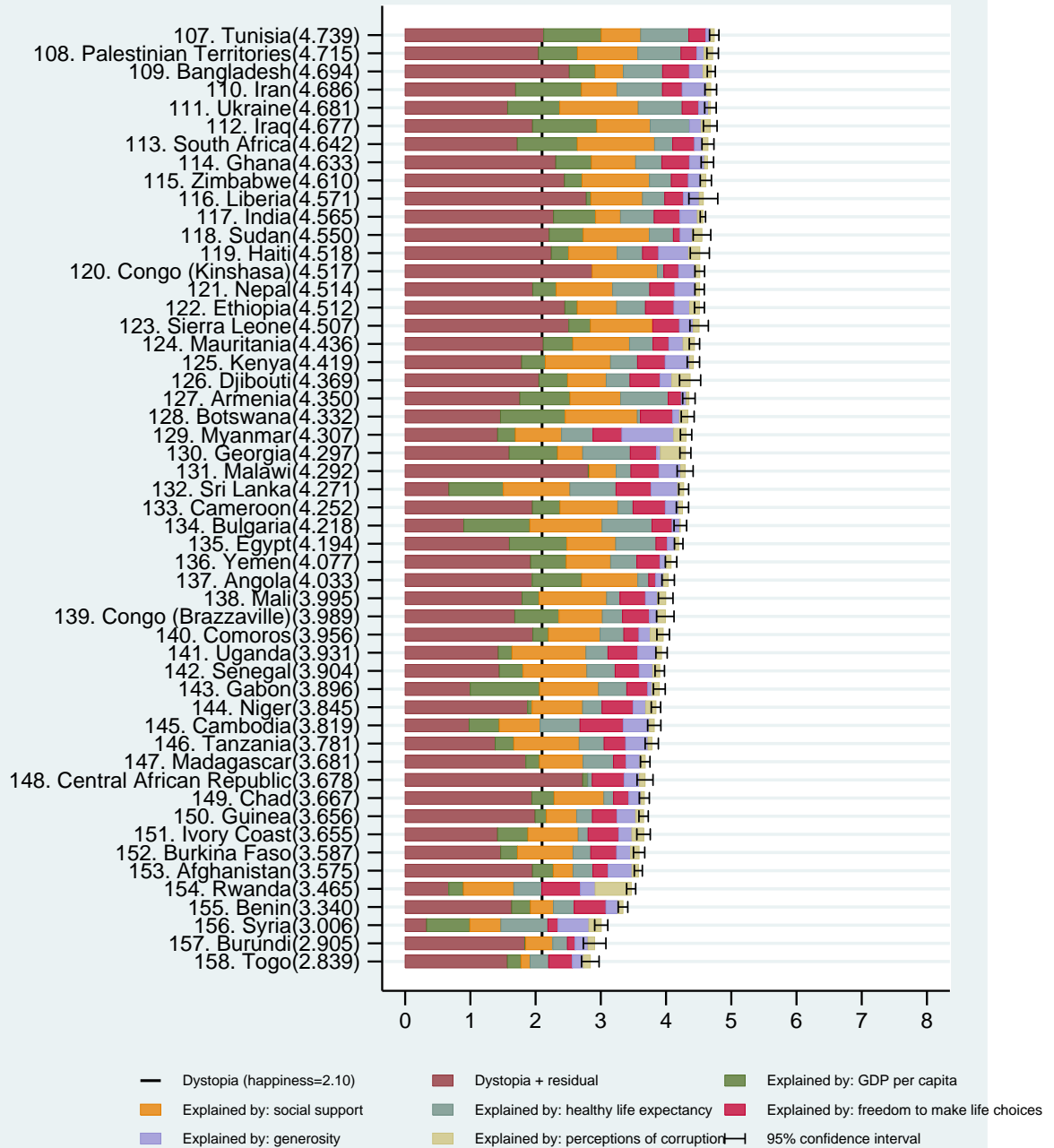
Figure 3: Ranking of Happiness: 2012-14 (Part 3)

— Dystopia (happiness=2.10)	Dystopia + residual
Explained by: GDP per capita	Explained by: social support
Explained by: healthy life expectancy	Explained by: freedom to make life choices
Explained by: generosity	Explained by: perceptions of corruption
⊢—⊣ 95% confidence interval	

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Figure 4: Predicted happiness and actual happiness in 2012-14
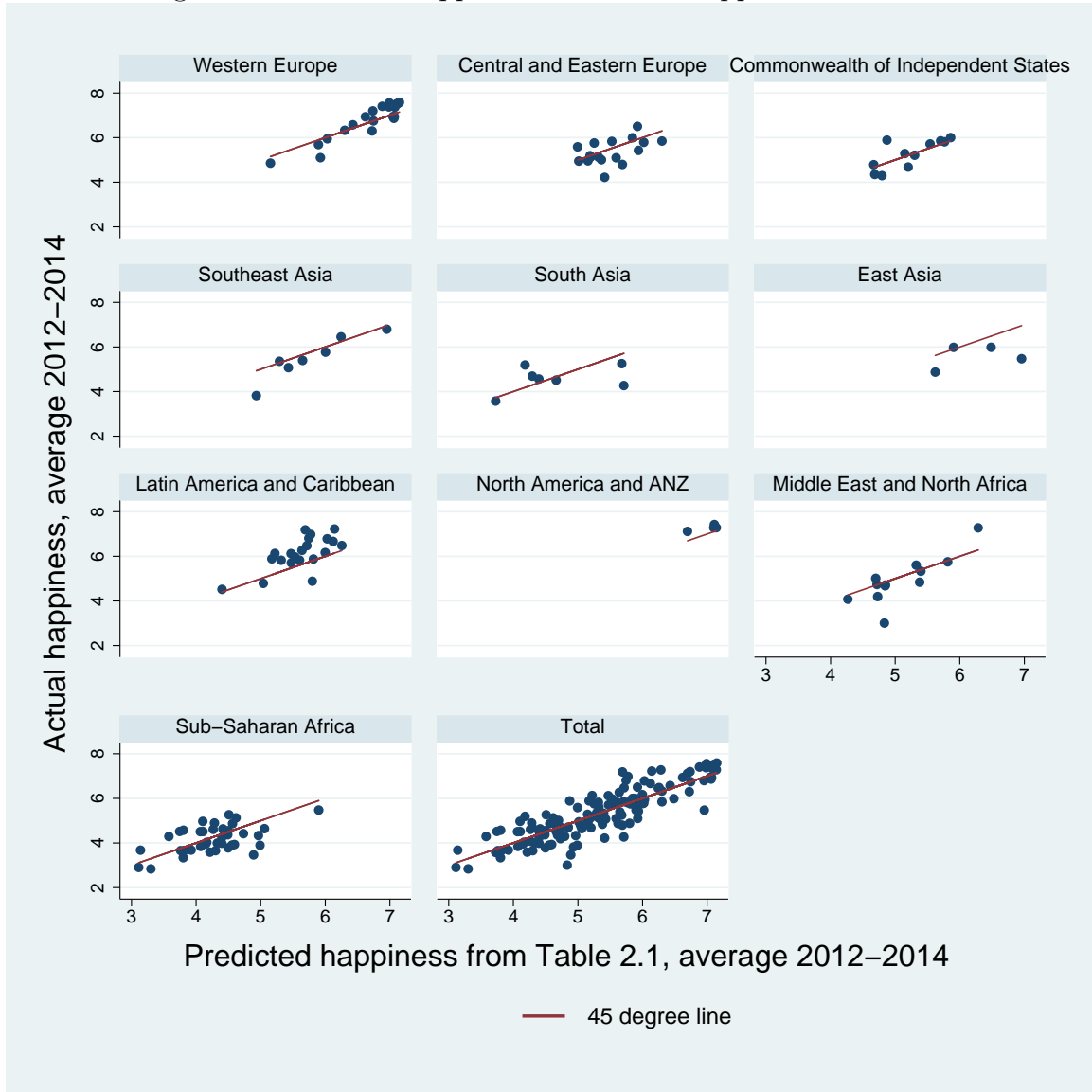
Note: These average actual (predicted) happiness scores by country/territory for the 2012-2014 period are weighted averages of the yearly averages by county/territory used in (predicted by) column (1)'s regression in Table 7. The yearly weights are the sums of Gallup-assigned individual weights by country/territory in that year.

Table 8: Countries/territories that have valid happiness scores in 2011 but not in 2012-2014

WP5 Country	Sample size in 2011
Mozambique	1000
Central African Republic	1000
Djibouti	986
Lesotho	998
Mauritius	997
Oman	1998
Swaziland	1000

Table 9: 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	5.38	2.1		
Logged GDP per capita	9.17	6.58	.85	.26
Social support	.8	.39	.99	.3
Healthy life expectancy	61.49	38.72	.63	.19
Freedom to make life choices	.72	.32	.43	.13
Generosity	.01	-.3	.24	.07
Perceptions of corruption	.74	.97	.14	.04
Sum of explained excess over Dystopia			3.28	1

Table 10: 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	7.43	3.37		
Logged GDP per capita	10.67	7.48	1.04	.34
Social support	.94	.61	.8	.26
Healthy life expectancy	71.56	49.9	.6	.19
Freedom to make life choices	.93	.64	.3	.1
Generosity	.19	.02	.14	.04
Perceptions of corruption	.38	.71	.21	.07
Total explained difference in happiness			3.08	1
Total difference in happiness			4.06	

Table 11: Imputed missing values that are used for decomposing the 2012-2014 happiness scores

Country	GDP per capita	Social support	Perceptions of corruption	Generosity	Freedom	Healthy life expectancy
Argentina	2011 data			Predicted by donation-a-b*ln(gdp)[1]		
Bahrain				Predicted by donation-a-b*ln(gdp) (donation in 2012-14 is missing, thus 2011 value is used)		
China			Russia's data			
Iran			2008 data		2008 data	
Jordan			2009 data			
Kuwait			Corruption in business in 2011	Predicted by donation-a-b*ln(gdp) (donation in 2012-14 is missing, thus 2010 value is used)		
Laos	PPP in 2013 dollar (CIA estimated) adjusted to PPP in 2011 dollar		2011 data		2011 data	
Myanmar				Predicted by donation-a-b*ln(gdp)		
North Cyprus	Cyprus's data			Predicted by donation-a-b*ln(gdp)		Cyprus's data
Oman		Saudi Arabia's data	Saudi Arabia's data			
Qatar			2009 data			
Saudi Arabia			2009 data	Predicted by donation-a-b*ln(gdp)		
Somaliland Region	Ethiopia's data			Predicted by donation-a-b*ln(gdp)		Ethiopia's data
Taiwan	2010 data					
Turkmenistan			Uzbekistan's data			
United Arab Emirates			Corruption in business in 2010	Predicted by donation-a-b*ln(gdp) (donation in 2012-14 is missing, thus 2011 value is used)		

Notes: The coefficients a (=-0.409) and b (=-0.078) are generated by regressing national-level donations on log GDP per capita in a pooled OLS regression.

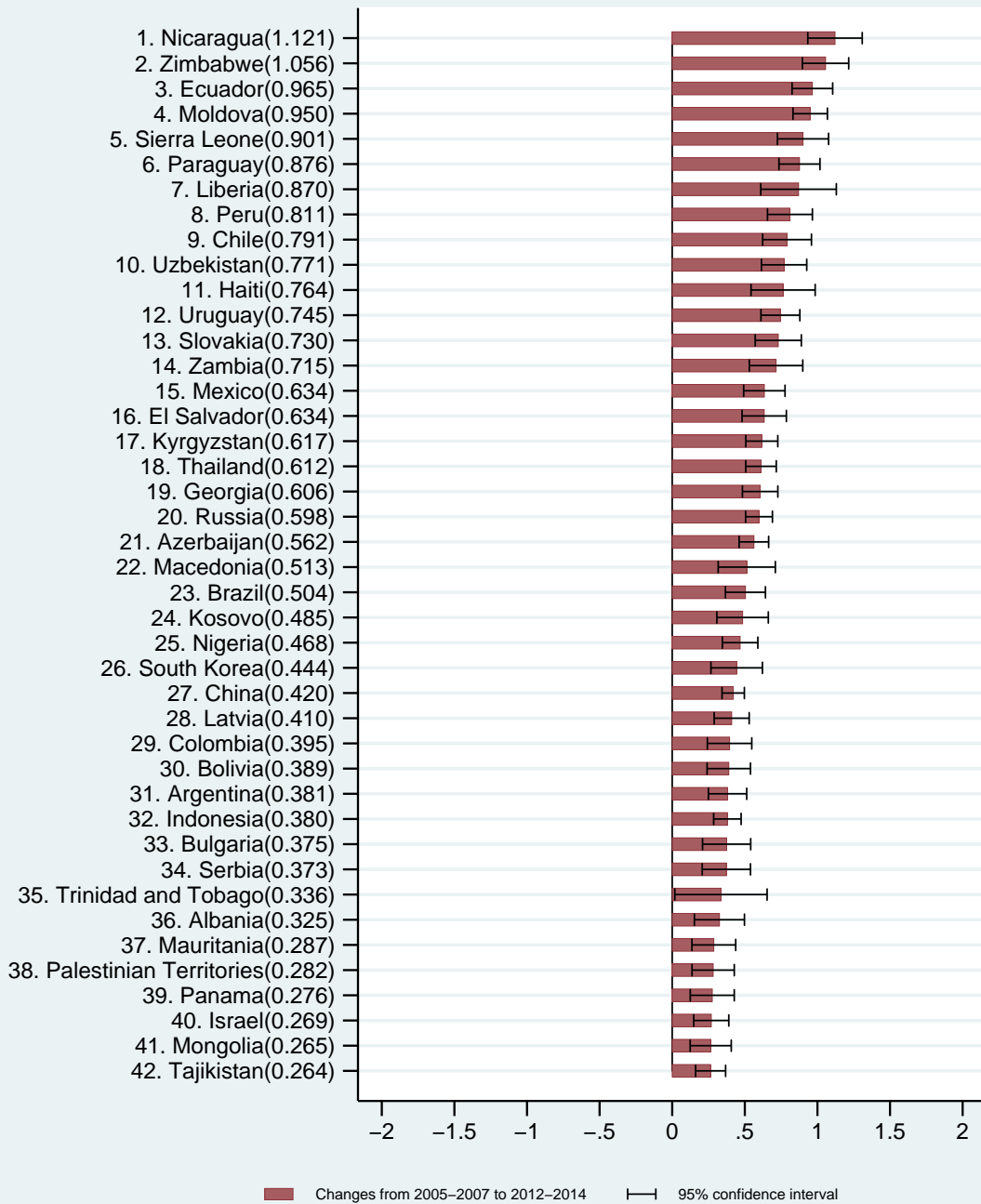Figure 5: Changes in Happiness: from 2005-07 to 2012-14 (Part 1)

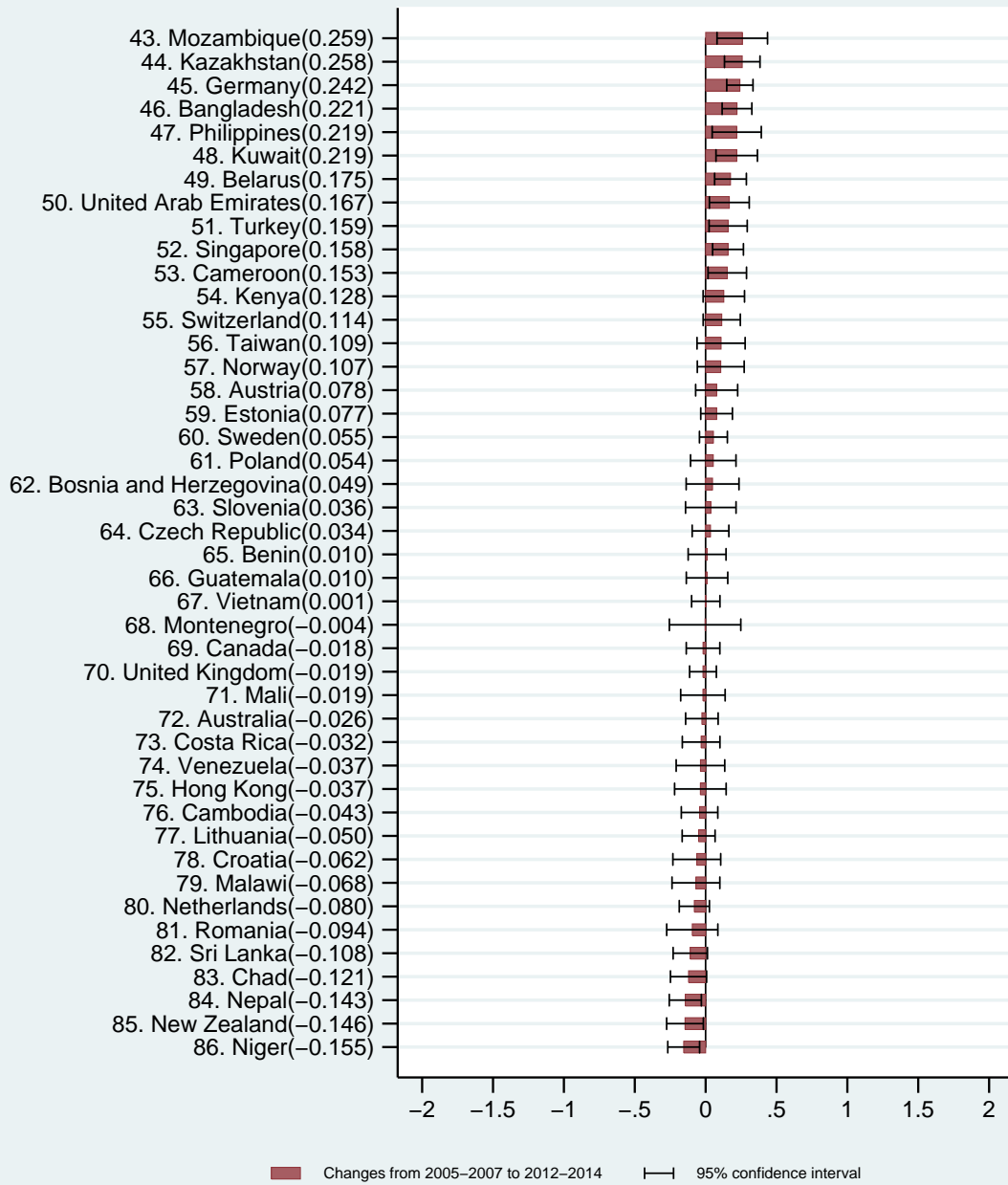Figure 6: Changes in Happiness: from 2005-07 to 2012-14 (Part 2)

43. Mozambique(0.259)
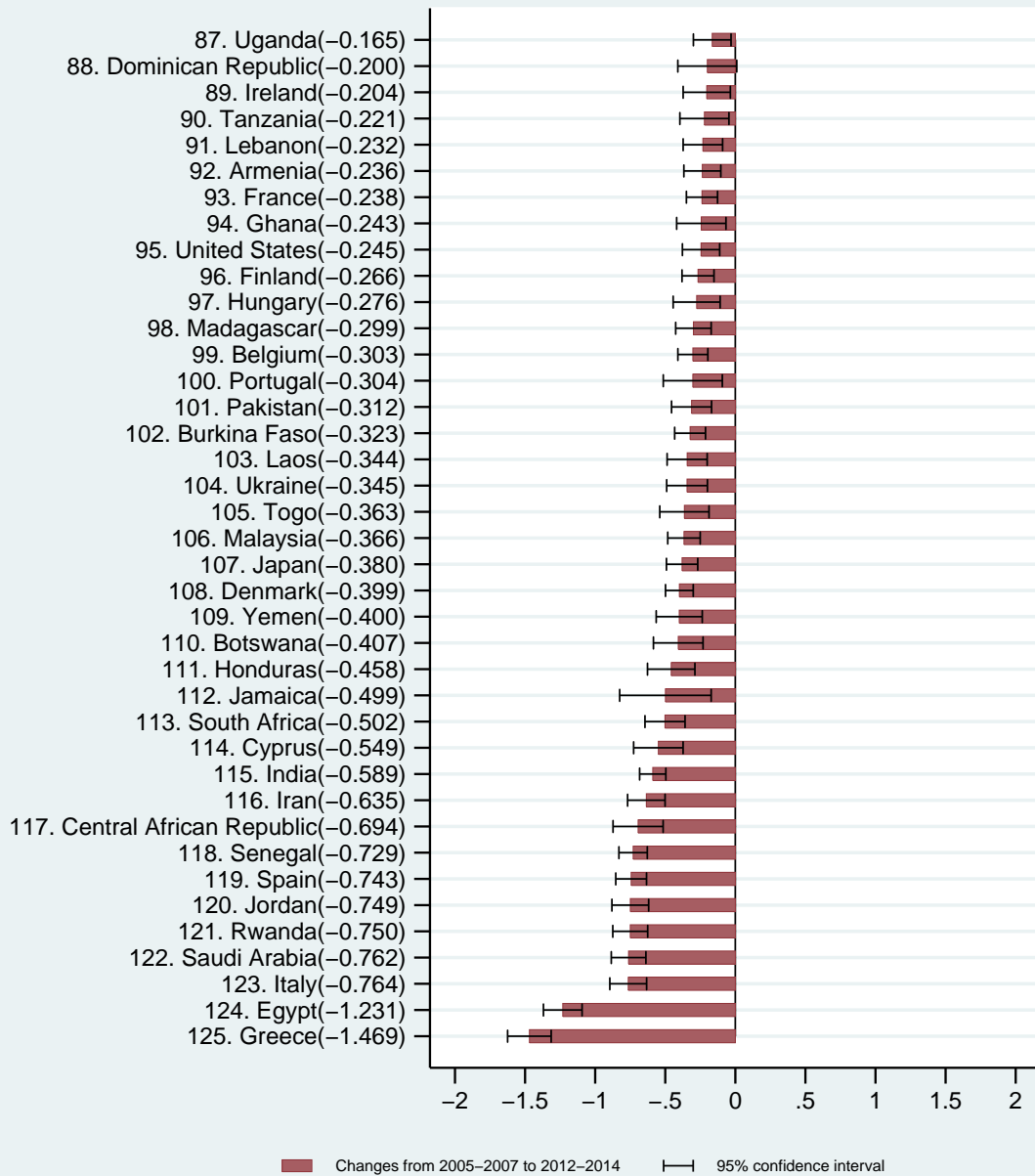44. Kazakhstan(0.258)
45. Germany(0.242)
46. Bangladesh(0.221)
47. Philippines(0.219)
48. Kuwait(0.219)
49. Belarus(0.175)
50. United Arab Emirates(0.167)
51. Turkey(0.159)
52. Singapore(0.158)
53. Cameroon(0.153)
54. Kenya(0.128)
55. Switzerland(0.114)
56. Taiwan(0.109)
57. Norway(0.107)
58. Austria(0.078)
59. Estonia(0.077)
60. Sweden(0.055)
61. Poland(0.054)
62. Bosnia and Herzegovina(0.049)
63. Slovenia(0.036)
64. Czech Republic(0.034)
65. Benin(0.010)
66. Guatemala(0.010)
67. Vietnam(0.001)
68. Montenegro(−0.004)
69. Canada(−0.018)
70. United Kingdom(−0.019)
71. Mali(−0.019)
72. Australia(−0.026)
73. Costa Rica(−0.032)
74. Venezuela(−0.037)
75. Hong Kong(−0.037)
76. Cambodia(−0.043)
77. Lithuania(−0.050)
78. Croatia(−0.062)
79. Malawi(−0.068)
80. Netherlands(−0.080)
81. Romania(−0.094)
82. Sri Lanka(−0.108)
83. Chad(−0.121)
84. Nepal(−0.143)
85. New Zealand(−0.146)
86. Niger(−0.155)

−2   −1.5   −1   −.5   0   .5   1   1.5   2

Changes from 2005−2007 to 2012−2014   95% confidence interval

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Figure 7: Changes in Happiness: from 2005-07 to 2012-14 (Part 3)

87. Uganda(−0.165)
88. Dominican Republic(−0.200)
89. Ireland(−0.204)
90. Tanzania(−0.221)
91. Lebanon(−0.232)
92. Armenia(−0.236)
93. France(−0.238)
94. Ghana(−0.243)
95. United States(−0.245)
96. Finland(−0.266)
97. Hungary(−0.276)
98. Madagascar(−0.299)
99. Belgium(−0.303)
100. Portugal(−0.304)
101. Pakistan(−0.312)
102. Burkina Faso(−0.323)
103. Laos(−0.344)
104. Ukraine(−0.345)
105. Togo(−0.363)
106. Malaysia(−0.366)
107. Japan(−0.380)
108. Denmark(−0.399)
109. Yemen(−0.400)
110. Botswana(−0.407)
111. Honduras(−0.458)
112. Jamaica(−0.499)
113. South Africa(−0.502)
114. Cyprus(−0.549)
115. India(−0.589)
116. Iran(−0.635)
117. Central African Republic(−0.694)
118. Senegal(−0.729)
119. Spain(−0.743)
120. Jordan(−0.749)
121. Rwanda(−0.750)
122. Saudi Arabia(−0.762)
123. Italy(−0.764)
124. Egypt(−1.231)
125. Greece(−1.469)

−2   −1.5   −1   −.5   0   .5   1   1.5   2

Changes from 2005−2007 to 2012−2014   95% confidence interval

Table 12: Countries/territories that are in the 2012-2014 happiness ranking (including the 7 that use 2011 survey), but do not have ladder observations in the 2005-2007 period

Afghanistan
Algeria
Angola
Bahrain
Bhutan
Burundi
Comoros
Congo (Brazzaville)
Congo (Kinshasa)
Djibouti
Ethiopia
Gabon
Guinea
Iceland
Iraq
Ivory Coast
Lesotho
Libya
Luxembourg
Malta
Mauritius
Morocco
Myanmar
North Cyprus
Oman
Qatar
Somaliland region
Sudan
Suriname
Swaziland
Syria
Tunisia
Turkmenistan

Table 13: Imputed missing values for the 2005-2007 period that are used for decomposing the happiness changes from 2005-2007 to 2012-14

Country	Perceptions of corruption	Generosity	Freedom
China	Russia's data		2008 data
Egypt	2009 data		
Madagascar	2008 data		2008 data
Rwanda		Predicted by donation-a-b*ln(gdp) (donation in 2005-07 is missing, thus 2008 value is used)[1]	
Yemen	Corruption in government in 2007		

Notes: 1). The coefficients a (=-0.409) and b (=-0.078) are generated by regressing national-level donations on log GDP per capita in a pooled OLS regression. 2). To decompose the changes, we also use the imputed values for the 2012-14 period listed in Table 11 in addition to the imputed values in this table.

Figure 8: Actual and predicted changes in happiness from 2005-07 to 2012-14

N=125; Correlation coefficient=0.54
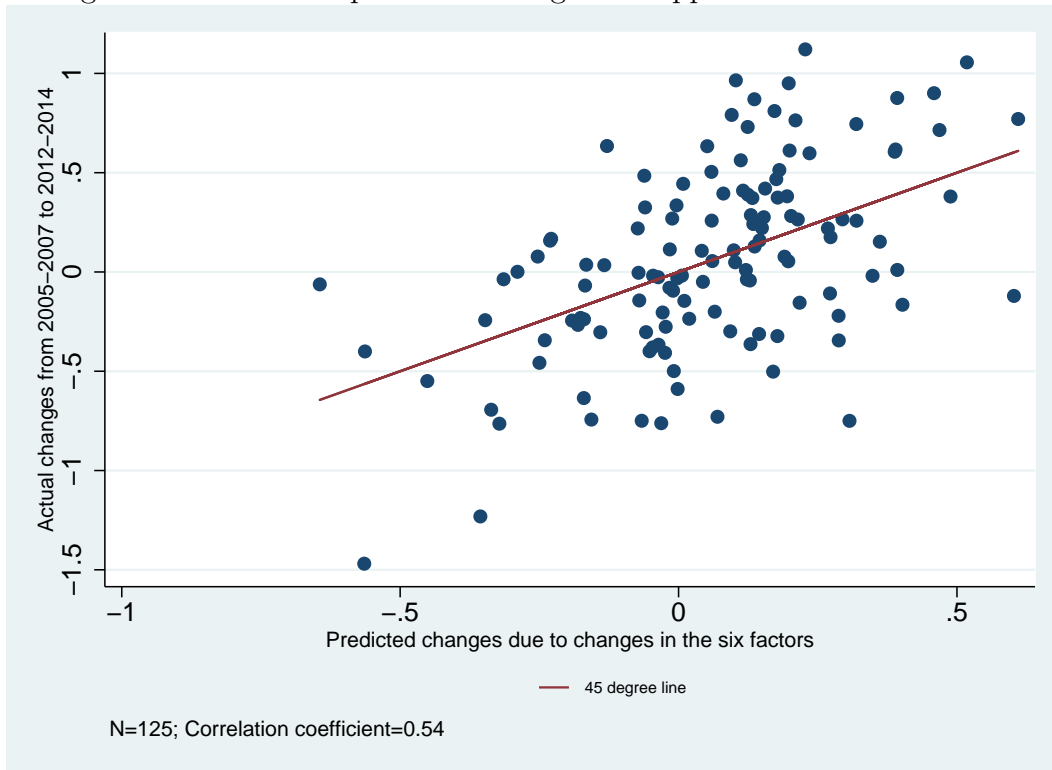
Note: Defining predicted changes in happiness due to changes in the six factors: Step 1. Take periodical averages (2005-07 and 2012-14, respectively) of the six factors in the survey data. Step 2. Take difference between the two periods for each of the factors. Step 3. Multiply the differences with corresponding 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 9: Actual and predicted changes in happiness from 2005-07 to 2012-14 at the regional level
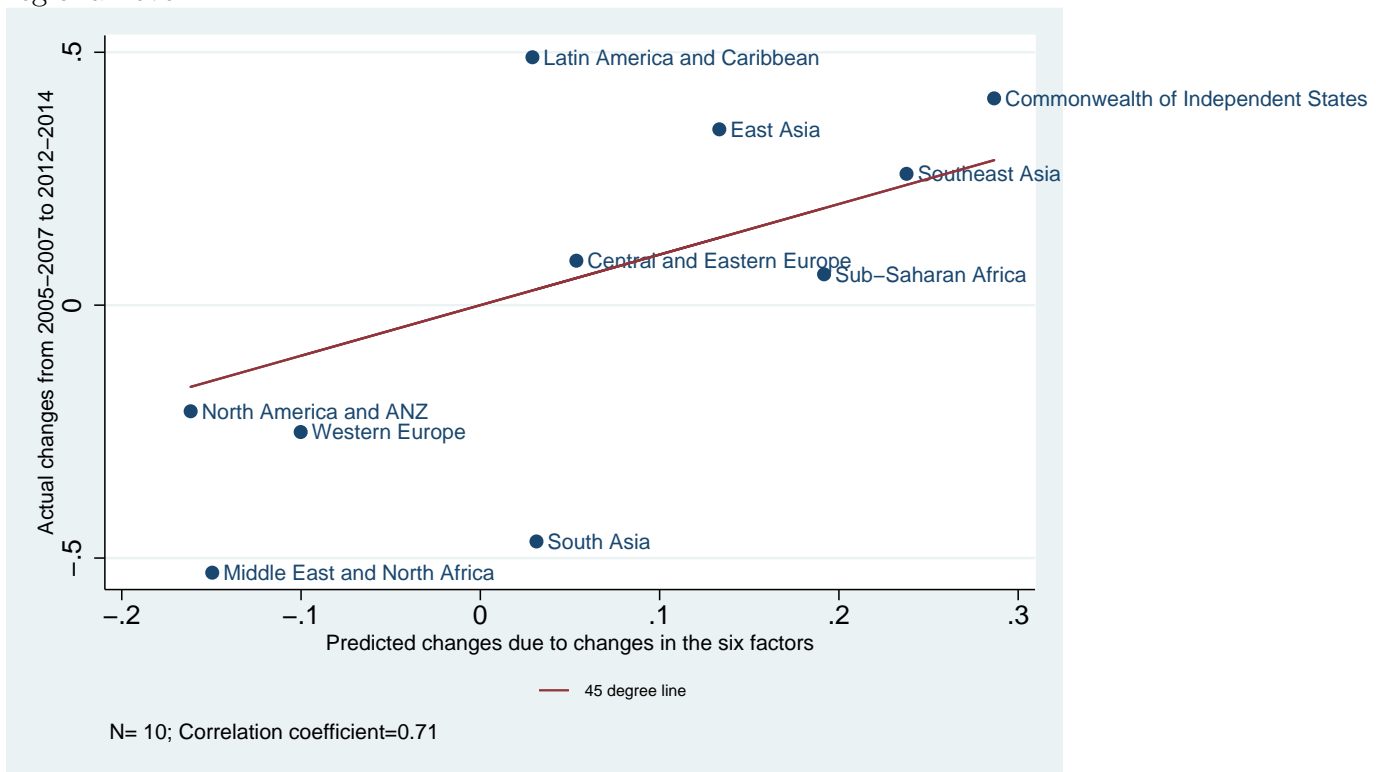
Note: This plot at the regional level shows weighted averages of the actual and predicted changes shown in figure 8. The weights for deriving the regional averages are average population from 2005 to 2013.

Table 14: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for the full world sample

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	5.483	5.42	
Logged GDP per capita	9.238	9.109	.042
Social support	.813	.83	-.039
Healthy life expectancy	62.607	60.764	.051
Freedom to make life choices	.733	.719	.015
Generosity	-.002	.015	-.013
Perceptions of corruption	.752	.755	.002
Sum of explained changes in happiness			.058
Total changes in happiness			.062

Note:

Table 15: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for the top 10 countries/territories in terms of happiness changes

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	5.576	4.664	
Logged GDP per capita	8.453	8.194	.085
Social support	.835	.802	.079
Healthy life expectancy	59.23	56.689	.07
Freedom to make life choices	.731	.683	.051
Generosity	-.003	.028	-.025
Perceptions of corruption	.776	.825	.031
Sum of explained changes in happiness			.291
Total changes in happiness			.911

Note: The following countries/territories are in this group: Chile, Ecuador, Liberia, Moldova, Nicaragua, Paraguay, Peru, Sierra Leone, Uzbekistan, Zimbabwe,

Table 16: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for the bottom 10 countries/territories in terms of happiness changes

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	4.866	5.719	
Logged GDP per capita	9.178	9.094	.027
Social support	.749	.801	-.125
Healthy life expectancy	62.044	60.071	.055
Freedom to make life choices	.642	.713	-.074
Generosity	-.064	-.025	-.031
Perceptions of corruption	.738	.715	-.014
Sum of explained changes in happiness			-.163
Total changes in happiness			-.853

Note: The following countries/territories are in this group: Central African Republic, Egypt, Greece, Iran, Italy, Jordan, Rwanda, Saudi Arabia, Senegal, Spain,

Table 17: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for Western Europe

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	6.705	6.984	
Logged GDP per capita	10.541	10.568	-.009
Social support	.91	.936	-.061
Healthy life expectancy	71.483	70.092	.039
Freedom to make life choices	.83	.879	-.051
Generosity	.066	.112	-.036
Perceptions of corruption	.588	.568	-.012
Sum of explained changes in happiness			-.13
Total changes in happiness			-.279

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

Table 18: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for Central and Eastern Europe

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	5.366	5.191	
Logged GDP per capita	9.76	9.67	.029
Social support	.833	.871	-.09
Healthy life expectancy	66.441	64.714	.048
Freedom to make life choices	.625	.607	.019
Generosity	-.096	-.094	-.002
Perceptions of corruption	.894	.896	.001
Sum of explained changes in happiness			.006
Total changes in happiness			.175

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

Table 19: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for Commonwealth of Independent States

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	5.263	4.879	
Logged GDP per capita	9.005	8.775	.075
Social support	.816	.811	.014
Healthy life expectancy	62.578	60.744	.051
Freedom to make life choices	.694	.658	.038
Generosity	-.116	-.195	.062
Perceptions of corruption	.759	.817	.037
Sum of explained changes in happiness			.277
Total changes in happiness			.384

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

Table 20: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for Southeast Asia

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	5.444	5.367	
Logged GDP per capita	9.193	8.965	.075
Social support	.794	.827	-.078
Healthy life expectancy	64.075	62.523	.043
Freedom to make life choices	.859	.827	.033
Generosity	.176	.215	-.03
Perceptions of corruption	.734	.724	-.006
Sum of explained changes in happiness			.036
Total changes in happiness			.077

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

Table 21: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for South Asia

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	4.648	4.834	
Logged GDP per capita	8.313	8.057	.084
Social support	.648	.683	-.082
Healthy life expectancy	59.737	58.243	.041
Freedom to make life choices	.667	.625	.044
Generosity	.096	.099	-.003
Perceptions of corruption	.818	.841	.014
Sum of explained changes in happiness			.099
Total changes in happiness			-.186

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

Table 22: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for East Asia

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	5.626	5.489	
Logged GDP per capita	10.107	9.873	.076
Social support	.848	.849	-.001
Healthy life expectancy	70.423	69.045	.038
Freedom to make life choices	.755	.782	-.028
Generosity	-.009	-.032	.018
Perceptions of corruption	.764	.769	.003
Sum of explained changes in happiness			.106
Total changes in happiness			.137

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

Table 23: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for Latin America and Caribbean

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	6.139	5.738	
Logged GDP per capita	9.247	9.098	.049
Social support	.853	.87	-.041
Healthy life expectancy	64.317	62.963	.037
Freedom to make life choices	.788	.738	.053
Generosity	-.017	.029	-.036
Perceptions of corruption	.782	.809	.017
Sum of explained changes in happiness			.079
Total changes in happiness			.4

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 24: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for North America and ANZ

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	7.279	7.388	
Logged GDP per capita	10.642	10.6	.014
Social support	.932	.962	-.07
Healthy life expectancy	71.306	70.261	.029
Freedom to make life choices	.902	.917	-.016
Generosity	.266	.261	.004
Perceptions of corruption	.462	.441	-.013
Sum of explained changes in happiness			-.053
Total changes in happiness			-.109

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

Table 25: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for Middle East and North Africa

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	5.447	5.712	
Logged GDP per capita	9.817	9.76	.019
Social support	.78	.838	-.138
Healthy life expectancy	64.38	63.099	.035
Freedom to make life choices	.659	.668	-.01
Generosity	-.06	-.053	-.006
Perceptions of corruption	.718	.684	-.021
Sum of explained changes in happiness			-.121
Total changes in happiness			-.265

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

Table 26: Decomposing changes in happiness from 2005-2007 to 2012-2014, equal weight for each country/territory, for Sub-Saharan Africa

	Period 2012-2014	Period 2005-2007	Explained changes in happiness due to
Happiness	4.151	4.16	
Logged GDP per capita	7.605	7.44	.054
Social support	.727	.705	.053
Healthy life expectancy	48.595	45.305	.091
Freedom to make life choices	.686	.66	.027
Generosity	-.013	.024	-.029
Perceptions of corruption	.79	.782	-.005
Sum of explained changes in happiness			.191
Total changes in happiness			-.009

Note: The following countries/territories are in this group: Benin, Botswana, Burkina Faso, Cameroon, Central African Republic, Chad, Ghana, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Tanzania, Togo, Uganda, Zambia, Zimbabwe,

Table 27: Decomposing changes in happiness from 2005-2007 to 2012-2014 by region, weighting countries/territories within a region with their population size

	Changes in average happiness	Total explained changes due to the six factors	Changes due to: GDP per capita	Changes due to: Social support	Changes due to: Healthy life expectancy	Changes due to: Freedom to make life choices	Changes due to: Generosity	Change due to: Perceptions of corruption
Western Europe	-.251	-.1	-.004	-.066	.046	-.034	-.061	.018
Central and Eastern Europe	.088	.054	.044	-.051	.048	.004	-.002	.009
Commonwealth of Independent States	.409	.287	.054	.048	.077	.039	.044	.024
Southeast Asia	.26	.238	.079	.074	.032	.054	.002	-.004
South Asia	-.467	.031	.095	-.142	.041	-.037	.058	.016
East Asia	.348	.133	.144	.003	.025	-.047	-.004	.012
Latin America and Caribbean	.49	.029	.049	-.054	.04	.011	-.045	.027
North America and ANZ	-.21	-.162	.007	-.117	.027	-.051	.021	-.049
Middle East and North Africa	-.529	-.15	.041	-.171	.043	-.063	.015	-.014
Sub-Saharan Africa	.061	.192	.051	.058	.093	.009	-.011	-.009

Table 28: Number of countries/territories that experienced statistically significant changes in happiness scores from 2005-2007 to 2012-2014

	Total number of countries/territories in sample	Number of significant positive changes	Number of significant negative changes
Western Europe	17	1	10
Central and Eastern Europe	17	7	1
Commonwealth of Independent States	11	9	2
Southeast Asia	8	4	2
South Asia	5	1	3
East Asia	6	3	1
Latin America and Caribbean	21	15	2
North America and ANZ	4	0	2
Middle East and North Africa	11	5	6
Sub-Saharan Africa	25	8	12

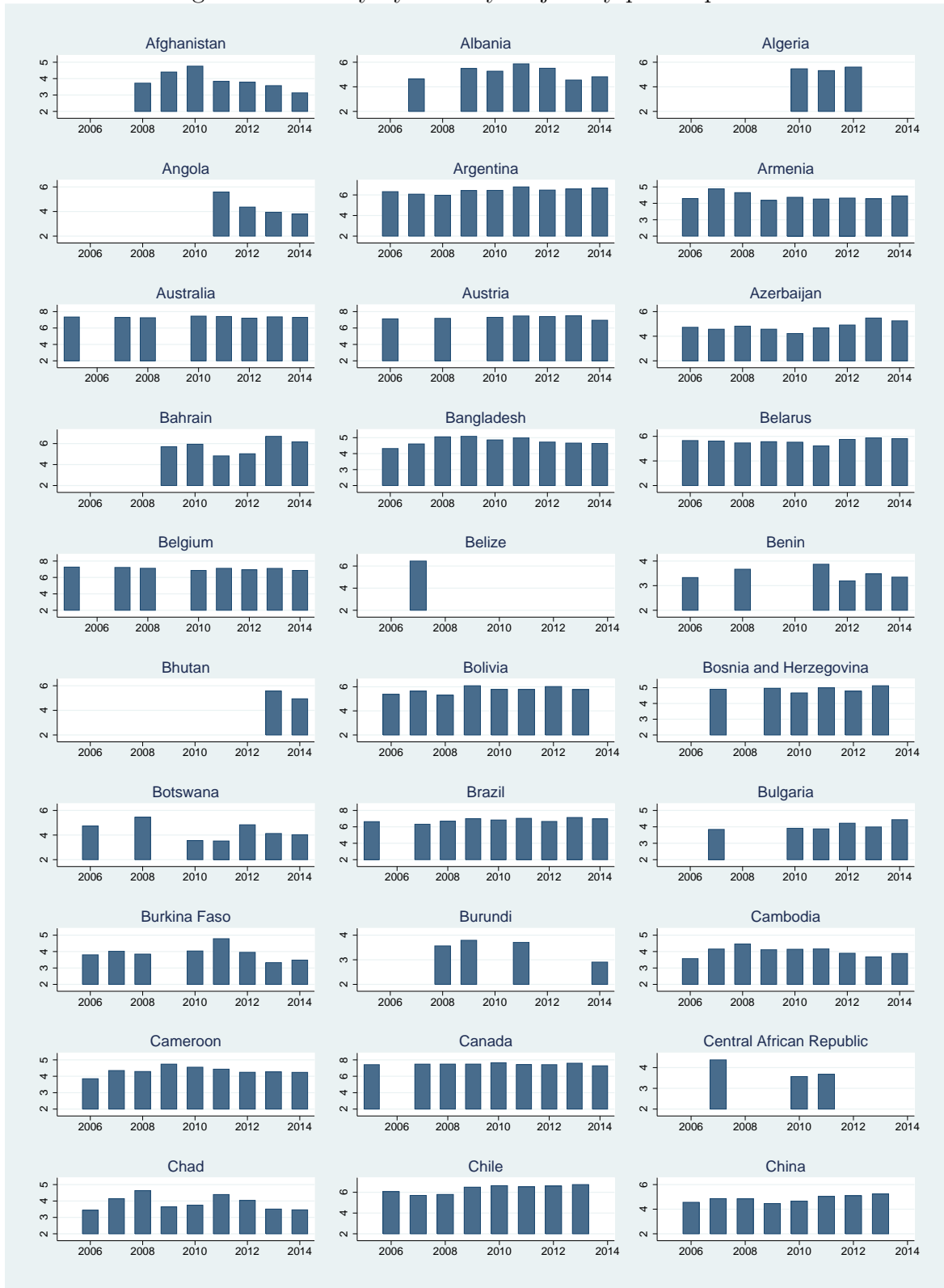Figure 10: County-by-country trajectory plots - part 1

Figure 11: County-by-country trajectory plots - part 2

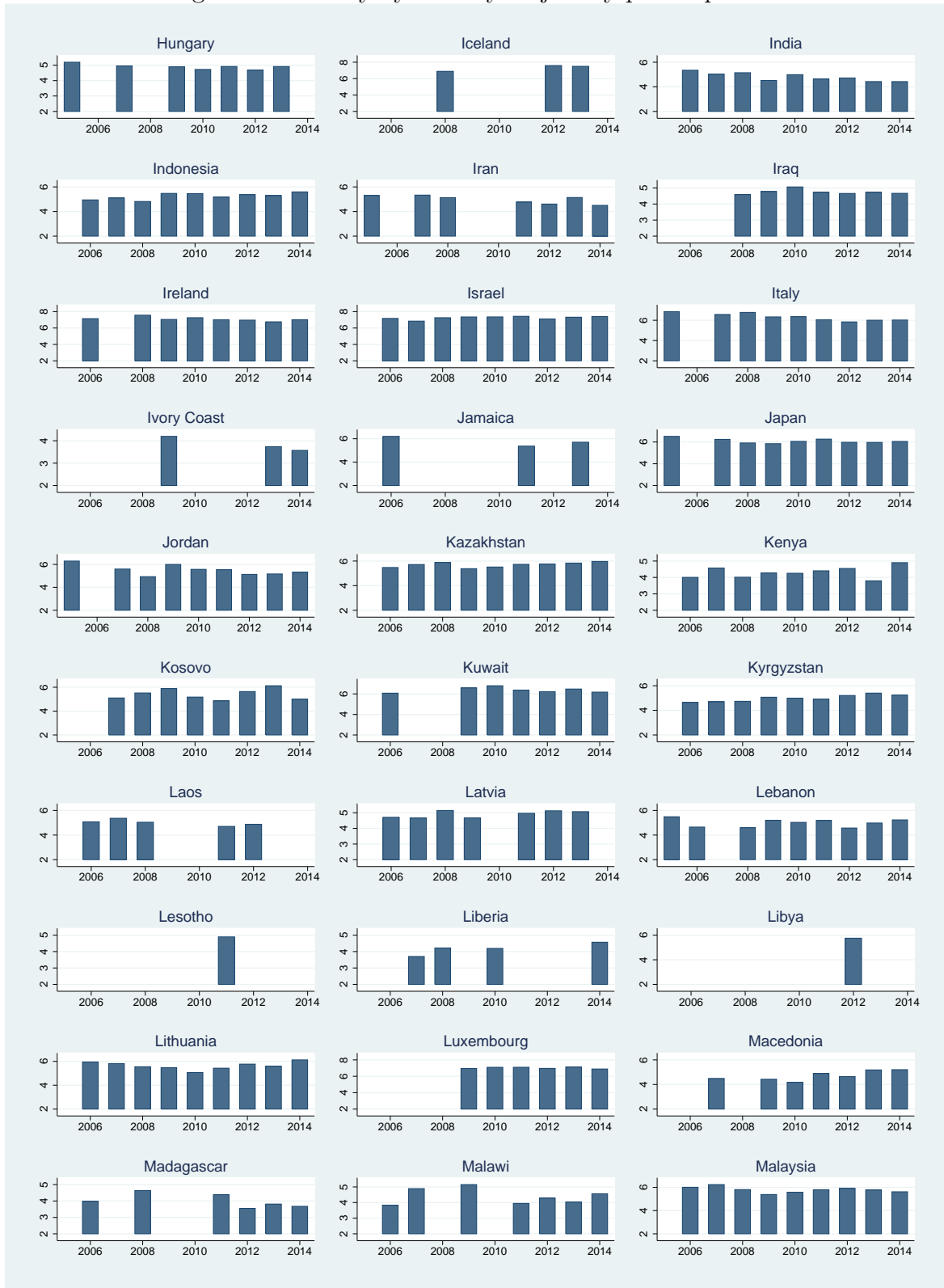Figure 12: County-by-country trajectory plots - part 3

Figure 13: County-by-country trajectory plots - part 4

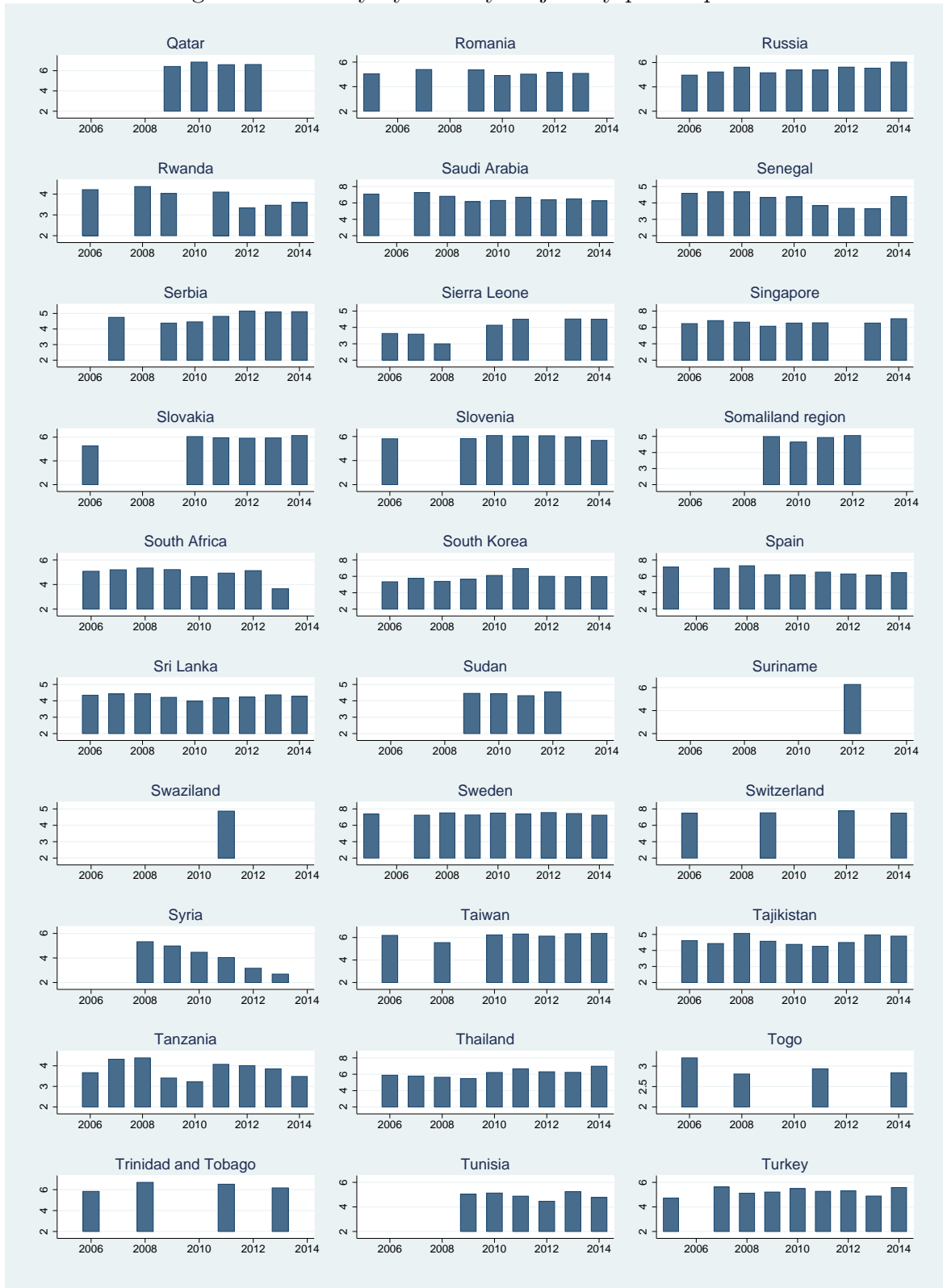Figure 14: County-by-country trajectory plots - part 5

Figure 15: County-by-country trajectory plots - part 6