Son birth and female lifespan are positively related in humans

Madhukar Shivajirao Dama

Assistant Professor,

Institute of Wildlife Veterinary Research, KVAFSU,

Kodagu, India, 571232.

*Correspondence at madhukar262@gmail.com

Sexual dimorphism of human body size starts as early as first trimester of fetal development [1]. Compared to daughters, sons develop faster [2] and weigh 2-3% higher at birth [3]. This dimorphism is believed to create an investment dimorphism for mothers, such that, women bearing sons tend to incur higher physiological investment costs. Further, analysis of human populations has shown that mothers bearing more sons require longer time to reproduce again [4]. These observations lead to the prediction that mothers bearing more sons may need to trade the physiological investments with lifespan [5].

To test these predictions, Helle et al., studied the interrelationship between family size, sex of the offspring, and maternal lifespan in natural mortality experiencing preindustrial Sami women [6]. On an average, maternal lifespan was reduced by 0.65 years for each son born. The authors suggested that higher physiological costs and elevation of maternal testosterone (which could have immunosuppressive effects) associated with male fetus could be possible basis for their observations. This groundbreaking study was followed by numerous publications on effect of sons on maternal longevity in other populations. Women giving birth to sons from a Flemish agricultural village [7], a Polish rural village [8], rural Bangladesh [9], and Utah [10] were found to have significant reduction in lifespan. On the contrary, women longevity was unaffected by son births in Krummhorn [11], Quebec valley [11], pre-industrial Swedish [12], pre-industrial Swedish Sami [13], and Amish [14] populations. These inconsistencies were attributed to unknown/hidden population specific socio-cultural and genetic confounders [11, 12]. However, analytical methods that could effectively bypass these shortcomings could reveal the true relation between son bearing and longevity of mothers.

We collected data from populations across the world and analyzed the relationship between child sex and female lifespan. Cross-cultural data come from the widest possible diversity of sources (human societies distributed over the face of the globe) and offer an advantage by washing out the factors that are endogenous to certain population by the process of aggregation [15]. The data were analyzed with regression model, to reveal the direction as well as strength of the association of son births on maternal longevity. We controlled for water treatment [16], disposable income [17], infection with HIV [18], availability of physicians [19] and spending on healthcare and education [20, 21], because technological advances, income, education, and health risks influence longevity [22]. Further, the level of education and disposable income has a tendency to influence lifespan by reflecting most of the above factors positively and many other variables that are not included here. Birth sex ratio varies with the number of offspring (fertility) [23], maternal age [24], polygyny prevalence [23], son preference [25] and latitude [26]. Hence, these confounders will also be controlled in the regression model. Continent of origin of the 75 countries analyzed will be included in the multiple regression analysis to make the data points independent. Meaning and description of each of the variables included in the analysis is explained in supplementary material 1.

The predictor and control variables were entered into a robust multiple regression model with female life expectancy as a dependent variable (STATA 11.0). When the number of variables is large, as in this case, the data set may not meet all of the assumptions underlying multiple regression, which could lead to biased estimates of coefficients and especially biased estimates of the standard errors. Hence, we have selected a regression model that is robust to the violations of the assumptions of regression modeling, so as to prevent the distortion of results [27]. The model showed that the ratio of male to female births (sex ratio at birth; SRB) is a significant

3

positive predictor of maternal lifespan across the world (Table 1), which shows that women who are giving birth to more sons live longer.

We have attempted to reveal the relationship between child sex and maternal longevity across the nations. Our results suggest that offspring sex is a better predictor of natural variation in female lifespan than many known variables. However, as the relation is positive, it contrasts the finding of negative association between male births and female longevity by some recent reports, though none of the works are causal. Unfortunately, the cross-cultural data cannot explain the mechanistic basis for the positive relationship of son births and maternal life expectancy. Nevertheless, it could be speculated that higher physiological costs of bearing sons implies that mothers who are already in better condition to afford these costs are able to produce more sons and have superior life expectancy due to their condition.

References

1. Bukowski, R., et al., *Human sexual size dimorphism in early pregnancy.* Am J Epidemiol, 2007. **165**(10): p. 1216-8.

2. Marsal, K., et al., *Intrauterine growth curves based on ultrasonically estimated foetal weights.* Acta Paediatr, 1996. **85**(7): p. 843-8.

3. Loos, R.J., et al., *Length of gestation and birthweight in dizygotic twins.* Lancet, 2001. **358**(9281): p. 560-1.

4. Mace, R. and R. Sear, *Birth interval and the sex of children in a traditional African population: an evolutionary analysis.* J Biosoc Sci, 1997. **29**(4): p. 499-507.

5. Kirkwood, T.B. and M.R. Rose, *Evolution of senescence: late survival sacrificed for reproduction.* Philos Trans R Soc Lond B Biol Sci, 1991. **332**(1262): p. 15-24.

6. Helle, S., V. Lummaa, and J. Jokela, *Sons reduced maternal longevity in preindustrial humans.* Science, 2002. **296**(5570): p. 1085.

7. Van de Putte, B., K. Matthijs, and R. Vlietinck, *A social component in the negative effect of sons on maternal longevity in pre-industrial humans.* J Biosoc Sci, 2004. **36**(3): p. 289-97.

8. Jasienska, G., I. Nenko, and M. Jasienski, *Daughters increase longevity of fathers, but daughters and sons equally reduce longevity of mothers.* Am J Hum Biol, 2006. **18**(3): p. 422-5.

9. Hurt, L.S., C. Ronsmans, and M. Quigley, *Does the number of sons born affect long-term mortality of parents? A cohort study in rural Bangladesh.* Proc Biol Sci, 2006. **273**(1583): p. 149-55.

10. Harrell, C., K. Smith, and G. Mineau, *Are Girls Good and Boys Bad for Parental Longevity?* Human Nature, 2008. **19**(1): p. 56-69.

11. Beise, J. and E. Voland, *Effect of producing sons on maternal longevity in premodern populations.* Science, 2002. **298**(5592): p. 317; author reply 317.

12. Cesarini, D., E. Lindqvist, and B. Wallace, *Maternal longevity and the sex of offspring in pre-industrial Sweden.* Ann Hum Biol, 2007. **34**(5): p. 535-46.

13. Cesarini, D., E. Lindqvist, and B. Wallace, *Is there an adverse effect of sons on maternal longevity?* Proc Biol Sci, 2009. **276**(1664): p. 2081-4.

14. McArdle, P.F., et al., *Does having children extend life span? A genealogical study of parity and longevity in the Amish.* J Gerontol A Biol Sci Med Sci, 2006. **61**(2): p. 190-5.

15. Ember, C.R. and M. Ember, *Cross-cultural research methods*. 2001, Lanham, MD: AltaMira Press.

16. Pruss, A., et al., *Estimating the burden of disease from water, sanitation, and hygiene at a global level.* Environ Health Perspect, 2002. **110**(5): p. 537-42.

17. Messias, E., *Income Inequality, Illiteracy Rate, and Life Expectancy in Brazil.* Am J Public Health, 2003. **93**(8): p. 1294-1296.

18. Quinn, T.C., *Global burden of the HIV pandemic.* The Lancet, 1996. **348**(9020): p. 99-106.

19. Mansfield, C.J., et al., *Premature mortality in the United States: the roles of geographic area, socioeconomic status, household type, and availability of medical care.* Am J Public Health, 1999. **89**(6): p. 893-898.

20. Lleras-Muney, A., *The Relationship Between Education and Adult Mortality in the United States.* Review of Economic Studies, 2005. **72**(1): p. 189-221.

21.   Anand, S. and T. Bärnighausen, *Human resources and health outcomes: cross-country econometric study.* The Lancet, 2004. **364**(9445): p. 1603-1609.

22.   Wilmoth, J.R., *Demography of longevity: past, present, and future trends.* Exp Gerontol, 2000. **35**(9-10): p. 1111-29.

23.   Barber, N., *Sex ratio at birth, polygyny, and fertility: a cross-national study.* Soc Biol, 2004. **51**(1-2): p. 71-7.

24.   Lowe, C.R. and K.T. Mc, *The sex ratio of human births related to maternal age.* Br J Soc Med, 1950. **4**(2): p. 75-85.

25.   Hesketh, T. and Z.W. Xing, *Abnormal sex ratios in human populations: Causes and consequences.* Proceedings of the National Academy of Sciences, 2006. **103**(36): p. 13271-13275.

26.   Navara, K.J., *Humans at tropical latitudes produce more females.* Biol Lett, 2009. **5**(4): p. 524-7.

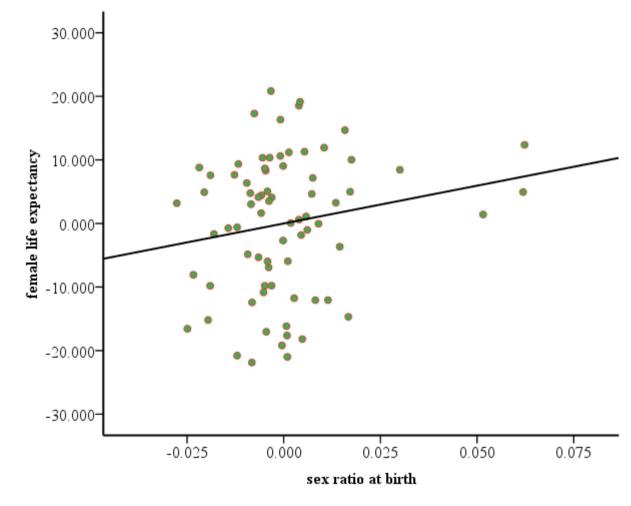27.   Draper, N.R. and H. Smith, *Applied regression analysis*. 1981, New York: Wiley.

Figure 1. Association between sex ratio at birth and female longevity in humans. See table 1 for

numerical values.

Supplementary table 1. Description of the variables included in the analysis.

1   Table 1. Results of the multiple robust regression model (n = 75 countries).

2

	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf. Interval]	
Log education index	27.09	21.91	1.24	0.221	-16.71	70.89
log h20	10.19	21.65	0.47	0.640	-33.09	53.47
log meds	-2.84	4.45	-0.64	0.525	-11.73	6.05
SRB	119.03	55.77	2.13	0.037	7.56	230.51
Fertility	1.84	2.19	0.84	0.404	-2.54	6.23
Latitude	-0.13	0.15	-0.88	0.384	-0.42	0.16
log GDP	-0.48	4.76	-0.10	0.919	-10.00	9.03
Maternal age	-0.08	0.59	-0.13	0.895	-1.27	1.11
Polygamy acceptance/legality	-0.97	5.44	-0.18	0.859	-11.86	9.91
Son Preference	7.70	6.02	1.28	0.206	-4.34	19.74
log DALY	-10.46	15.63	-0.67	0.506	-41.70	20.78
Continent	1.43	1.14	1.26	0.211	-0.83	3.70
constant	-31.53	123.82	-0.25	0.800	-279.04	215.98

3   log h20 (Log population using improved water sources, %), log meds (Log number of physicians per 1000 people), Lgdp (Log

4   disposable income percapita,in U.S.dollars), AIDs (percentage of people ages 15-49 who are infected with HIV), log DALY (log The

5   disability-adjusted life year). Refer to supplementary data for brief description of the variables.

VARIABLE	DESCRIPTION
Leduc	Log education index. One of the three indices on which the human development index is built. The Education Index is measured by the adult literacy rate (with two-thirds weighting) and the combined primary, secondary, and tertiary gross enrollment ratio (with one-third weighting). The adult literacy rate gives an indication of the ability to read and write, while the GER gives an indication of the level of education from kindergarten to postgraduate education. Human Development Report 2009, accessed at http://hdrstats.undp.org/en/indicators/93.html
Lh20	Log population using improved water sources (%). Access to improved water source is the percentage of population with access to an improved drinking water source in a given year. World Health Organization, Statistical Information System, 2008. http://www.who.int/whosis/indicators/compendium/2008/2wst/en/
Lmeds	Log number of physicians (per 1000people). WHO, 2009. http://apps.who.int/gho/indicatorregistry/App_Main/view_indicator.aspx?iid=112
Lgdp	Log disposable income (percapita,in U.S. dollars). GDP data was taken from the Central Intelligence Agency, World Factbook , 2009. https://www.cia.gov/library/publications/the-world-factbook/index.html
AIDs	Prevalence of HIV refers to the percentage of people ages 15-49 who are infected with HIV. World DataBank, 2009. http://data.worldbank.org/indicator/SH.DYN.AIDS.ZS?display=graph
LOGHEPC	Per capita total expenditure on health at average exchange rate (US$). WHO, 2009. http://apps.who.int/gho/indicatorregistry/App_Main/view_indicator.aspx?iid=111
SRB	Count of the sex ratio at birth for the year 2009 was taken from the Central Intelligence Agency, World Factbook (CIA 2010). Equal number of male and female birth was represented by 1.0. https://www.cia.gov/library/publications/the-world-factbook/index.html
fertility	Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children

	in accordance with current age-specific fertility rates. World bank Data Bank, 2009. http://data.worldbank.org/indicator
Latitude	Latitude values for nations were obtained from the Central Intelligence Agency (CIA) World Factbook (CIA 2010) and numerical values were used irrespective of direction. https://www.cia.gov/library/publications/the-world-factbook/index.html
MATERNAL AGE	Maternal age were calculated as modes estimated as the center point of the five¬-year age block with the highest fertility in a country. United nations, 2008. http://esa.un.org/unpp/index.asp?panel=2
Polygamy acceptance/legality	Polygyny was defined as men having multiple wives simultaneously. Countries were coded as 0 = generally not accepted/polygyny is not legal in a country, 0.5 = accepted by part of the population/polygyny is only legal for some people, or 1 = generally accepted/polygyny is legal in a country. Indicator of polygyny . prevalence were obtained from Gender, Institutions and Development Database (GID-DB, 2009). http://stats.oecd.org/Index.aspx?DatasetCode=GID2
Son Preference	Son preference (missing women) describes the difference between the number of women that should be alive (assuming no son preference) and the actual number of women in a country. All other countries are assigned values between 0 (no women are missing) and 1 accordingly. Values for prevalence of son preference were obtained from Gender, Institutions and Development Database (GID-DB, 2009). http://stats.oecd.org/Index.aspx?DatasetCode=GID2
FemaleLE	The average number of years to be lived by a group of people born in the same year, if mortality at each age remains constant in the future. United Nations, 2005 to 2010. http://data.un.org/Data.aspx?d=PopDiv&f=variableID%3A67

COUNTRY	LE DUC	LH20	LogH EPC	Lmeds	AIDs	SRB	fertility	Latitude	Log GDP	MATERNAL AGE	Polygamy acceptance/legality	Son Preference	CONTINENT	Female LE
Algeria	-0.13	1.92	2.43	0.08	0.10	1.05	2.36	28.00	3.85	27.00	0.5	0.5	1	73.70
Angola	-0.18	1.70	2.31	-1.10	2.00	1.05	5.76	12.50	3.95	27.00	1.0	0.3	1	79.10
Argentina	-0.02	1.99	2.86	0.50	0.50	1.05	2.24	34.00	4.14	27.00	0.0	0.0	5	75.10
Armenia	-0.04	1.98	2.11	0.57	0.10	1.13	1.74	40.00	3.77	22.00	0.0	0.0	2	71.20
Azerbaijan	-0.06	1.90	2.45	0.58	0.10	1.13	2.30	40.50	4.02	22.00	0.0	0.0	2	77.50
Bangladesh	-0.28	1.90	1.26	-0.53	0.10	1.04	2.34	24.00	3.20	22.00	0.5	0.5	2	75.20
Belarus	-0.02	2.00	2.47	0.69	0.30	1.06	1.42	53.00	4.06	22.00	0.0	0.0	3	57.80
Benin	-0.35	1.88	1.51	-1.23	1.20	1.05	5.45	9.50	3.18	27.00	0.5	0.0	1	67.50
Bhutan	-0.27	1.96	1.99	-1.64	0.20	1.05	2.64	27.50	3.73	27.00	0.5	0.8	2	67.70
Botswana	-0.10	1.98	2.79	-0.47	24.80	1.03	2.87	22.00	4.12	27.00	0.5	0.0	1	76.10
BurkinaFaso	-	1.8	1.58	-	1.2	1.	5.9	13.0	3.08	22.00	1.0	0.0	1	51.00

	0.52	8		1.19	0	03	1	0						
Burundi	-0.25	1.86	1.30	-1.52	3.30	1.03	4.59	3.50	2.48	27.00	1.0	0.0	1	61.90
Cambodia	-0.15	1.79	1.62	-0.64	0.50	1.04	2.91	13.00	3.28	27.00	0.5	0.0	2	50.80
Cameroon	-0.20	1.87	1.79	-0.72	5.30	1.03	4.62	6.00	3.36	27.00	1.0	0.0	1	46.10
CentralAfricanRepublic	-0.38	1.83	1.28	-1.10	4.70	1.03	4.80	7.00	2.85	27.00	0.5	0.0	1	52.00
Chad	-0.48	1.70	1.62	-1.40	3.40	1.04	6.16	15.00	3.20	22.00	1.0	0.0	1	76.60
Côted'Ivoire	-0.35	1.90	1.74	-0.84	3.40	1.03	4.60	8.00	3.23	27.00	0.5	0.0	1	80.40
Croatia	-0.04	2.00	3.05	0.41	0.10	1.06	1.47	45.17	4.25	27.00	0.0	0.0	3	47.70
Cuba	0.00	1.97	2.85	0.81	0.10	1.06	1.51	21.50	3.99	22.00	0.0	0.0	4	75.50
Egypt	-0.16	2.00	2.05	0.45	0.10	1.05	2.86	27.00	3.78	27.00	0.0	0.5	1	52.80
ElSalvador	-0.10	1.94	2.36	0.20	0.80	1.05	2.32	13.83	3.85	22.00	0.0	0.0	4	60.30
Eritrea	-0.27	1.79	1.00	-1.3	0.80	1.03	4.63	15.00	2.85	27.00	0.5	0.0	1	71.10

				0										
Gabon	-0.07	1.94	2.42	-0.54	5.20	1.03	3.31	1.00	4.14	22.00	1.0		0.0	1	74.80
Ghana	-0.20	1.91	1.72	-1.07	1.80	1.03	4.00	8.00	3.18	27.00	0.5		0.0	1	73.80
Guinea	-0.44	1.85	1.28	-1.00	1.30	1.03	5.41	11.00	3.00	27.00	1.0		0.0	1	47.90
Guinea-Bissau	-0.26	1.79	1.26	-1.35	2.50	1.03	5.71	12.00	2.78	27.00	1.0		0.0	1	62.80
India	-0.19	1.94	1.65	-0.22	0.30	1.12	2.74	20.00	3.49	22.00	1.0		0.8	2	72.70
Indonesia	-0.08	1.90	1.74	-0.54	0.20	1.05	2.17	5.00	3.60	27.00	0.5		0.0	2	72.60
Jamaica	-0.08	1.97	2.36	-0.07	1.70	1.05	2.39	18.25	3.91	22.00	0.0		0.0	4	74.50
Kazakhstan	-0.02	1.98	2.52	0.59	0.10	1.06	2.56	48.00	4.07	22.00	0.0		0.0	2	55.20
Kyrgyzstan	-0.04	1.95	1.76	0.36	0.30	1.05	2.70	41.00	3.32	22.00	0.0		0.0	2	65.80
Laos	-0.17	1.76	1.56	-0.57	0.20	1.05	3.47	18.00	3.32	27.00	0.5		0.0	2	74.20
Lebanon	-	2.0	2.82	0.5	0.1	1.	1.8	33.8	4.12	27.00	0.5		0.0	2	42.30

	0.07	0		5	0	05	5	3						
Lesotho	-0.12	1.93	1.85	-1.30	23.60	1.03	3.33	29.50	3.23	22.00	0.5	0.0	1	46.60
Liberia	-0.25	1.83	1.46	-1.85	1.50	1.03	5.90	6.50	2.70	22.00	0.5	0.0	1	76.90
Madagascar	-0.17	1.61	1.26	-0.79	0.20	1.03	4.72	20.00	3.00	22.00	0.5	0.0	1	48.40
Malawi	-0.16	1.90	1.28	-1.72	11.00	1.02	5.55	13.50	2.95	22.00	0.5	0.0	1	76.70
Malaysia	-0.07	2.00	2.53	-0.03	0.50	1.07	2.56	2.50	4.17	27.00	0.5	0.0	2	56.60
Mali	-0.48	1.75	1.58	-1.31	1.00	1.03	6.54	17.00	3.08	27.00	1.0	0.0	1	66.00
Mauritania	-0.26	1.69	1.34	-0.89	0.70	1.03	4.47	20.00	3.32	27.00	1.0	0.0	1	76.20
Mauritius	-0.08	2.00	2.58	0.03	1.00	1.05	1.58	20.28	4.09	27.00	0.0	0.0	1	69.90
Mongolia	-0.04	1.88	1.88	0.44	0.10	1.05	2.00	46.00	3.51	27.00	0.5	0.3	2	73.40
Morocco	-0.24	1.91	2.19	-0.21	0.10	1.05	2.35	32.00	3.66	27.00	0.5	0.3	1	42.40
Mozambique	-	1.6	1.40	-	11.	1.	5.0	18.2	2.95	22.00	1.0	0.0	1	53.10

	0.32	7		1.57	50	02	6	5						
Namibia	-0.09	1.96	2.41	-0.43	13.10	1.03	3.36	22.00	3.81	22.00	0.5	0.3	1	64.20
Nepal	-0.24	1.94	1.40	-0.68	0.40	1.04	2.90	28.00	3.08	22.00	0.0	0.5	2	76.00
Nicaragua	-0.12	1.93	2.02	-0.43	0.20	1.05	2.72	13.00	3.45	22.00	0.0	0.0	4	56.00
Niger	-0.55	1.68	1.32	-1.72	0.80	1.03	7.12	16.00	2.85	22.00	1.0	0.3	1	47.30
Nigeria	-0.18	1.76	1.84	-0.40	3.60	1.06	5.70	10.00	3.38	27.00	1.0	0.3	1	69.30
Oman	-0.10	1.94	2.70	0.28	0.10	1.05	3.05	21.00	4.38	27.00	0.5	0.5	2	65.80
Pakistan	-0.31	1.95	1.36	-0.09	0.10	1.10	3.96	30.00	3.41	27.00	0.0	0.8	2	78.20
PapuaNewGuinea	-0.28	1.60	1.56	-1.28	0.90	1.05	4.07	6.00	3.38	27.00	1.0	0.8	6	73.90
Peru	-0.05	1.91	2.30	-0.04	0.40	1.05	2.57	10.00	3.93	27.00	0.0	0.0	5	74.00
Philippines	-0.05	1.96	1.83	0.06	0.10	1.05	3.08	13.00	3.52	27.00	0.0	0.0	2	73.90

Russia	-0.03	1.98	2.68	0.63	1.00	1.06	1.49	60.00	4.18	22.00	0.5	0.0	3	72.60
Rwanda	-0.22	1.81	1.68	-1.62	2.90	1.03	5.41	2.00	2.95	27.00	0.5	0.0	1	47.80
Senegal	-0.38	1.84	1.77	-1.23	0.90	1.03	4.82	14.00	3.20	27.00	1.0	0.0	1	65.10
SierraLeone	-0.39	1.69	1.64	-1.80	1.60	1.03	5.20	8.50	2.95	27.00	0.5	0.0	1	44.10
Singapore	-0.04	2.00	3.18	0.26	0.10	1.08	1.28	1.37	4.70	27.00	0.5	0.0	2	81.90
SouthAfrica	-0.07	1.96	2.69	-0.11	17.80	1.02	2.54	29.00	4.00	27.00	0.5	0.0	1	49.70
SriLanka	-0.08	1.95	1.92	-0.31	0.10	1.04	2.33	7.00	3.65	27.00	0.0	0.0	2	76.20
Sudan	-0.27	1.76	1.98	-0.55	1.10	1.05	4.17	15.00	3.36	27.00	1.0	0.5	1	60.10
Swaziland	-0.14	1.84	2.19	-0.80	25.90	1.03	3.53	26.50	3.64	22.00	1.0	0.0	1	39.40
Tajikistan	-0.05	1.85	1.58	0.30	0.20	1.05	3.41	39.00	3.26	27.00	0.5	0.0	2	69.40
Thailand	-0.05	1.99	2.23	-0.53	1.30	1.05	1.82	15.00	3.91	27.00	0.5	0.0	2	75.00

THEGambia	-0.36	1.96	1.41	-1.42	2.00	1.03	5.05	13.47	3.15	27.00	1.0	0.0	1	60.10
Togo	-0.27	1.78	1.46	-1.28	3.20	1.03	4.26	8.00	2.95	27.00	1.0	0.0	1	71.80
TrinidadandTobago	-0.06	1.97	3.03	0.07	1.50	1.03	1.64	11.00	4.36	22.00	0.0	0.3	4	76.00
Tunisia	-0.11	1.97	2.38	0.08	0.10	1.07	2.06	34.00	3.90	27.00	0.0	0.3	1	67.50
Uganda	-0.16	1.83	1.63	-0.93	6.50	1.03	6.34	1.00	3.11	22.00	1.0	0.0	1	73.80
Ukraine	-0.02	1.99	2.26	0.49	1.10	1.06	1.39	49.00	3.81	22.00	0.0	0.0	3	81.50
Uruguay	-0.02	2.00	2.84	0.57	0.50	1.04	2.01	33.00	4.10	27.00	0.0	0.0	5	70.40
Uzbekistan	-0.05	1.94	1.79	0.42	0.10	1.06	2.56	41.00	3.45	22.00	0.5	0.0	2	76.80
Vietnam	-0.09	1.97	1.90	0.09	0.40	1.07	2.06	16.00	3.46	27.00	0.0	0.0	2	64.30
Zambia	-0.17	1.78	1.67	-1.26	13.50	1.03	5.83	15.00	3.18	22.00	1.0	0.0	1	42.60