Room for Happiness? International Heterogeneity in the use of the Happiness Scale Using Big Data

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(joint with Koen Decancq)

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Outline

Introduction

- 2 Related Bibliography
- Goals of the paper
- 4 Data & Econometric model

5 Results



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• Wide consensus in economics of going *beyond GDP* when we measure individual's well-being.

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- Wide consensus in economics of going *beyond GDP* when we measure individual's well-being.
- One possibility is to ask directly to the individuals about their life
 - I.e. Happiness, health, job or leisure time.

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Ordinal preferences, i.e. MRS and willingness-to-pay.

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- **1** Ordinal preferences, i.e. MRS and willingness-to-pay.
- 2 Cardinal and inter-personally comparable measures of utility
 - $I_i \rightarrow \text{all possible life aspects.}$
 - $\xi_i \rightarrow A$ function that maps I_i into possible responses to the scale question, also known as reporting function (Oswald 2008).

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Problem:

- Individuals across different countries or cultural backgrounds might use different benchmarks or scales.
- If Danes are more likely to report excellent health than Italians, that may mean that they are healthier than Italians or that they are more likely to report better health, even if they have the same true level of health.

VIAIES



Los cinco mejores rincones de Portugal para sentarse a llorar

SI HAS ACABADO ALLÍ RÍNDETE A LA TRISTEZA, PUES TODA RESISTENCIA ES FÚTIL

1. El museo del Fado: un homenaje al llanto en sí mismo. Incluso el personal que vende entradas llora cuando alguien compra una. Con una adloguía fantástica imposibie de entender, pues la vaz que narra el recorrido únicamente esolloza. Además, de regalo con la entrada, un paquete de clínex para usar cuando escuches temas tan tristes como "Eu tenho uma doença terminal" o "Meu gato morreu atropelado".



Dos de cada tres españoles creen que saben hablar italiano

CONSIDERAN QUE LOS DOS IDIOMAS TIENEN LA MISMA RAÍZ Y "SON IL MISMO ROLLO TUTTO"



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Related Bibliography

SWB to measure social welfare

- Helliwell, et al. 2021.
- Layard et al. 2008.
- Dolan and White 2007.
- Kahneman et al. 2004.
- Easterlin 1974 and 1995.

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Figure 2.1: Ranking of happiness 2019-2021 (Part 1)



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- Show the existence of international heterogeneity in the cultural norms about the use of the response function of subjective evaluation questions.
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 - Not everybody uses the scale with the same "positiveness".
- Show that this "positiveness" can be explained by characteristics as culture and population's idiosyncrasy.
- Show that this heterogeneity has a significant and robust explanatory power in cross-country subjective well-being.
- Show how besides culture, other "mundane" effects, can affect individual's reporting function.

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- Even if we cannot measure individuals' true life satisfaction in objective units, we can learn about the heterogeneity in the way in which individuals reports things.
- To purse this, we collected data on hotel online reviews.
- Through the comparison of the reviews from guests staying in the same hotel room, we provide evidence on how individuals from different countries uses different response scale when they are asked self-perception questions

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Data

- Intels reviews web-scrapped from booking.com
- 26,380,460 reviews from individuals from 246 countries or territories, containing for each observation:
 - Hotel and room booked .
 - Country of origin.
 - Score provided to the room.
 - Other variables: date, number of nights, type of trip, composition of the trip, location of the hotel, name of the guest (displayed by the site), etc.
- Solution This implies 225,548 hotels and 794,914 different rooms.

Data Example:

- Hotel: W Barcelona
- Room: King-Size Fabulous Sky



Guest	Date	Country	Hotel	Room	Score	Mean
Miyuki	18/05/2019	Japan	W Barcelona	King-Size Fab. Sky	10	7.8
Yoshiaki	25/05/2019	Japan	W Barcelona	King-Size Fab. Sky	7.5	7.8
Takahide	21/10/2019	Japan	W Barcelona	King-Size Fab. Sky	9	7.8
Koichi	23/10/2019	Japan	W Barcelona	King-Size Fab. Sky	6.7	7.8
Chizuru	31/10/2019	Japan	W Barcelona	King-Size Fab. Sky	6	7.8
Morgane	13/11/2021	France	W Barcelona	King-Size Fab. Sky	10	9.5
Olivier	15/10/2021	France	W Barcelona	King-Size Fab. Sky	10	9.5
Sandra	04/11/2019	France	W Barcelona	King-Size Fab. Sky	9	9.5
Francis	17/12/2018	France	W Barcelona	King-Size Fab. Sky	9.2	9.5
lan	13/05/2019	UK	W Barcelona	King-Size Fab. Sky	9.2	9.7
Anne	19/06/2019	UK	W Barcelona	King-Size Fab. Sky	10	9.7
Katie	07/11/2021	UK	W Barcelona	King-Size Fab. Sky	10	9.7

Country heterogeneity effect on individuals' scores:

$$S_{ric} = \alpha_r + \beta_c + \Gamma X_i + \varepsilon_{ric}$$

2 Country positiveness $\hat{\beta}_c$, explained by country level variables:

$$\beta_c = \kappa + \Lambda Y_c + \eta_c$$

Sountry life satisfaction explained by its "positiveness":

$$LS_c = \mu + \nu\beta_c + \Xi Z_c + \sigma_c$$

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Country heterogeneity effect on individuals' scores (reduced output)

Country	β_c	Country	β_c	Country	β_c	Country	β_c
Algeria	0.09***	Mexico	0.28***	Denmark	0.17***	Sweden	0.10***
	(0.02)		(0.01)		(0.01)		(0.01)
D.R. Congo	-0.04	P. Rico	0.86***	Estonia	0.55***	Switz.	-0.10***
	(0.04)		(0.01)		(0.01)		(0.01)
Egypt	0.06***	China	0.10***	Finland	0.35***	U. Kingdom	0.48***
	(0.01)		(0.01)		(0.01)		(0.01)
Morocco	-0.16***	H. Kong	-0.19***	France	0.10***	Australia	0.39***
	(0.01)		(0.01)		(0.01)		(0.01)
Mozambique	0.15***	India	0.21***	Germany	0.21***	N. Zealand	0.25***
	(0.03)		(0.01)		(0.01)		(0.01)
Nigeria	0.44***	Israel	0.03***	Greece	0.47***	Argentina	0.37***
	(0.02)		(0.01)		(0.01)		(0.01)
S. Africa	Ò.34* ^{**} *	Japan	-0.22***	Italy	0.37***	Brazil	0.54***
	(0.01)		(0.01)		(0.01)		(0.01)
Sudan	0.24* ^{**}	Russia	0.49***	Netherlands	0.20***	Chile	0.50***
	(0.04)		(0.01)		(0.01)		(0.01)
Canada	0.03***	Turkey	-0.02*	N. Maced.	0.54***	Colombia	0.55***
	(0.01)		(0.01)		(0.01)		(0.01)
C. Rica	0.74***	Qatar	0.02*	Portugal	0.13***	Peru	0.50***
	(0.01)		(0.01)		(0.01)		(0.01)
Cuba	0.71***	Belgium	0.17***	Spain	-0.04***	Uruguay	0.27***
	(0.11)		(0.01)		(0.01)		(0.01)
Constant	8.14	Prob > F	0.000	R-Squared	0.21	Obs.	24,701,724

Note: Standard errors in parentheses. *p < 0.05, **p < 0.01, **p < 0.01. The model was estimated including also a constant. Omitted country United States. Additional control variables: gender, type of trip, composition, number of nights and quarter of the year.

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Country heterogeneity effect on individuals' scores, grouped by continent



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Country heterogeneity effect on individuals' scores, grouped by religion family



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Country heterogeneity effect on individuals' scores, grouped by linguistic family



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Country heterogeneity effect on individuals' scores



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		Dep. Va	r: β _c		
	(1)				
Ln Income	-0.13***	-0.18***	-0.13***	-0.11***	-0.13***
	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)
Education	1.09***	1.00***	0.64**	0.37	0.53*
	(0.22)	(0.24)	(0.29)	(0.33)	(0.28)
Freed. Choices		0.50***	0.49**	0.47**	0.56***
		(0.18)	(0.21)	(0.19)	(0.15)
Corruption		0.39***	0.36***	0.37***	0.46***
		(0.11)	(0.13)	(0.11)	(0.13)
Life Expect.		-0.00	-0.00	0.00	-0.01
		(0.00)	(0.01)	(0.01)	(0.01)
Generosity		-0.07	-0.01	0.10	0.04
		(0.11)	(0.13)	(0.11)	(0.10)
Soc. Support		0.81***	0.65**	0.73***	0.61**
		(0.19)	(0.29)	(0.23)	(0.27)
Aust-Asiatic			0.04	0.14	
			(0.10)	(0.12)	
Germanic			0.16**	0.07	
			(0.07)	(0.08)	
Italic-Latin			0.19***	0.10	
			(0.05)	(0.07)	
Slavic			0.32***	0.26***	
			(0.08)	(0.08)	
Turkic			0.13	0.16	
			(0.09)	(0.10)	
Religion				\checkmark	\checkmark
Continent					\checkmark
Constant	0.73***	0.03	-0.27	-0.29	0.43
	(0.18)	(0.30)	(0.37)	(0.33)	(0.39)
Observations	148	148	148	140	140
R-squared	0.14	0.32	0.43	0.48	0.49

Note: Standard errors in parentheses. *p < 0.05, **p < 0.01, **p < 0.001.

Average life satisfaction (Helliwell, Sachs, et al. 2021)



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Life satisfaction vs. $\hat{\beta}_c$



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		De	ep. Var. Life	satisfaction L	adder score			
	(1)	(2)	(3)	(4)	(i)	(ii)	(iii)	(iv)
β_c	0.96***	0.78***	0.78***	0.65***				
	(0.19)	(0.22)	(0.22)	(0.14)				
Ln Income	0.39***	0.29***	0.38***	0.24**	0.36***	0.22***	0.32***	0.18*
	(0.07)	(0.09)	(0.08)	(0.11)	(0.08)	(0.08)	(0.06)	(0.09)
Free. Choices	1.88***	1.40***	1.31**	1.61***	2.46***	1.74***	1.65***	1.94***
	(0.48)	(0.49)	(0.51)	(0.45)	(0.42)	(0.42)	(0.56)	(0.42)
Corruption	-0.93**	-0.94***	-1.01***	-1.07***	-0.47	-0.65*	-0.75**	-0.83**
	(0.43)	(0.35)	(0.35)	(0.30)	(0.45)	(0.36)	(0.34)	(0.36)
Life Expect.	0.04***	0.03**	0.02*	0.02	0.05***	0.04***	0.03**	0.01
c .	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)
Generosity		0.46	0.89**	0.61		0.39	0.85*	0.64*
C C .		(0.33)	(0.41)	(0.43)		(0.48)	(0.45)	(0.34)
Soc. Support		2.02**	2.15***	2.19**		2.78****	2.12****	2.52****
		(0.99)	(0.77)	(0.93)		(0.73)	(0.79)	(0.80)
Aust-Asiatic			-0.31	0.05			-0.26	0.15
c			(0.21)	(0.48)			(0.25)	(0.39)
Germanic			-0.20**	-0.13			-0.10	-0.11
Inclin Latin			(0.15)	(0.20)			(0.14)	(0.22)
Italic-Latin			0.33**	0.48****			0.50****	0.49
Clauda			(0.16)	(0.17)			(0.12)	(0.19)
Slavic			-0.19	-0.19			(0.12)	-0.06
Turkie			(0.10)	(0.22)			(0.18)	(0.20)
TUTKIC			-0.38	-0.38			-0.23	-0.25
Education			(0.19)	(0.19)			(0.19)	(0.17)
Religion				•				•
Continent				v				•
Constant	-1 63**	-1 48**	-1 66***	-1 23	-2 45***	-1 96***	-2 18***	-1 13
Constant	(0.71)	(0.70)	(0.62)	(1.16)	(0.81)	(0.68)	(0.59)	(1.28)
Observations	151	151	151	140	151	151	151	140
R-squared	0.76	0.78	0.83	0.86	0.72	0.75	0.81	0.85
	0.10	0.10	0.00	0.00	0.12	0.10	0.01	0.00

Note: Standard errors in parentheses. *p < 0.05, **p < 0.01, ***p < 0.001.

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The role of mundane effects on the reporting function

- Evidence shows that "minor" or "mundane" events that affect respondents' current mood also affect their reported life satisfaction (Kahneman and Krueger 2006).
 - Grading exams (Thaler 2015).
 - Finding a coin on the copy machine (Schwarz 1987).
 - Outcome of soccer games (Schwarz et al. 1987),

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- Rather than provide evidence on how it influences reported values, is it possible to show that "mundane" events also affect the individual reporting functions?
- "Natural" experiment: Euro Final 2021 Italy vs. United Kingdom.
- How was the room valuation for Italians and British before and after the final game?

$$S_{ricw} = \alpha_r + \beta_c + \gamma_w + \Gamma X_i + \varepsilon_{ricw}$$

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	Total	Males	Females
UK	0.307***	0.296***	0.295***
	(0.024)	(0.038)	(0.040)
UK			
Week - 2 × 2020	0.180***	0.100	0.154*
	(0.053)	(0.083)	(0.089)
Week - 2 × 2021	0.007	-0.039	0.005
	(0.037)	(0.058)	(0.059)
Week - 1 × 2020	-0.149*	-0.166	-0.114
	(0.087)	(0.133)	(0.152)
Week - 1 × 2021	0.015	-0.005	-0.021
	(0.051)	(0.081)	(0.082)
Week $+ 1 \times 2020$	0.034	0.050	-0.042
	(0.070)	(0.110)	(0.117)
Week + 1 × 2021	-0.467***	-0.700***	-0.277***
	(0.051)	(0.080)	(0.081)
Week + 2 × 2020	-0.011	-0.102	-0.077
	(0.068)	(0.107)	(0.114)
Week + 2 × 2021	-0.215***	-0.410***	-0.149*
	(0.050)	(0.079)	(0.080)
Week + 3 × 2020	0.070	-0.050	0.068
	(0.066)	(0.104)	(0.110)
Week + 3 × 2021	-0.138***	-0.257***	-0.094
	(0.049)	(0.078)	(0.079)
Week + 4 × 2020	-0.042	-0.091	-0.082
	(0.063)	(0.099)	(0.105)
Week + 4 × 2021	-0.051	-0.108	-0.086
_	(0.047)	(0.075)	(0.075)
Constant	8.437***	8.430***	8.560***
Observations	2,746,415	1,235,609	1,087,254
R-squared	0.265	0.316	0.325

Standard errors in parentheses. * p < 0.05, ** p < 0.01, ***p < 0.001. Add. controls: "Type of trip", "Quarter of the year", "Composition" and "Num. of nights". Base categories "Italy" "2019" and Week-0.

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Outline

Introduction

- 2 Related Bibliography
- 3 Goals of the paper
- 4 Data & Econometric model

5 Results



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Conclusions

- We show that cultural and cross-country heterogeneity limit the reliability of SWB data.
- We do that by showing how individual reporting function varies across countries.
- This variation can be explained by country characteristics as income, educational level or language spoken.
- This finding puts into question what can be learned from cross-country comparisons of SWB: are respondents in a country really better off or do they adhere to a more positive cultural norm about the use of the response scale?
- In addition to cultural norms, we also show that reporting function is by more "minor" events (i.e. a football game).

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Room for Happiness? International Heterogeneity in the use of the Happiness Scale Using Big Data

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