Cultural values and economic choices: Three meta-reanalyses of experimental evidence

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Introduction

- We investigate the role of individualism in influencing economic choices by revisiting three published meta-analyses of experimental evidence

- The three meta-studies are selected on the basis of contrasting existing hypotheses about the role of individualism

We re-analyze the data by linking country-level cultural indicators to the experimental outcome:

1. Risk aversion (Filippin & Crosetto, 2016)
2. Tax compliance (Alm & Malézieux, 2021)
3. Prosocial behavior (Bilén, Dreber, & Johannesson, 2021)

Introduction

Twofold contribution:

1. Three literatures (risk-taking, tax compliance, and prosocial behavior), each hosting contradictory theories about the role of individualism as a determinant
2. Robustness check of the gender-related results of the three selected meta-studies

Added value:

a. Addressing new research questions not posed by the included studies
b. Settling controversies that arise from conflicting claims

Methodology

- The **measurement** of culture has mainly relied on survey questions (problem: reverse causality) and experiments (problem: external validity). To mitigate both problems, we use **country-level indicators** in the context of meta-analysis of experimental evidence

Challenges when using country-level indicators:

- Persistence of culture and speed of cultural change
- Disentangling the effect of culture from other confounding factors
- Within-country variation in cultural values and the issue of *ecological fallacy*

Methodology

Common features of the three selected meta-studies:

- Systematic meta-analyses of experimental evidence
- Combination of individual participant data
- Meta-regressions are performed to account for between-study heterogeneity
- Cultural diversity is not investigated

Same **modus operandi** across meta-reanalyses:

1. We obtain the original datasets
2. We code seven country-level cultural indicators and two country-level proxies of economic development as additional regressors:

   - **Individualism-collectivism** (Hofstede, 2001)
   - Power distance (Hofstede, 2001)
   - Uncertainty avoidance (Hofstede, 2001)
   - Masculinity-femininity (Hofstede, 2001)
   - Long-term orientation (Hofstede, 2001)
   - Indulgence-restraint (Hofstede, 2001)
   - **Ethno-linguistic-religious fractionalization** (Alesina et al., 2003)
   - Ease of doing business (World Bank)
   - GDP per capita (World Bank)

3. We re-analyze the data

META-REANALYSES: CULTURE & RISK AVERSION

«A reconsideration of gender differences in risk attitudes» by Filippin & Crosetto (2016, Management Science)

- Meta-analysis of Multiple Price Lists (MPLs) à la Holt & Laury (2002)
- Dependent variable of meta-regressions: *Number of safe choices* (from 0 to 9)

5,796 observations at the individual level from 47 studies and 15 countries

Hypotheses linking **individualism** to risk attitude:

1. ***Cushion hypothesis:*** collectivist countries → more risk-seeking

relatively more extended social network can cushion people financially in case of unfavorable events

2. ***Tough guy hypothesis:*** individualist countries → more risk-seeking

they reward people for personal success and accordingly lead them to take relatively more risks

META-REANALYSES: CULTURE & RISK AVERSION

Table 2: Explaining risk aversion through cultural values

	Dependent variable: Number of safe choices			
	(1) Filippin and Crosetto (OLS)	(2) Extended OLS model	(3) Extended OLS model with controls	(4) Extended MME model with controls
Female	0.326***	0.330***	0.337***	0.299***
	(0.050)	(0.069)	(0.066)	(0.048)
Realmoney	0.013***	0.012	0.017	0.002
	(0.002)	(0.012)	(0.011)	(0.006)
Realmoney^2 / 100	-0.004***	-0.004	-0.007	-0.001
	(0.001)	(0.004)	(0.004)	(0.003)
Exchange / 100	0.011	0.023	0.053**	0.047***
	(0.009)	(0.019)	(0.021)	(0.017)
Randomorder	0.360***	0.427	0.692	1.071**
	(0.128)	(0.344)	(0.584)	(0.414)
Individualism		0.005	0.033	0.023
		(0.004)	(0.020)	(0.018)
Constant	5.303***	4.969***	7.631***	5.978***
	(0.039)	(0.327)	(2.354)	(2.196)
Cultural & ED controls	No	No	Yes	Yes
R-squared (%)	1.935	2.122	3.349	-
Adj. R-squared (%)	1.850	2.020	3.115	-
Akaike's IC	23,799.040	23,745.810	23,688.680	23,435.620
LR χ^2 vs. no random slope	-	-	-	7.390***
No. of observations	5,807	5,796	5,796	5,796

*** p-value < 0.01; ** p-value < 0.05; *p-value < 0.10

- **Result 1A:** *The included studies divide fairly evenly between those that find a positive relationship between individualism and risk aversion, and those that provide opposite findings*
- **Result 1B:** *The original evidence for gender differences in risk attitude remains solid after the meta-reanalysis*

META-REANALYSES: CULTURE & TAX COMPLIANCE

«40 years of tax evasion games: A meta-analysis» by Alm & Malézieux (2021, Experimental Economics)

- Meta-analysis of Tax Evasion Games (TEGs) à la Friedland et al. (1978)
- Dependent variable of meta-regressions: *Compliance rate* (from 0 to 1)

11,101 observations at the individual level from 48 datasets and 15 countries

Hypotheses linking **individualism** to tax compliance:

1. **individualist countries → more compliant**
   collectivist societies' concern for the in-group can override written laws

2. **individualist countries → less compliant**
   individualism causes the erosion of moral codes
   (institutional anomie theory)

Case studies: culture & tax compliance

Table 3: Explaining tax compliance through cultural values

	Dependent variable: Compliance rate			
	(1) Alm and Malézieux (OLS)	(2) Extended OLS model	(3) Extended OLS model with controls	(4) Extended MME model with controls
Random audit	-0.008	-0.093	-0.086	-0.112**
	(0.050)	(0.083)	(0.062)	(0.047)
Audit probability	0.002	0.093	-0.037***	-0.156*
	(0.034)	(0.154)	(0.151)	(0.086)
Fine size	0.006	0.007	0.008	-0.016
	(0.010)	(0.014)	(0.011)	(0.011)
Audit * Fine	-0.233***	0.036	0.029	-0.219***
	(0.033)	(0.099)	(0.097)	(0.065)
Amnesty	-0.313***	0.094	0.262***	0.098
	(0.029)	(0.072)	(0.074)	(0.120)
Flat tax	-0.127***	-0.261***	-0.397***	-0.288***
	(0.025)	(0.063)	(0.061)	(0.071)
Tax rate	-0.175***	0.225	0.118**	-0.148
	(0.032)	(0.171)	(0.107)	(0.125)
Individualism		$-19.3e^{-4}$**	-0.003*	-0.001
		($8.3e^{-4}$)	(0.002)	(0.001)
Constant	0.952***	1.230***	1.278**	1.350***
	(0.067)	(0.132)	(0.543)	(0.325)
Cultural & ED controls	No	No	Yes	Yes
Round FE	Yes	No	No	No
Country FE	Yes	No	No	No
Study FE	Yes	No	No	No
Year FE	Yes	Yes	Yes	Yes
R-squared (%)	8.836	3.577	5.241	-
Adj. R-squared (%)	8.769	3.412	5.010	-
Akaike's IC	161,886.800	11,266.470	11,089.230	10,755.66
LR χ^2 vs. no random slope	-	-	-	8.340***
No. of observations	163,123	11,101	11,101	11,101

*** p-value < 0.01; ** p-value < 0.05; *p-value < 0.10

- **Result 2A:** *The included studies divide fairly evenly between those that find a positive relationship between individualism and tax compliance, and those that provide opposite findings*
- **Result 2B:** *The original evidence for gender differences in tax compliance remains solid after the meta-reanalysis*

Case studies: culture & prosocial behavior

«Are women more generous than men? A meta-analysis» by Bilén, Dreber & Johannesson (2021, Journal of the Economic Science Association)

- Meta-analysis of Dictator Games (DGs) à la Forsythe et al. (1994)
- Dependent variable of meta-regressions: *Share donated* (from 0 to 1)

14,689 observations at the individual level from 52 studies and 19 countries

Hypotheses linking **individualism** to prosocial behavior:

1. **individualist countries → less prosocial**
   individualism is associated with the pursuit of self-interest rather than group interest

2. **individualist countries → more prosocial**
   especially in individualist countries, individuals behave in a prosocial manner because it serves their own purposes
   (warm-glow giving)

Case studies: culture & prosocial behavior

Table 4: Explaining prosocial behavior through cultural values

	Dependent variable: Share donated			
	(1) Bilén et al. (OLS)	(2) Extended OLS model	(3) Extended OLS model with controls	(4) Extended MME model with controls
Female	0.020***	0.021***	0.023***	0.023***
	(0.007)	(0.008)	(0.007)	(0.005)
Charity DG	0.146***	0.147***	0.152***	0.139***
	(0.030)	(0.026)	(0.020)	(0.036)
Charity DG * Female	0.096***	0.096***	0.097***	0.099***
	(0.018)	(0.023)	(0.023)	(0.011)
Individualism		$-1.4e^{-4}$	-0.003**	-0.003
		$(4.1e^{-4})$	(0.001)	(0.002)
Constant	0.272***	0.281***	0.532***	0.443***
	(0.011)	(0.029)	(0.114)	(0.156)
Cultural & ED controls	No	No	Yes	Yes
Individual controls	No	No	No	No
Treatment controls	No	No	No	No
Continent FE	No	No	No	No
Condition FE	No	No	No	No
R-squared (%)	8.384	8.538	11.131	-
Adj. R-squared (%)	8.366	8.513	11.071	-
Akaike's IC	4,309.057	4,273.617	3,863.086	3,235.510
LR χ^2 vs. no random slope	-	-	-	7.490***
No. of observations	14,827	14,689	14,689	14,689

*** p-value < 0.01; ** p-value < 0.05; *p-value < 0.10

- **Result 3A:** *The included studies divide fairly evenly between those that find a positive relationship between individualism and prosocial behavior, and those that provide opposite findings*
- **Result 3B:** *The original evidence for gender differences in prosociality remains solid after the meta-reanalysis*

Conclusions

In all three cases:

1. The impact of individualism on economic choices appears to be context-dependent and cannot be generalized across the literature
2. The gender-related results remain unchanged after our re-analyses

We call for further primary research on cross-cultural differences (especially, in non-WEIRD countries) and more multilab replication studies

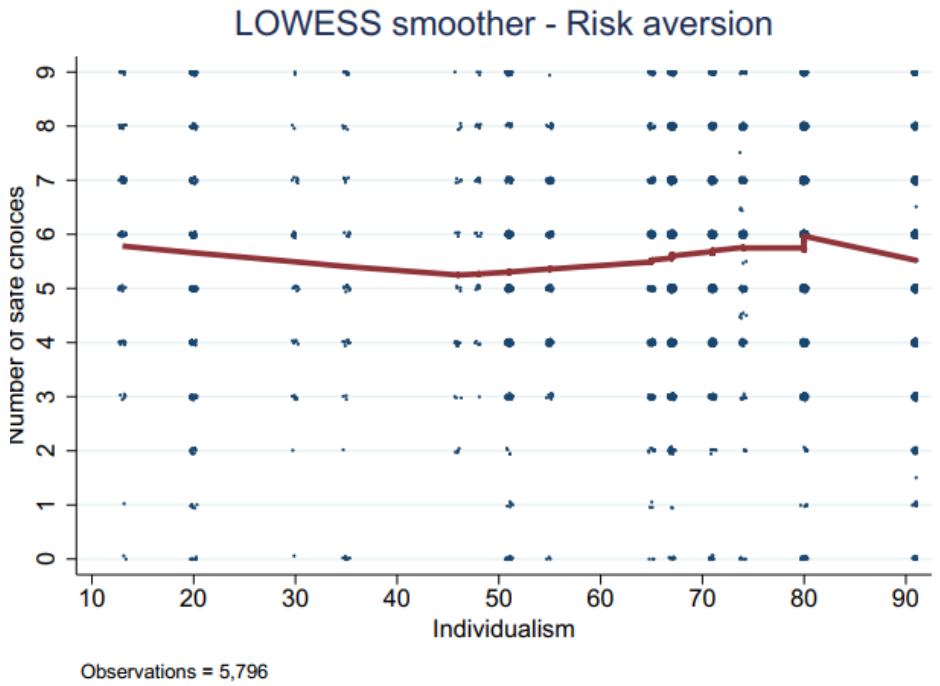
Appendix

Table A1: Culture and risk aversion: summary statistics

	Obs.	Mean	Std. Dev.	Min	Max
Number of safe choices	5,796	5.622	1.895	0	9
Individualism	5,796	72.430	18.522	13	91
Fractionalization	5,796	0.439	0.170	0.114	0.826
Power distance	5,796	44.494	14.951	11	81
Uncertainty avoidance	5,796	57.252	17.406	23	100
Masculinity	5,796	55.126	14.220	14	79
Long-term orientation	5,796	48.340	22.938	13	87
Indulgence	5,796	57.305	14.585	24	97
Ease of doing business	5,796	23.938	18.456	4	84
GDP per capita	5,796	51,033.190	14,493.050	5,264.592	62,962.180

The columns report absolute frequencies, means, standard deviations, as well as minimum and maximum values.

Figure 1: Relationship between individualism and risk aversion



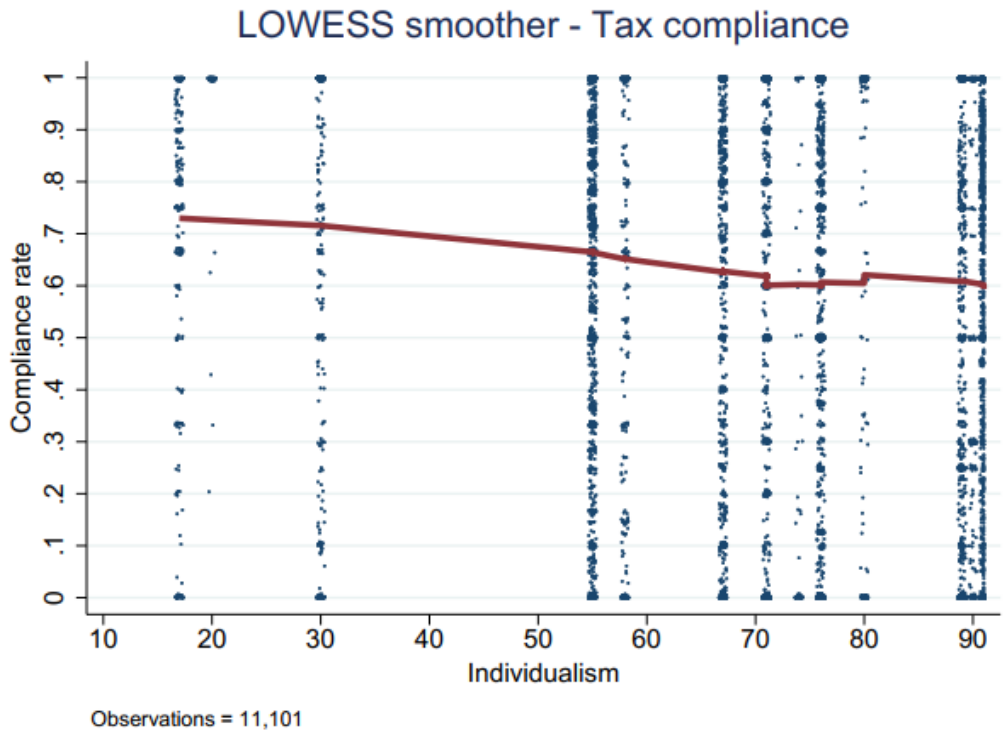
Appendix

Table A4: Culture and tax compliance: summary statistics

	Obs.	Mean	Std. Dev.	Min	Max
Compliance rate	11,101	0.627	0.409	0	1
Individualism	11,101	70.997	18.177	17	91
Fractionalization	11,101	0.285	0.139	0.140	0.662
Power distance	11,101	39.425	18.953	11	90
Uncertainty avoidance	11,101	60.725	17.418	23	90
Masculinity	11,101	61.626	16.962	5	80
Long-term orientation	11,101	54.635	17.870	21	93
Indulgence	11,101	53.507	17.545	15	78
Ease of doing business	11,101	33.224	19.505	4	82
GDP per capita	11,101	54,698.220	11,426.480	8,566.965	68,095.690

The columns report absolute frequencies, means, standard deviations, as well as minimum and maximum values.

Figure 2: Relationship between individualism and tax compliance



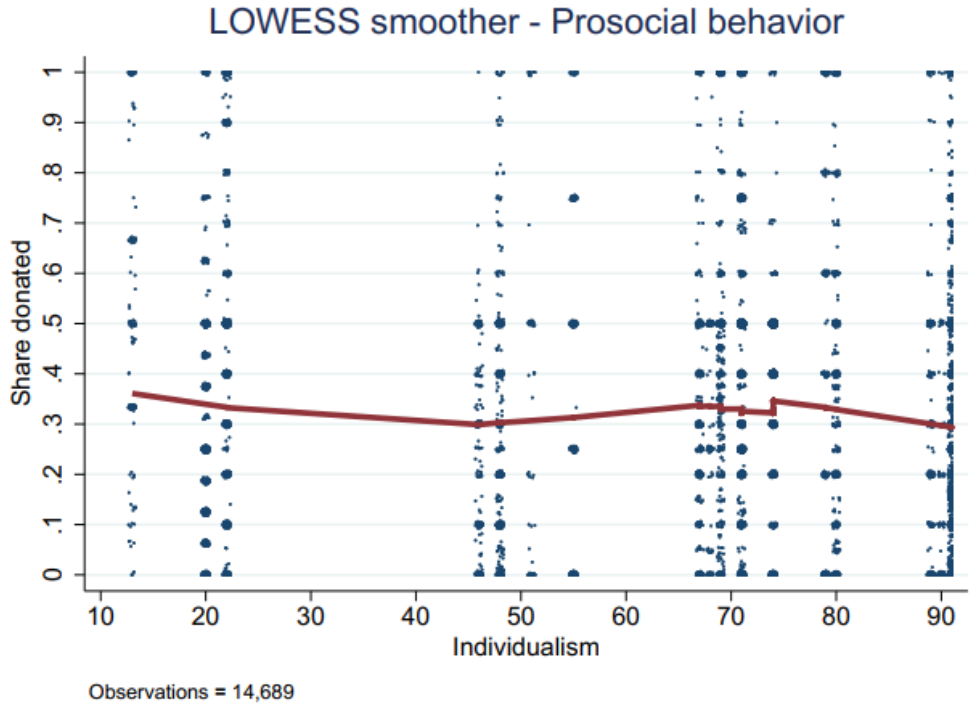
Appendix

Table A7: Culture and prosocial behavior: summary statistics

	Obs.	Mean	Std. Dev.	Min	Max
Share donated	14,689	0.322	0.293	0	1
Individualism	14,689	69.777	23.438	13	91
Fractionalization	14,689	0.385	0.193	0.110	0.707
Power distance	14,689	42.160	19.673	11	90
Uncertainty avoidance	14,689	47.045	18.274	23	92
Masculinity	14,689	42.598	25.235	5	95
Long-term orientation	13,773	42.814	18.056	13	88
Indulgence	13,773	63.837	14.442	25	83
Ease of doing business	14,689	27.132	41.329	1	163
GDP per capita	14,689	51,951.190	22,331.500	1,524.388	85,766.610

The columns report absolute frequencies, means, standard deviations, as well as minimum and maximum values.

Figure 3: Relationship between individualism and prosocial behavior



Appendix

Table A6: Extending model (6) from Table 16 of Alm and Malézieux

	Dependent variable: Compliance rate			
	(1) Alm and Malézieux (OLS)	(2) Extended OLS model	(3) Extended OLS model with controls	(4) Extended MME model with controls
Age	0.001	0.001	0.001	0.001
	(0.001)	(0.002)	(0.002)	(0.001)
Male	-0.056***	-0.086	-0.084	-0.084***
	(0.009)	(0.051)	(0.049)	(0.017)
Student	-0.055	0.032	0.023	0.023
	(0.041)	(0.059)	(0.058)	(0.052)
Income	-0.032***	-0.045	-0.040	-0.040**
	(0.008)	(0.029)	(0.029)	(0.016)
Risk averse (HL)	0.018**	0.064	0.062	0.062***
	(0.009)	(0.031)	(0.031)	(0.017)
Individualism		0.036***	0.005	0.005
		(0.001)	(0.003)	(0.003)
Constant	0.661***	-1.620***	0.498*	0.498**
	(0.065)	(0.124)	(0.221)	(0.237)
Cultural & ED controls	No	No	Yes	Yes
Round FE	Yes	No	No	No
Country FE	Yes	No	No	No
Study FE	Yes	No	No	No
Year FE	Yes	Yes	Yes	Yes
R-squared (%)	29.588	25.644	25.873	-
Adj. R-squared (%)	29.508	25.207	25.389	-
Akaike's IC	3,917.061	882.724	877.962	895.962
LR χ^2 vs. no random slope	-	-	-	-
No. of observations	29,420	1,544	1,544	1,544

(1): coefficient estimates from OLS regression model, with standard errors clustered at the individual level in parentheses. (2) and (3): coefficient estimates from OLS regression models, with standard errors clustered at the study level in parentheses. (4): coefficient estimates from multilevel mixed-effects (MME) model, with standard errors clustered at both the study and the country level in parentheses. The label "Cultural & ED controls" includes *Fractionalization*, *Power distance*, *Uncertainty avoidance*, and *Masculinity*. The remaining controls are omitted because of collinearity.
***, **, and * denote statistical significance at the 1%, 5%, and 10% level, respectively.