A Web-Appendix

A.1 Information on data sources

Individual level responses on benefit morale, tax morale, age, sex, marital status, children, education (captured by the school leaving age), household income (measured on a ten-point scale), size of the place of residence (measured on a three-point scale) and employment status (employed, self-employed, unemployed and out of labour force) are taken from the *European and World Values Survey* (E/WVS). In particular, we used the *European and World Values Surveys Four-wave Integrated Data File, 1981-2004*. We selected all OECD-member countries for which benefit and tax morale is available, except South Korea. We have decided to exclude South Korea since no information on labour market status was available. Our sample consists of all observations from respondents from these OECD-member countries for which information on these basic individual characteristics was available. (Table A.2 shows the number of observations over years and countries.) Note that the E/WVS includes two questions on education: (i) 'What is the highest educational level that you have attained?' and (ii) 'At what age did you (or will you) complete your full time education?'. While the former question would be preferred to measure the level of education, there are considerably more missing answers compared to the latter one. In order to exploit all the available information on education and to save observations, we constructed a variable capturing the actual or the regular school leaving age. In particular, if information on the second question was available we used it. In cases where the answer on the second question was missing, but information on the first question was available, we imputed the regular school leaving age at the respective educational level. Thereby we distinguished two cases: (i) If there was information on both questions for other respondents from the same country and year available, we imputed the average school leaving age among those with the same highest educational level attained. (ii) If there were no respondents from the same country and year available with information on both questions we imputed the regular school living age of the respective educational level; details are available upon request.

The primary source for the **macroeconomic variables** (GDP per capita, GDP-deflator and the unemployment rate) is the *OECD Factbook 2007* and various issues of the *OECD Economic Outlook*. For the Czech Republic (1991), Mexico (1996), Poland (1990) and Slovakia (1991) no information on unemployment rates was available and we retrieved this information from the *Database of the International Labour Organization*. Information for Hungary (1991), Poland

(1990) and Slovakia (1991) on the GDP-deflator is from the *World Bank's World Development Indicators*.

Data on implicit **tax rates** on labour, capital and consumption are own calculations following Mendoza et al. (1994); Volkerink and de Haan (2001) based on Revenue Statistics and National Accounts, see Table A.3 below for descriptive statistics by country and wave/year.

Data on **public social spending** are from the *OECD Social Expenditure Database*. This classifies an spending item as social if the benefits are intended to address one or more social purposes, and if programmes regulating the provision involve either an inter-personal redistribution, or a compulsory participation. The OECD groups benefits with a social purpose in nine policy areas: (i) old-age (pensions, early retirement pensions, home-help and residential services for the elderly), (ii) survivors (pensions and funeral payments), (iii) incapacity-related benefits (care services, disability benefits, benefits accruing from occupational injury and accident legislation, employee sickness payments), (iv) health (spending on in- and out-patient care, medical goods, prevention), (v) family (child allowances and credits, child-care support, income support during leave, sole parent payments), (vi) active labour market policies (employment services, training, youth measures, subsidized employment, employment measures for the disabled), (vii) unemployment (unemployment compensation, severance pay, early retirement for labour market reasons), (viii) housing (housing allowances and rent subsidies) and (ix) other social policy areas (non-categorical cash benefits to low-income households, other social services). The quantitatively most important functional categories are old age (about 33 percent of total public social spending), health (about 29 percent) and incapacity-related benefits (about 11 percent), for further descriptive statistics (by country and wave/year) see Table A.3 below. For further details please refer to OECD (2007).

A.2 Testing the normal good assumption of benefit and tax morale

In this section we report on an auxiliary empirical test to determine whether benefit and tax morale are normal or inferior goods. The E/WVS includes, in addition to the income information for a sub-sample (12 countries with 18,344 observations) also a question on household savings. Survey respondents are asked 'During the past year, did your family save money, just get by, spent some savings, or spent savings and borrowed money'. We use this question to construct an ordinal proxy for positive wealth shocks during the year before the survey. In particular, we generate a four-point scale variable equal to one for the answer 'spent savings and borrowed money', equal to two for 'spent some savings', equal to three for 'just get by', and equal to four for 'save money'. Clearly, this proxy variable is not perfect. For instance, if a survey respondent's family spent savings (and borrowed money) in the year before the survey to purchase a house, we would categorise this as a negative wealth shock. Unfortunately, no superior variable to proxy for a wealth shocks is available. Table A.1 summarizes estimation results for two different

Table A.1: Testing the normal good assumption of benefit and tax morale[a]

Dependent var.	Benefit Morale		Tax Morale	
	(I)	(II)	(I)	(II)
Wealth	0.079***	0.061***	0.100***	0.085***
	(0.017)	(0.017)	(0.018)	(0.018)
Income	0.031***	(0.040***	−0.016**	0.002
	(0.006)	0.006)	(0.006)	(0.007)
Individual level controls	no	yes	no	yes
No. of observations	18,344		18,344	
No. of countries	12		12	

[a] Method of estimation is a random intercept model. Standard errors in parentheses below. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively. The set of individual level control variables comprises information on age, sex, marital status (married vs. non-married, number of children, education (captured by the school leaving age), employment status (employed vs. non-employed), and the size of the place of residence (measured on a three-point scale). Detailed estimation output is available upon request.

specifications for both outcome variables. In Specification (I) we include the proxy variable for (positive) wealth shocks and income as explanatory variables. The idea is that such an estimations allows us to examine a variation in wealth while controlling for income. That means, we can observe the impact of a (positive) wealth shock on benefit and tax morale while keeping the substitution effect constant. In Specification (II) we control also for a set of individual level control variables. Each specification shows that benefit and tax morale improve in response to a positive wealth shock. Therefore, we conclude that both morale goods are normal goods.

Note, as in the case of the estimations presented in the paper we find that benefit morale (tax morale) increases (decreases) with income. The only exception is given by Specification (II) of the tax morale estimation, where we find no statistically significant effect of income on tax morale. This is most likely caused by correlations between income and other covariates that are more decisive in the smaller sampler (where we in addition control for wealth shocks). In fact, if we drop the explanatory variable 'employment status' from this estimation, we find a negative effect of income on tax morale; which is, however, still statistically insignificant.

A.3 Additional tables and figures

Table A.2: Number of observations per country and year[a]

	Wave 1			Wave 2			Wave 3				Wave 4			
	1981	1982	1984	1989	1990	1991	1995	1996	1997	1998	1999	2000	2001	
Australia	823						1,789							2,612
Austria					1,387						1,179			2,566
Belgium	532				1,646						1,435			3,613
Canada		632			1,439							1,670		3,741
Czech Republic						1,994					1,676			3,670
Denmark					875						897			1,772
Finland												817		817
France	601				692						1,234			2,527
Germany					3,175				1,637		1,515			6,327
Greece											860			860
Hungary						941					922			1,863
Iceland			601								876			1,477
Ireland	276				880						772			1,928
Italy	605				1,373						1,393			3,371
Japan	928				648		816					1,054		3,446
Luxembourg											573			573
Mexico					723			1,647				835		3,205
Netherlands	531				749						903			2,183
New Zealand										980				980
Norway		688			988			1,034						2,710
Poland					910						1,015			1,925
Portugal					1,093									1,093
Slovakia						1,019				909	1,204			3,132
Spain	1,235				2,915		846				771	818		6,585
Sweden		600						928			641			2,169
Switzerland				723				899						1,622
Turkey													1,179	1,179
United Kingdom	520				1,080						648			2,248
United States		1,374			1,538		1,246				1,119			5,277
	6,051	3,294	601	723	22,111	3,954	4,697	4,508	1,637	1,889	19,633	5,194	1,179	*75,471*

[a] Wave 1 was carried out between 1981 and 1984, Wave 2 between 1989 and 1993, Wave 3 between 1994 and 1998, and Wave 4 between 1999 and 2001.

Figure A.1: Average benefit morale in the OECD member countries

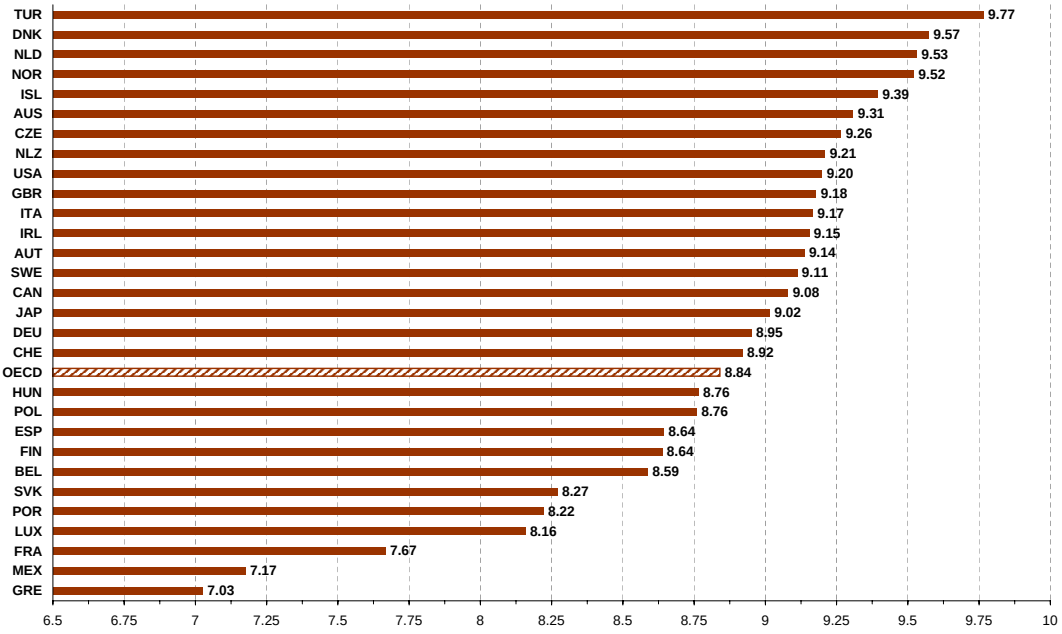


Figure A.2: Average tax morale in the OECD member countries

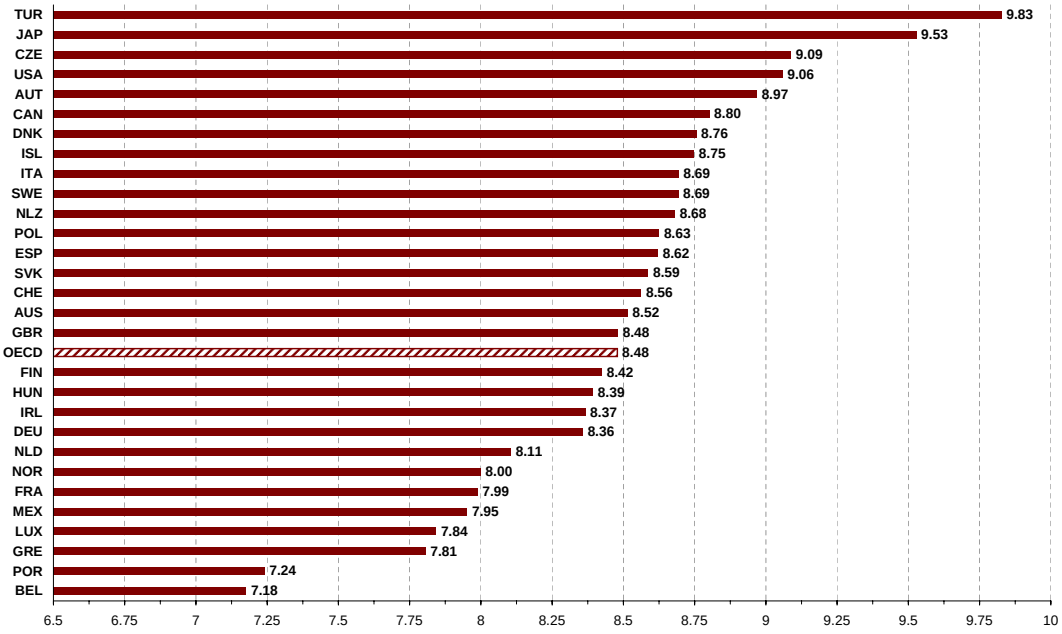


Figure A.3: Average difference between benefit and tax morale

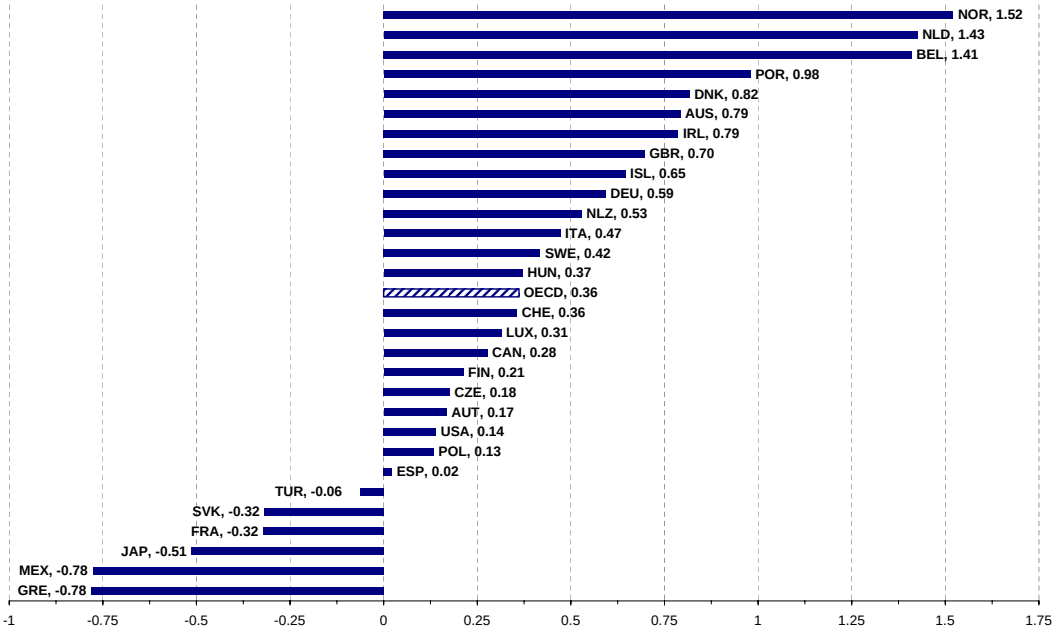
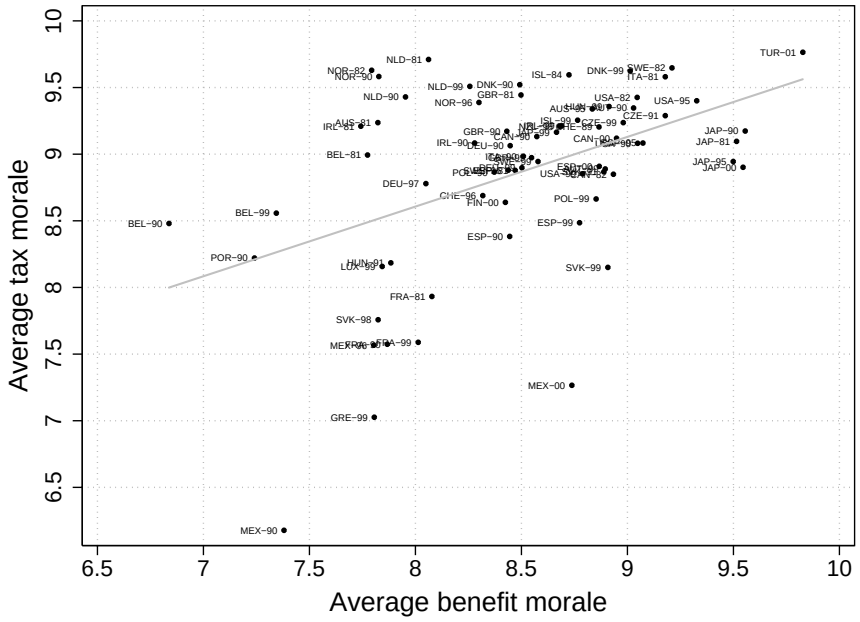


Figure A.4: Relationship between benefit and tax morale



Data source: E/WVS

A.3.1 Development of benefit and tax morale over time

For the majority of the countries we can observe the development of benefit and tax morale over time. Figure A.5 depicts the evolution of average benefit morale for countries with four and three available observations separately. An equivalent depiction for tax morale is given by Figure A.6. The average range of fluctuation (i. e. the difference between the country maximum and minimum) in benefit morale for the depicted countries is 0.47. The average range of fluctuation in tax morale within countries is somewhat higher (0.57). Mexico and Slovakia (which have the largest fluctuations over time; see paper) are suppressed in Figure A.5 and Figure A.6, respectively. For the remaining 13 countries (see Table A.2) we have only two or one observations in time.

Figure A.5: Development of benefit morale over time

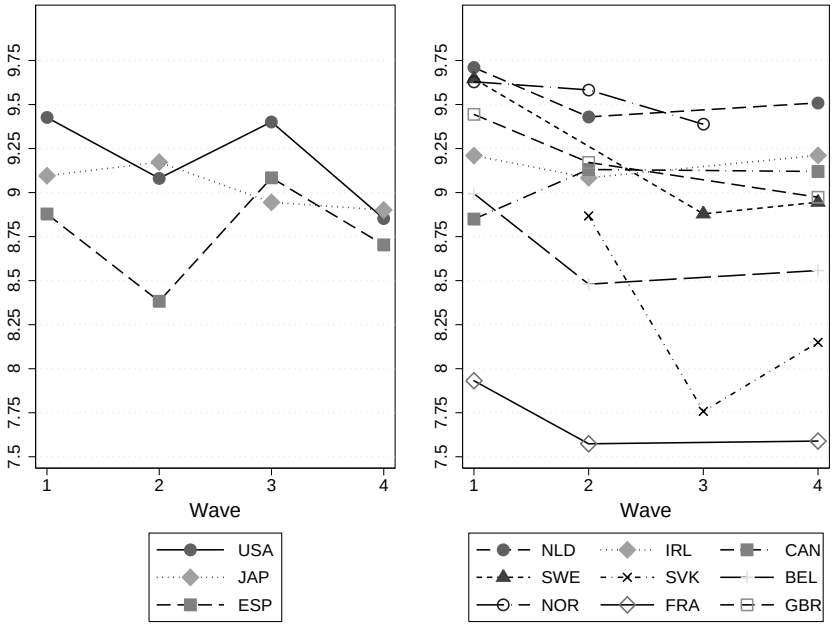


Figure A.6: Development of tax morale over time

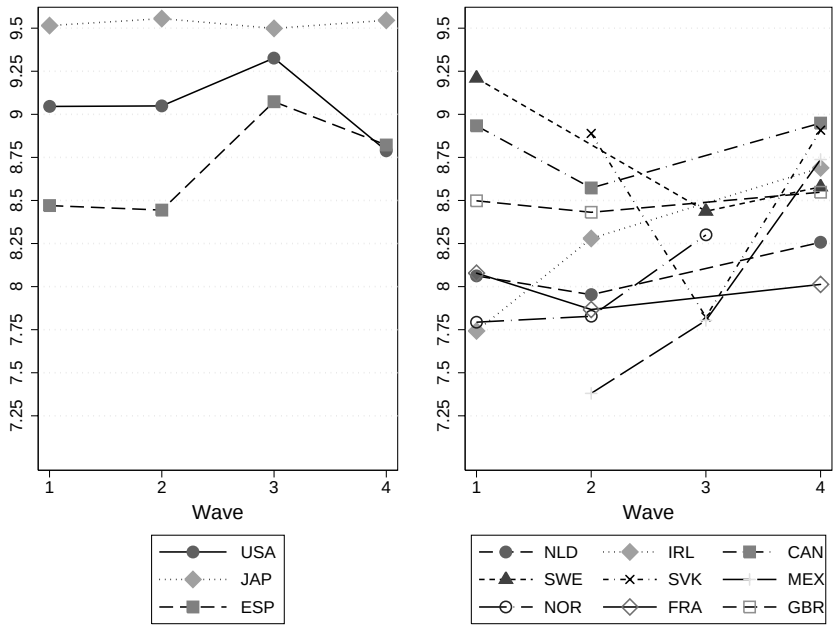


Table A.3: Implicit tax rates (on labour, capital and consumption) and total public social spending[a]

	Tax rate on labour[b]				Tax rate on capital[b]				Tax rate on consumption[b]				Public social spending[c]			
Wave[a]	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Australia	20.28		21.22		46.56		48.59		13.62		12.70		10.85		17.12	
Austria		36.43		40.71		51.11		60.12		20.17		18.83		23.69		25.56
Belgium	36.05	40.81		41.74	52.13	43.82		54.67	16.96	17.42		17.78	25.08	24.97		25.93
Canada	23.03	28.24		30.30	46.87	58.56		53.00	17.67	14.14		13.96	17.04	18.43		16.73
Czech Republic				41.60				30.29				17.44		17.27		20.10
Denmark		35.78		42.91		76.04		78.66		27.06		27.96		25.47		26.78
Finland				45.55				48.29				23.86				21.23
France	34.99	40.16		40.58	54.07	47.33		62.93	18.34	18.59		18.72	21.80	25.26		28.82
Germany			36.28	36.25			34.16	36.42			14.96	15.18		22.48	26.45	26.35
Greece				39.23				22.13				17.96				21.38
Hungary		43.37		42.35				16.58		22.14		24.98				21.64
Iceland	18.10			28.21	23.25				22.89			20.38				15.44
Ireland	20.33	26.20		25.29	29.59	21.79		23.78	18.76	21.37		21.05	16.88	15.51		14.18
Italy	29.01	34.81			28.56	36.91			12.19	16.07			19.37	19.93	23.26	
Japan	19.93	25.63	24.34	31.77	41.90	53.48	51.97	47.65	6.88	6.76	6.61	12.24	10.75	11.25	13.89	16.11
Luxembourg				34.25				48.11				19.36				21.74
Mexico		8.62	9.23	10.25			0.53	0.52		12.27	12.53	12.61		3.57	4.48	5.82
Netherlands	39.11	38.01		32.58	49.46	49.43		54.69	16.04	17.58		18.71	24.97	24.35		19.91
New Zealand			23.41				40.72				17.71				20.02	
Norway	35.28	36.72	36.16		51.42	43.61	37.36		25.33	24.37	26.66			22.61	22.73	
Poland				37.28				12.75				19.13	15.14			22.23
Portugal		21.61				22.66				19.10				13.67		
Slovakia			42.20	41.54			12.78	10.44			15.40	15.35			18.22	18.76
Spain	28.58	30.65	30.45	30.21	15.67	27.79	26.06	34.35	7.66	14.22	13.98	15.74	16.69	19.98	21.48	20.36
Sweden	46.01		49.80	52.40	53.64		53.89	73.90	17.89		18.00	17.53	29.75		32.06	30.06
Switzerland		27.62	32.49			55.50	49.50			9.26	9.42			14.84	18.13	
Turkey				51.12				9.23				15.96				
United Kingdom	25.05	22.06		24.16	87.13	62.62		55.11	15.62	15.52		14.97	18.01	17.16		19.01
United States	22.78	22.48	22.98	24.86	41.10	38.58	39.59	39.45	6.90	6.20	6.58	6.32	13.94	13.39	15.35	14.59

[a] Wave 1 was carried out between 1981 and 1984, Wave 2 between 1989 and 1993, Wave 3 between 1994 and 1998, and Wave 4 between 1999 and 2001. [b] Own calculations following Mendoza et al. (1994); Volkerink and de Haan (2001) based on Revenue Statistics and National Accounts. [c] Measured as percentage of GDP. Source: *OECD Social Expenditure Database*

Table A.4: Determinants of benefit and tax morale (alternative specification of labour market status)[a]

	Specification I		Specification II		Specification III		Specification IV[b]	
Dependent variable	BM	TM	BM	TM	BM	TM	BM	TM
Hypotheses 1a & 1b								
Self-employed	-0.049 (0.030)	-0.310*** (0.034)	-0.050* (0.030)	-0.310*** (0.034)	-0.044 (0.031)	-0.291*** (0.036)	-0.048 (0.033)	-0.309*** (0.037)
Unemployed	-0.353*** (0.034)	-0.172*** (0.038)	-0.300*** (0.034)	-0.202*** (0.039)	-0.291*** (0.034)	-0.217*** (0.040)	-0.308*** (0.036)	-0.229*** (0.041)
Out of labour force	-0.093*** (0.019)	0.075*** (0.022)	-0.053*** (0.020)	0.052** (0.023)	-0.055*** (0.020)	0.051** (0.024)	-0.062*** (0.021)	0.047* (0.024)
Hypotheses 2a & 2b								
Income			0.034*** (0.003)	-0.019*** (0.004)	0.038*** (0.003)	-0.019*** (0.004)	0.038*** (0.003)	-0.018*** (0.004)
Hypotheses 3a & 3b								
Tax rate on labour					-0.021*** (0.006)	-0.064*** (0.007)	-0.019*** (0.006)	-0.067*** (0.007)
Tax rate on capital					0.004** (0.002)	-0.005** (0.002)	0.006*** (0.002)	-0.002 (0.002)
Tax rate on cons.					-0.031*** (0.009)	-0.027** (0.011)	-0.035*** (0.010)	-0.036*** (0.011)
Hypotheses 4a, 4b & 5								
Social exp.							-0.004 (0.009)	0.023** (0.010)
Social exp.*income							-0.002*** (0.001)	-0.004*** (0.001)
Individual level controls[c]	yes		yes		yes		yes	
Time fixed-effects[d]	yes		yes		yes		yes	
Country level controls[e]	no		no		yes		yes	
ρ	0.097	0.064	0.097	0.063	0.131	0.156	0.132	0.092
No. of observations	75,471	75,471	75,471	75,471	69,008	69,008	66,540	66,540
No. of countries	29	29	29	29	29	29	27	27

[a] Method of estimation is a random intercept model. Standard errors in parentheses. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively. BM stands for benefit morale, and TM for tax morale. [b] The variables social exp. and income are mean centered. These variables and their interaction are jointly statistically significant (P-value$<$ 0.001). [c] Individual level control variables comprise information on respondent's age, sex, marital status, number of children, education (captured by school leaving age) and size of place of residence (measured on a three-point scale). [d] Time fixed-effects are binary variables for each wave of the E/WVS. [e] Country level control variables comprise macroeconomic indicators (GDP per capita, inflation and the unemployment rate) and population control variables (population size and fertility rate).

Table A.5: Determinants of benefit and tax morale (country fixed-effects estimation, full set of specifications)[a]

	Specification I		Specification II		Specification III		Specification IV[b]	
Dependent variable	BM	TM	BM	TM	BM	TM	BM	TM
Hypotheses 1a & 1b								
Non-employed	-0.059*** (0.019)	0.127*** (0.021)	-0.018 (0.019)	0.110*** (0.022)	-0.021 (0.020)	0.109*** (0.023)	-0.027 (0.020)	0.108*** (0.023)
Hypotheses 2a & 2b								
Income			0.038*** (0.003)	-0.017*** (0.004)	0.042*** (0.003)	-0.016*** (0.004)	0.042*** (0.003)	-0.015*** (0.004)
Hypotheses 3a & 3b								
Tax rate on labour					-0.024*** (0.006)	-0.073*** (0.007)	-0.018*** (0.007)	-0.071*** (0.008)
Tax rate on capital					0.003 (0.002)	-0.004* (0.002)	0.004** (0.002)	-0.002 (0.002)
Tax rate on cons.					-0.035*** (0.010)	-0.032*** (0.012)	-0.039*** (0.010)	-0.039*** (0.012)
Hypotheses 4a, 4b & 5								
Social exp.							-0.010 (0.009)	0.018* (0.011)
Social exp.*income							-0.002*** (0.001)	-0.004*** (0.001)
Individual level controls[c]	yes		yes		yes		yes	
Time fixed-effects[d]	yes		yes		yes		yes	
Country level controls[e]	no		no		yes		yes	
Country fixed-effects	yes		yes		yes		yes	
No. of observations	75,471	75,471	75,471	75,471	69,008	69,008	66,540	66,540
No. of countries	29	29	29	29	29	29	27	27

[a] Method of estimation is a fixed-effects model. Standard errors in parentheses. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively. BM stands for benefit morale, and TM for tax morale. [b] The variables social exp. and income are mean centered. These variables and their interaction are jointly statistically significant (P-value< 0.001). [c] Individual level control variables comprise information on respondent's age, sex, marital status, number of children, education (captured by school leaving age) and size of place of residence (measured on a three-point scale). [d] Time fixed-effects are binary variables for each wave of the E/WVS. [e] Country level control variables comprise macroeconomic indicators (GDP per capita, inflation and the unemployment rate) and population control variables (population size and fertility rate).