

Table 1 Descriptive statistics of all variables included in the analysis in their original metrics.

Variable name	Mean / Proportion*	Std. dev.	Min	Max
Individual-level variables (n = 356,874)				
Participation in demonstrations	0.193		0	1
Trust in parliament	4.508	2.282	0.71	9.29
Trust in parliament (group mean centered)	0.001	2.097	-6.829	7.146
Education, years	10.587	4.363	0	18
Age, years	42.457	16.456	14	96
Female	0.512		0	1
Household income	38.722	27.165	0	100
Country-year-level variables (n = 319)				
Freedom House, reversed	9.395	2.902	0	12
GDP per capita, 000	20.627	15.061	1.088	94.900
GDP per capita, ln	9.611	0.888	6.992	11.461
Trust in parliament, sample mean	4.506	0.879	2.144	8.179
Year			1989	2009
Methodological variables (n = 319)				
Non-response on demonstrations	0.054	0.053	0.000	0.350
Question on demonstrations extended	0.160		0	1
Education filled with schooling years	0.213		0	1
Trust in parliament scale length				
4 points	0.784		0	1
5 points	0.103		0	1
7 points	0.113		0	1
Sample type				
No information	0.110		0	1
Insufficient information	0.232		0	1
Quota	0.313		0	1
Random route	0.154		0	1
Multistage address	0.078		0	1
Multistage individual	0.078		0	1
Single-stage	0.034		0	1
Survey project				
Americas Barometer	0.113		0	1
Asia Europe Survey	0.047		0	1
European Values Study	0.317		0	1
International Social Survey Programme	0.103		0	1
World Values Survey	0.420		0	1

* Proportions in the case of binary variables.

Results

Estimates of the conditional three-level models explaining individual participation in demonstrations are presented in Table 2. Model 1 is the baseline model with individual- and country-year-level covariates and controls, and random intercepts for all covariates. According to the model estimates, individual education and household income on average have a positive effect on participating in demonstrations, which is in line with the resource approach to explaining political participation. The standardized effect of education is about five times stronger than that of income, pointing to the role of non-economic resources in shaping participation decisions. The association between participation in demonstrations and the country's quality of democracy is also positive, in line with the expected role of political openness for political participation. The average linear effect of trust in parliament is weakly negative and not statistically significantly different from zero at the customary 0.05 level.

Coefficients for the individual-level control variables also largely conform to prior findings: participation in demonstrations is higher among men and the association with age forms an inverse-U, where the predicted probability of participating increases with age, peaks around 50 years, and declines to its minimum levels in old age. After controlling for the quality of democracy, economic development (*GDP per capita*) is negatively associated with the probability of demonstrating, while the effect of mean trust in parliament is positive suggesting that countries where individuals on average have more trust in the parliament see higher levels of participation in demonstrations.

Model 2 includes the quadratic term of trust in parliament. The coefficient is positive and statistically significant at the conventional level. The predicted association between trust in parliament and participation in demonstrations is hence U-shaped, where individuals with the lowest and highest levels of trust in parliament have the highest probability of participating in demonstrations, while individuals with medium levels – the lowest probability. This is the opposite pattern to the inverted-U that Cichocka et al. (2017) have found with the World Values Survey with a different operationalization of participation that took into account more activities.

Models 3, 4, and 5 add cross-level interactions of education, income, and trust in parliament, respectively, with the level of democracy. The significance of the interaction term in non-linear probability models is not a proper test of the interaction effect in terms of predicted probabilities (Mize, 2019), so the interactions are explored graphically below.

Model 6 includes all cross-level interactions – between individual education, income, and trust in parliament, and the country's level of democracy. The patterns

of associations remain stable with regard to their directions and magnitudes compared to Models 3, 4, and 5 with single interactions.

The final Model 7 adds methodological control variables of two types. The first are harmonization controls, which deal with variation in the design of original survey items: (a) an indicator for surveys where the original question about demonstrations also asked about another form of participation apart from demonstrations (“Question on demonstrations extended”), (b) information about the length of the original response scale in the “trust in parliament” items, and (c) a flag indicating whether the education variable substitutes schooling years for education levels. The second type includes other methodological controls: (a) the share of item non-response in the item about participation in demonstrations, and (b) the sample type employed in the given survey. While the coefficients for some of these controls are substantial, they only minimally change the effects of the individual-level covariates or the cross-level interactions. At the same time coefficients of macro variables – the level of democracy, GDP *per capita*, and mean trust in parliament – are affected much more, even if for the first two variables the directions and significance levels of the coefficients remain unchanged. The effect of mean trust in parliament becomes not statistically significant after adding control variables related to the length of the original response scales, which changes the substantive interpretation of the results. These changes in coefficients for macro-level predictors are not surprising given that harmonization controls and the sample type are measured on the level of the national survey corresponding to the country-year. As a result, including harmonization and quality controls will not likely change coefficients for individual-level predictors, especially if they are group-mean centered, but might affect coefficients for macro-level predictors in ways that may be difficult to interpret in substantive terms.

Table 2 Three-level logistic regression of individual-level participation in demonstrations.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Participation in demonstrations							
Education	0.846*** (0.012)	0.847*** (0.012)	0.927*** (0.032)	0.842*** (0.012)	0.845*** (0.012)	0.911*** (0.031)	0.914*** (0.031)
Education * Democracy			0.421*** (0.064)			0.429*** (0.063)	0.431*** (0.063)
Income	0.147*** (0.009)	0.147*** (0.009)	0.135*** (0.010)	0.170*** (0.020)	0.148*** (0.010)	0.164*** (0.018)	0.164*** (0.018)
Income * Democracy				0.065 (0.042)		-0.016 (0.037)	-0.016 (0.037)
Trust in parliament	-0.014 (0.009)	-0.016* (0.009)	-0.022** (0.009)	-0.016* (0.009)	-0.035* (0.020)	-0.041** (0.020)	-0.041** (0.020)
Trust in parliament, squared		0.077*** (0.015)			0.069*** (0.022)	0.077*** (0.022)	0.076*** (0.022)
Trust in parliament * Democracy					0.064 (0.042)	0.062 (0.041)	0.061 (0.041)
Trust in parliament, squared * Democracy					-0.107*** (0.045)	-0.085* (0.045)	-0.084* (0.045)
Democracy	0.626*** (0.120)	0.626*** (0.119)	0.605*** (0.123)	0.641*** (0.119)	0.659*** (0.120)	0.645*** (0.123)	0.518*** (0.118)
Individual-level control variables							
Age	0.198*** (0.011)	0.197*** (0.011)	0.198*** (0.011)	0.206*** (0.011)	0.199*** (0.011)	0.204*** (0.011)	0.204*** (0.011)
Age, squared	-0.455*** (0.018)	-0.456*** (0.018)	-0.433*** (0.019)	-0.456*** (0.019)	-0.456*** (0.018)	-0.445*** (0.019)	-0.444*** (0.019)
Female	-0.351*** (0.009)	-0.350*** (0.009)	-0.353*** (0.009)	-0.352*** (0.009)	-0.351*** (0.009)	-0.353*** (0.009)	-0.353*** (0.009)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Participation in demonstrations							
GDP per capita, ln	-0.308** (0.133)	-0.304** (0.131)	-0.333** (0.136)	-0.320** (0.133)	-0.309** (0.133)	-0.340** (0.137)	-0.262* (0.139)
Trust in parliament, mean	0.151* (0.082)	0.149* (0.082)	0.142* (0.085)	0.158* (0.082)	0.160* (0.082)	0.149* (0.085)	0.037 (0.083)
Harmonization control variables							
Education filled with schooling years							-0.035 (0.114)
Trust in parliament scale length (ref. 4 points)							
5 points							0.427*** (0.092)
7 points							0.466** (0.228)
Question on demonstrations extended							0.179 (0.129)
Quality control variables							
Non-response on demonstrations							0.009 (0.070)
Sample type (ref. No information)							
Insufficient information							0.041 (0.109)
Quota							-0.026 (0.096)
Random route							-0.047 (0.119)
Multi-stage address							-0.257* (0.138)

Participation in demonstrations	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Multi-stage individual							
Single-stage							
Year	-0.006 (0.055)	-0.007 (0.055)	-0.003 (0.057)	-0.002 (0.055)	-0.016 (0.055)	-0.014 (0.057)	-0.133* (0.076)
Constant	-1.421*** (0.068)	-1.440*** (0.067)	-1.461*** (0.069)	-1.429*** (0.068)	-1.448*** (0.068)	-1.494*** (0.070)	-1.588*** (0.112)
Variance components							
Survey intercept	0.188	0.188	0.201	0.188	0.185	0.196	0.152
Education			0.239			0.222	0.223
Income				0.088		0.060	0.060
Trust in parliament					0.091	0.085	0.085
Trust in parliament, squared					0.052	0.052	0.052
Country intercept	0.357	0.356	0.374	0.359	0.369	0.385	0.413
Fit statistics							
Log Likelihood	-154,773	-154,761	-154,152	-154,506	-154,450	-153,722	-153,697
Akaike Inf. Crit.	309,572	309,549	308,333	309,042	308,936	307,487	307,460
Bayesian Inf. Crit.	309,712	309,700	308,495	309,204	309,130	307,725	307,816

Coefficients and standard errors in parentheses. * p<0.05, ** p<0.01, *** p<0.001.
 N individuals = 356,874, N surveys = 319, N countries = 100.
 Data source: Survey Data Recycling v.1, Harmonized Income Database v.1, Freedom House, World Bank, International Monetary Fund.

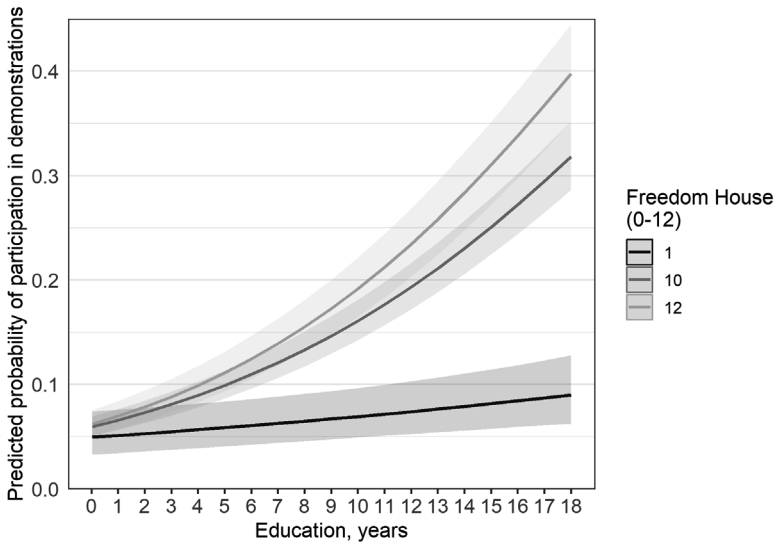


Figure 1 Predicted probability of participation in demonstrations by education and democracy (based on Model 7).

Predicted probabilities of participation in demonstrations illustrating the effects of individual education, income, and trust in parliament and their interactions with the level of democracy, with other covariates held at their means or at base levels for factors, are presented in Figures 1, 2, and 3. Figure 1 shows how the positive effects of education increase with increasing levels of democracy, in line with Hypothesis 1a. In the least democratic countries (Freedom House score equal to 1 on the scale from 0 to 12), the difference between the predicted probability of participation in demonstrations for those with no education and those with secondary education (12 years of schooling) is less than 3 percentage points, while in the most democratic countries (Freedom House score of 12) the difference is around 13 percentage points. Moving from secondary education (12 years) to tertiary education (16 years) corresponds to a change in predicted probability of demonstrating by 10 percentage points in democratic countries and by one percentage point in the least democratic countries.

Figure 2 presents the association between participation in demonstrations and household income at different levels of democracy, and shows that the effect of income on participating in demonstrations is positive at all levels of democracy, and is stronger the higher the more democratic the country. Moving from the lowest income to the highest income in non-democratic countries increases the probabil-

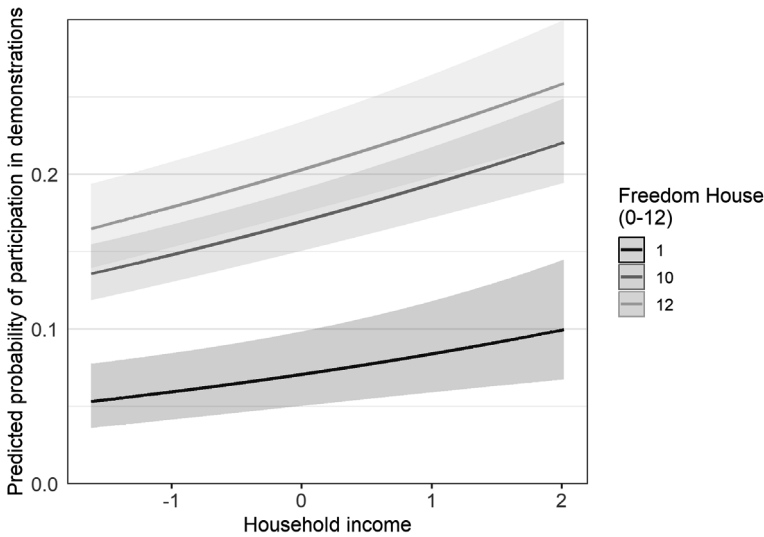


Figure 2 Predicted probability of participation in demonstrations by levels of income and democracy (based on Model 7).

ity of participation by less than 5 percentage points, while in the most democratic countries the corresponding change is by around 8 percentage points. These results need to be taken with a grain of salt given how imperfect the harmonized measure of household income is. It is possible that the observed interaction effect is due to differences in the measurement of income between surveys, or in the distribution of income between less and more democratic countries. Even if real, the difference in the magnitude of the effect of income by level of democracy is far smaller than of the effects of education, and the support for Hypothesis 1b is weak at best.

The predicted levels of participation in demonstrations depending on trust in parliament and by levels of democracy are presented in Figure 3, showing the U-shaped association between the probability of demonstrating in non-democratic countries. In these countries, the highest predicted probability of participating in demonstrations is for individuals with the lowest levels of trust in parliament at 0.13. Individuals with a medium-high level of trust in parliament have the lowest predicted probability of demonstrating of 0.065. The predicted probability increases for individuals with the highest level of trust in parliament to almost 0.1. In democratic countries the association is much flatter, and the difference between the lowest and the highest predicted probability of demonstrating is less than 2

percentage points. These results contradict the expectations stated in Hypotheses 2 and 3⁶.

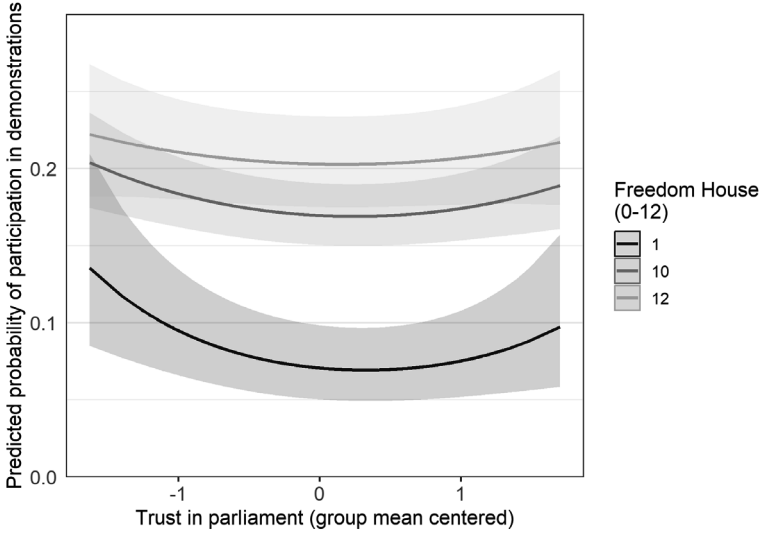


Figure 3 Predicted probability of participation in demonstrations by levels of political trust and democracy (based on Model 7).

Conclusion

In this paper I analyzed individual and contextual determinants of participation in demonstrations with data from 100 countries between 1989 and 2009, using ex-post harmonized data from five international survey projects. Results provide mixed support for previous findings and point to new insights. First, the analysis reveals systematic variation in the effects of education on participation in demonstrations: the effect of education on participation in demonstrations is positive and far stronger in democracies than in non-democracies. This might be because, while educated individuals are better at recognizing opportunities for meaningful participation and exploiting them, in non-democratic countries the awareness of limited chances for success might keep them from taking to the streets. Additionally, educated individuals who engage in protests in non-democratic countries face comparatively higher risks of state repression than in democracies. At the same time, while the association between income and participation in demonstrations is also positive, the magnitude of the effect and its variation across levels of democ-

racy are much weaker. These results confirm prior findings about the central role of education for political participation.

Further, I found that political trust is related to participation in demonstrations in a complex way: it is U-shaped, but the pattern is the strongest in the least democratic countries, and very weak in institutionalized democracies. If in non-democracies both the least and the most trusting citizens demonstrate the most, are they participating in the same demonstrations? Perhaps the demonstrations attended by individuals who are distrustful of the political regime indeed constitute protest, while in the case of individuals with high political trust in a non-democratic country, demonstrations could rather be in support of than against the state (cf. Hellmeier & Weidmann, 2019). Standard survey questions about participation in demonstrations do not distinguish between demonstrations for and demonstrations against the political system, and variation between countries might be exacerbated by linguistic differences in the meaning and connotations of the word “demonstration” or an alternative term used in the survey question. In general, verifying the validity of the assumption that participation in demonstrations, as measured in surveys, is a form of protest, could explain some of the mixed findings in the empirical literature on this topic.

The second goal of the paper is to provide an illustration of how survey data harmonized ex-post can be used in a substantive analysis. The approach to ex-post harmonization proposed in the SDR project consists in unifying the coding of original (source) variables that are identified as measuring the same concept by either mapping the original values onto a common coding scheme or by rescaling the responses to a common range, in addition to constructing auxiliary variables to record selected properties of the source variables. In this paper, I showed how the harmonized data created in the SDR approach can be applied to a concrete research problem.

Data from ex-post harmonization, such as performed in the SDR project, are not without limitations. First, while the SDR data set increases country coverage through harmonization of survey data from different cross-national surveys, the inequality in country coverage persists, and the time series for less developed countries remain short and sparse, especially after selecting a subset of the data set with the necessary harmonized variables. Second, the harmonization of variables requires that survey projects include the same or very similar questions. As a consequence, analyses are limited by the number of available harmonized variables enabling the estimation of fairly modest models. Such models can identify only broad patterns of associations for further examination with richer data sets.

Third, the process of harmonization as employed in the SDR project entails information loss and may introduce bias when response categories are collapsed, or when original responses measured with ordinal rating scales are treated as continuous and rescaled. Overall, ex-post harmonization introduces harmonization error

