ONLINE APPENDICES/SUPPLEMENTAL MATERIAL

Strategic Interdependence and Preferences for Debt Mutualization in the Eurozone

Table of Contents:

APPENDIX A: Further information about the survey

A.1. Short description of the survey

The paper draws on two waves of an online survey about preferences towards the euro, which were conducted among citizens over the age of 18 in Italy and Germany. The first wave only included Italy, and it was fielded by *SWG* using their online panel in October 2019 (17-23 October 2019) (Baccaro et al, 2021). The second wave was again conducted by *SWG* in Italy (31 March – 7 April 2020) as well as *respondi* in Germany (31 March – 7 April 2020). The second wave was based on a common questionnaire, and we closely coordinated and monitored the implementation of the surveys in both countries.

The use of an online survey was necessitated by the complexity of the information presented, which requires considerable cognitive effort by the respondents. Moreover, we wanted to minimize the effects of social desirability bias which often arises with face-to-face surveys.

We used two survey companies that maintain large online panels in the respective countries. Since non-probability panels are less likely to be representative of the population than probability sampling for telephone or face-to-face surveys, both survey companies employed a quota sampling approach on age and gender (interlocked), education, and region in each country to ensure that the samples are as representative of the population as possible.

To correct for other sources of sampling bias, the survey includes additional post-stratification weights for age, gender, education, and political preferences (past vote choice). Population targets were obtained by Eurostat and aggregated opinion polls that were conducted during the survey fieldwork period.

The implementation of the online survey included timers which allowed the survey companies to clean the data by removing responses that were equal to or less than 33% of the median duration per country. To further filter out inattentive respondents, we included a screener question as an attention check (Berinsky et al. 2013).

Respondents' consent was obtained at the beginning of the survey. Respondents were informed that the survey was anonymous, their participation voluntary, and that the data would be used for scientific purposes and kept in a data repository to allow subsequent use. Respondents had to indicate that they were citizens of the particular country, 18 years of age or older and that they had read and agreed to the information given in the consent message.

The survey then included questions on the following aspects: demographic information, political preferences, attitudes towards the EU, experimental manipulation and post-treatment questions, socio-economic information, and economic knowledge. We also included an open feedback question at the end of the survey, which allowed respondents to tell us what they thought about the survey. A limited number of respondents thought that the survey was too long and cognitively complex, but overall the response was overwhelmingly positive.

A.2. Italian frames and questions used as dependent variables:

Costs of remain (between the two paragraphs of the basic scenario):

> *Acceptance of the bailout package implies that the Italian government commits to implementing some policy changes. The measures that the Italian government needs to implement involve making it easier for companies to fire employees, cutting public expenditures (e.g. pension cuts, social expenditure cuts, etc.), increasing taxes (both income taxes and value-added taxes), privatizing state assets, and introducing a haircut on savings in troubled banks. These measures may lead to a recession and increase unemployment.*

Costs of exit (between the two paragraphs of the basic scenario):

> *Refusal of the bailout package implies exiting the Euro. This is likely to usher in a turbulent period in which the new currency quickly loses value vis-à-vis the Euro, inflation rises reducing the purchasing power of citizens, and the banks face solvency problems and cut their lending to households and enterprises. The European partners may also react by restricting Italy's access to their markets. These measures may lead to a recession and increase unemployment.*

Question:

> How would you vote in this referendum?
>
> 1. I would accept the bailout package and remain in the Euro
> 2. I would reject the bailout package and leave the Euro
> 3. I wouldn't vote
> 4. I don't know

In Italy, the full scenario, including the basic scenarios and all frames, read as follows:

> *Please imagine the following scenario:*
>
> *Italy faces a crisis of confidence in financial markets. Capital flies out of the country; customers try to withdraw their deposits from banks; and the interest rate spread with Germany increases. As a result, the Italian government is unable to meet its financial obligations. Other European countries offer Italy a bailout package.*
>
> *Acceptance of the bailout package implies that the Italian government commits to implementing some policy changes. The measures that the Italian government needs to implement involve making it easier for companies to fire employees, cutting public expenditures (e.g. pension cuts, social expenditure cuts, etc.), increasing taxes (both income taxes and value-added taxes), privatizing state assets, and introducing a haircut on savings in troubled banks. These measures may lead to a recession and increase unemployment.*
>
> *Refusal of the bailout package implies exiting the Euro. This is likely to usher in a turbulent period in which the new currency quickly loses value vis-à-vis the Euro, inflation rises reducing the purchasing power of citizens, and the banks face solvency problems and cut their lending to households and enterprises. The European partners may also react by restricting Italy's access to their markets. These measures may lead to a recession and increase unemployment.*

Before deciding whether to accept or not the bailout package, the government calls a referendum. The referendum asks citizens whether they want to stay in the euro and thus accept the bailout package, or whether they want to reject the bailout package and therefore exit the euro.

A.3. German frames and questions used as dependent variables:

Costs of exit (between the two paragraphs of the basic scenario):

Italy's exit from the Euro, as the third-largest economy of the eurozone, may lead to a domino effect and even to the end of the euro in its current form. This would imply a large appreciation of the new German currency, which may reduce the competitiveness of the German export industry, and lead to enterprise failures and job losses. The consequences for the German economy may be serious.

Costs of remain (between the two paragraphs of the basic scenario):

The measures that the German and other European governments would need to implement to avoid Italy's exit involve some form of debt mutualization such as jointly guaranteed government debt (commonly referred to as Eurobonds); authorize the European Central Bank to buy Italian bonds without limits; or introduce a European unemployment insurance financed by a European tax. These measures would increase Germany's public debt and may imply higher taxes or higher inflation. The consequences for the German economy may be serious.

Question:

In your view, what should the German government do in response to this crisis?

1. Prevent Italy's exit from the Euro
2. Facilitate Italy's exit from the Euro

98. I don't know

In Germany, the full scenario, including the basic scenarios and all frames, read as follows:

Please imagine the following scenario:

Italy faces a crisis of confidence in financial markets. Capital flies out of the country; customers try to withdraw their deposits from banks; and the interest rate that the Italian government has to pay to issue government debt increases. As a result, the Italian government is unable to meet its financial obligations. The Italian government is unwilling to sign a bailout plan similar to the Greek one after the financial crisis, which would condition the disbursement of funds on the implementation of austerity measures, and is contemplating exit from the euro.

Italy's exit from the Euro, as the third-largest economy of the eurozone, may lead to a domino effect and even to the end of the euro in its current form. This would imply a large appreciation of the new German currency, which may reduce the competitiveness of the German export industry, and lead to enterprise failures and job losses. The consequences for the German economy may be serious.

The measures that the German and other European governments would need to implement to avoid Italy's exit involve some form of debt mutualization such as jointly guaranteed government debt (commonly referred to as Eurobonds); authorize the European Central Bank to buy Italian bonds without limits; or introduce a European unemployment insurance financed by a European tax.

These measures would increase Germany's public debt and may imply higher taxes or higher inflation. The consequences for the German economy may be serious.

Due to its weight in the negotiations with other eurozone countries, the German government can prevent Italy from exiting the euro or facilitate Italy's exit.

A.4. Variable coding

Table A.1. Coding of additional variables from the survey

Variable	Survey question	Operationalization
Region	"In which region do you live?"	For Italy: dummy variable *south*; 1 for Southern regions, including islands; 0 for all other regions For Germany: dummy variable *east*; 1 for East Germany; 0 for West Germany, including Berlin
Exclusive national identity	Do you see yourself as 1 Italian only; 2 Italian and European; 3 European and Italian; 4 European only; 5 None; 98 Refusal; 99 I don't know	Binary categorical variable; 1 coded as 1, 2 to 5 coded as 0, 98, and 99 coded as missing
Female	What is your gender? 1 Male 2 Female 3 Other 98 Prefer not to say	Binary categorical variable 1 coded as 0, 2 coded as 1, 3, and 98 coded as missing
Age	What is your date of birth (dd/mm/yy)?	Three age groups generated (<30; >=30 & <60; >=60)
Education	What is your highest educational qualification?	Continuous variable based on a detailed list of Italian education levels according to the ISCED classification
Subjective income	Thinking of your household's total monthly or weekly income, is your household able to make ends meet, that is, pay your usual expenses easily or with difficulty?	Continuous variable, 0-10; 0 = With great difficulty; 10 = Very easily
Past vote	Which party did you vote for in the last [Italian general election on 4 March 2018/German federal election on 24 September 2017]?	Categorical variable based on a detailed list of Italian/German parties; smaller parties are coded as "Other party"; abstention, "I would prefer not to say" and "I don't remember" coded as "No party"
Economic knowledge	1. What does the gross domestic product (GDP) measure? 2. What is the exchange rate? 3. Inflation is the term used to describe...	The variable is coded as the sum of correct answers to three knowledge questions. Four response options were given for each question.
Benefitted from the euro	Taking everything into account, would you say that [Italy/Germany] has on balance benefited or not from being a member of the European common currency, the Euro?	Continuous variable, 0-10; 0 = Not benefited at all; 10 = Benefited a lot
Interest in economics	How interested would you say you are in economic affairs?	Continuous variable, 0-10; 0 = Not interested at all; 10 = Very interested
Assessment of EU membership	Generally speaking, do you think [Italy's/Germany's] membership in the European Union is a bad or good thing?	Continuous variable, 0-10; 0 = Totally a bad thing; 10 = Totally a good thing

APPENDIX B: Strategic interaction as a game-theoretic model

The clash between northern and southern countries over the issuing of Coronabonds can be formalized as a two-person game between Germany (heading the northern front) and Italy (heading the southern front). The game starts with the Italian government finding itself in the condition of not being able to honor its financial commitments due to the additional burden of the corona crisis and asking the German government to share a portion of the additional debt. We assume that the actions of both governments conform to public opinion in the respective countries. The German government moves first by choosing between two possible options: allow for debt mutualization (MUTUALIZE), or not allow for it (NON-MUTUALIZE). Next Italy moves by choosing whether to remain in the eurozone (REMAIN) or to exit (EXIT). The game generates four possible states of the world: 1) one in which Germany allows for mutualization of risk and Italy remains in the eurozone (MR); 2) one in which Germany agrees to mutualization and Italy exits (ME); 3) one in which Germany does not allow for mutualization and Italy remains (NR); and 4) one in which Germany does not allow for mutualization and Italy exits (NE).

We assume that Germany's first preference is the status quo, i.e. NR (non-mutualize and Italy remains) and that Germany's last preference is ME (debt mutualization but Italy exits nonetheless,) because in this case, Germany would pay the costs of mutualization without being able to deter a breakup of the eurozone. However, we also assume that German voters are uncertain between MR (mutualization and Italy remaining in the eurozone) (MR) and NE (non-mutualization and Italy exiting) and that they decide between the two options based on information about the costs and benefits of these two options. With MR, Germany benefits from keeping the eurozone intact but pays the costs of debt mutualization. With NE, the opposite happens.

In contrast, we assume that Italy's first preference is MR, i.e. a state in the world in which they remain in the eurozone while benefiting from debt mutualization and that Italy's last preference is ME, which implies paying the costs of euro exit without benefiting from debt mutualization. Italian voters are assumed to be uncertain between NE and NR, two states of the world in which Germany does not agree to debt mutualization. In NR, they value to costs of exit from the eurozone as greater than the costs of remaining. In NE, the opposite applies. Again, we assume that the Italian voters' preferences can be moved by providing information about the costs and benefits of these two options. Table B.1 displays the pay-offs.

Table B.1. Pay-off matrix from the interaction between Germany and Italy (with ordinal payoffs)

		Italy	
		Remain (R)	Exit (E)
Germany	Mutualize (M)	MR (3 or 2), 4	ME 1,1
	Non-Mutualize (N)	NR 4, (2 or 3)	NE (2 or 3), (3 or 2)

Table B.1 shows that if the game is played simultaneously, an outcome involving debt mutualization is not feasible because the strategy of mutualization is strictly dominated for Germany (since it prefers NON-MUTUALIZE to MUTUALIZE both if Italy plays EXIT

and if it plays REMAIN). The equilibrium is Italexit or the status quo depending on the preferences of Italian voters between exiting or remaining in the euro contingent on Germany refusing debt mutualization. However, if the game is played sequentially (Figure B.1), debt mutualization becomes a feasible outcome if Italy prefers NE to NR and if Germany prefers MR to NE. In other words, for debt mutualization to emerge two conditions have to be satisfied: 1) Italy must credibly threaten exit; 2) Germany must consider that the costs of debt mutualization are lower than the costs of Italexit. Table B.2 presents all four possible combinations.

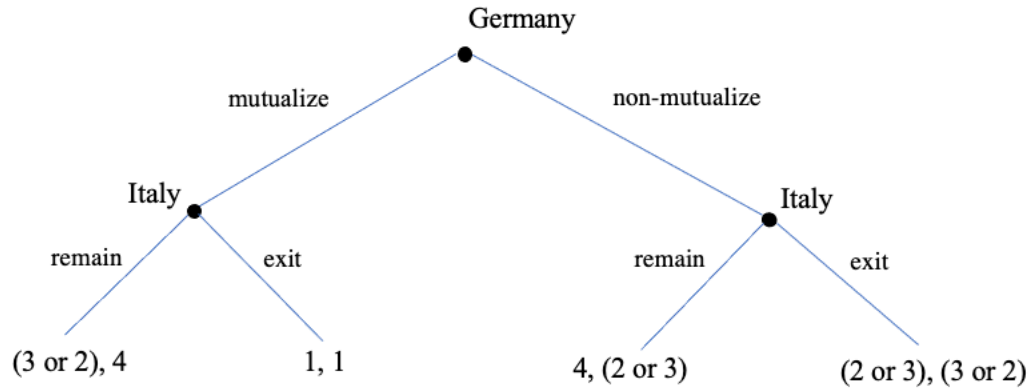

Figure B.1. Decision tree for a sequential game with Germany as a first-mover

Table B.2. Four possible outcomes based on the sequential game with Germany as a first-mover

		Italy	
		NE>NR	NR>NE
Germany	MR>NE	Debt sharing (Mutualize & Remain)	Status quo (Non-Mutualize & Remain)
	NE>MR	Euro breakup (Non-Mutualize & Exit)	Status quo (Non-Mutualize & Remain)

APPENDIX C: Additional tables and figures

C.1. Support for Italexit in Italy over time

Table C.1. Determinants of supporting Italexit in Italy based on the pooled sample from 2019 and 2020; marginal effects of timing of the survey based on multinomial probit regressions

	Model 1	Model 2
Remain		
Year=2020 (ref: 2019)	-0.196***	-0.163***
	(-5.20)	(-4.61)
Exit		
Year=2020 (ref: 2019)	0.0956**	0.0498
	(2.61)	(1.48)
Don't know		
Year=2020 (ref: 2019)	0.101**	0.113**
	(2.87)	(3.25)
Control variables included?	No	Yes
Observations	1172	1172

t values in parentheses

* p<0.05 ** p<0.01 *** p<0.001

Note: Only observations from the control group included; survey weights applied. Model 2 includes age, age squared, gender, education, subjective income, national identity, economic knowledge, and region as control variables.

C.2. Assessment of having benefited from the euro in Italy and Germany

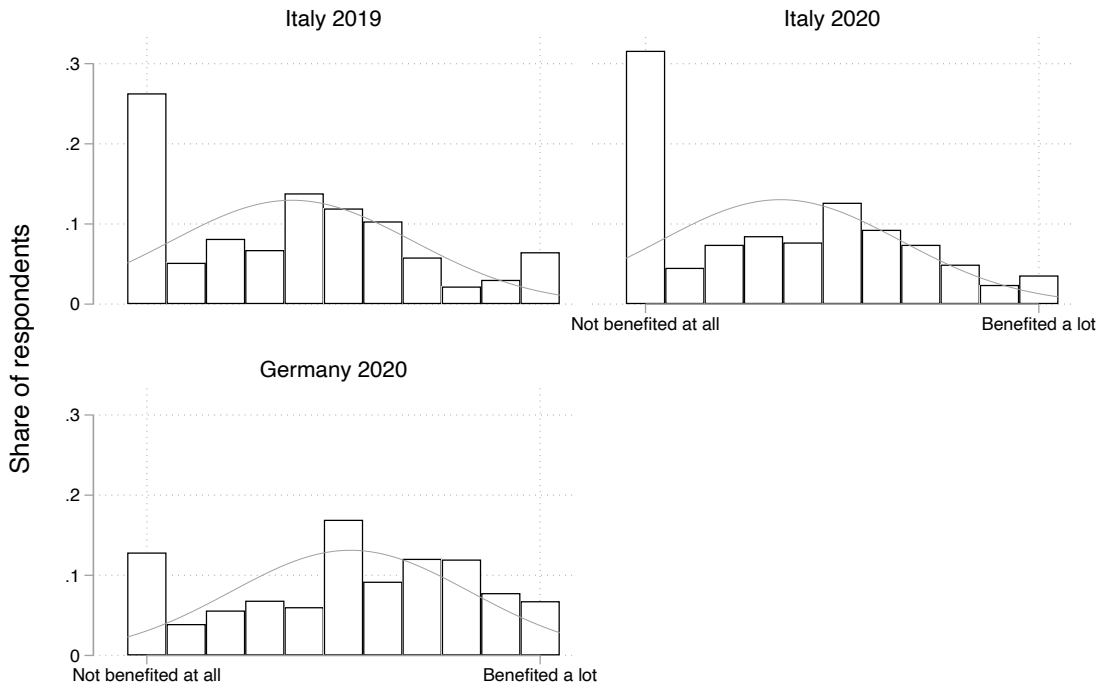

Figure C.1. Assessment of having benefited from the euro in Germany (April 2020) and Italy (October 2019 and April 2020)

Note: The figure shows responses to the survey question 'Have you and your family benefited or not benefited from [Italy/Germany| being a member of the euro?'. It shows the distribution of responses on a scale from 0 to 10 and normal distributions. Survey weights applied.

Table C.2. Determinants of evaluating the Euro positively in Italy based on the pooled sample from 2019 and 2020

	(1)	(2)
Year=2020	-0.333***	0.111
	(-3.73)	(1.36)
National identity=1		-2.439***
		(-27.40)
Age		-0.0954***
		(-6.02)
Age # Age		0.000880***
		(5.65)
Female		-0.141
		(-1.72)
Education		0.0987***
		(5.25)
Subjective income		0.197***
		(10.97)
Southern Italy=1		-0.0272
		(-0.31)
Economic knowledge		-0.117**
		(-2.76)
Constant	3.788***	5.658***
	(57.65)	(13.00)
Observations	7896	7896

t statistics in parentheses, survey weights included
* p<0.05 ** p<0.01 *** p<0.001

C.3: Determinants of support for Italexit in Italy and Germany

Table C.3. Determinants of supporting Italexit in Italy; average marginal effects based on multinomial probit regressions with additional covariates

	(1)	(2)	(3)
Treatment effects			
Costs of Italexit			
Remain	0.041	0.048	0.036
	(1.141)	(1.431)	(1.062)
Exit	-0.022	-0.015	0.011
	(-0.604)	(-0.422)	(0.306)
Don't know	-0.019	-0.033	-0.047
	(-0.501)	(-0.888)	(-1.300)
Costs of Italremain			
Remain	-0.134***	-0.110***	-0.123***
	(-4.031)	(-3.497)	(-3.882)
Exit	0.156***	0.152***	0.159***
	(4.055)	(4.218)	(4.418)
Don't know	-0.022	-0.042	-0.036
	(-0.601)	(-1.199)	(-1.059)
Costs of Italexit + costs of Italremain			
Remain	-0.118***	-0.065*	-0.072*
	(-3.582)	(-2.023)	(-2.186)
Exit	0.148***	0.128***	0.124***
	(3.856)	(3.527)	(3.506)
Don't know	-0.030	-0.062	-0.052
	(-0.807)	(-1.754)	(-1.533)
Covariates			
Age			
Remain		-0.010*	-0.006
		(-2.294)	(-1.252)
Exit		-0.001	-0.003
		(-0.122)	(-0.548)
Don't know		0.011*	0.009
		(2.243)	(1.937)
Age squared			
Remain		0.000*	0.000
		(2.431)	(1.436)
Exit		-0.000	0.000
		(-0.052)	(0.253)
Don't know		-0.000*	-0.000
		(-2.159)	(-1.807)
Female			
Remain		0.033	0.037
		(1.421)	(1.558)
Exit		-0.087***	-0.077**
		(-3.349)	(-2.958)
Don't know		0.054*	0.040
		(2.106)	(1.605)
Education			
Remain		0.021***	0.020***
		(4.358)	(4.008)

Exit	-0.011	-0.010
	(-1.958)	(-1.608)
Don't know	-0.010	-0.011
	(-1.767)	(-1.869)
Subjective income		
Remain	-0.016***	-0.014**
	(-3.521)	(-2.803)
Exit	0.015**	0.017***
	(2.850)	(3.306)
Don't know	0.001	-0.004
	(0.302)	(-0.774)
National identity		
Remain	-0.254***	-0.169***
	(-11.037)	(-6.515)
Exit	0.345***	0.267***
	(16.112)	(10.775)
Don't know	-0.091***	-0.098***
	(-3.589)	(-3.755)
Economic knowledge		
Remain	0.004	-0.002
	(0.282)	(-0.155)
Exit	0.056***	0.063***
	(4.311)	(4.762)
Don't know	-0.060***	-0.061***
	(-4.775)	(-5.010)
Southern Italy		
Remain	-0.035	-0.056*
	(-1.369)	(-2.134)
Exit	0.034	0.042
	(1.203)	(1.511)
Don't know	0.001	0.013
	(0.051)	(0.483)
Forza Italia (Ref: Lega)		
Remain		0.104
		(1.818)
Exit		-0.033
		(-0.514)
Don't know		-0.071
		(-1.500)
Fratelli d'Italia		
Remain		0.011
		(0.246)
Exit		-0.021
		(-0.352)
Don't know		0.011
		(0.179)
M5S		
Remain		0.094**
		(2.906)
Exit		-0.099*
		(-2.534)
Don't know		0.005
		(0.145)

PD			
Remain			0.341***
			(8.910)
Exit			-0.320***
			(-7.372)
Don't know			-0.021
			(-0.562)
Other			
Remain			0.251***
			(5.439)
Exit			-0.269***
			(-5.150)
Don't know			0.018
			(0.370)
No party			
Remain			0.100*
			(2.464)
Exit			-0.248***
			(-5.344)
Don't know			0.148**
			(3.199)
Observations	2118	2047	1925

t statistics in parentheses, survey weights included

* p<0.05 ** p<0.01 *** p<0.001

Table C.4. Determinants of supporting Italexit in Germany; average marginal effects based on multinomial probit regressions with additional covariates

	(1)	(2)	(3)
Treatment effects			
Costs of Italexit			
Remain	0.148***	0.162***	0.164***
	(4.537)	(5.274)	(5.393)
Exit	-0.130***	-0.136***	-0.133***
	(-4.205)	(-4.578)	(-4.441)
Don'	-0.019	-0.026	-0.031
	(-0.691)	(-1.026)	(-1.304)
Costs of Italremain			
Remain	-0.104***	-0.106***	-0.092**
	(-3.320)	(-3.513)	(-3.033)
Exit	0.090**	0.078*	0.079*
	(2.748)	(2.451)	(2.454)
Don't know	0.013	0.027	0.014
	(0.488)	(1.045)	(0.550)
Costs of Italexit + costs of Italremain			
Remain	0.086**	0.087**	0.084**
	(2.620)	(2.781)	(2.690)
Exit	-0.097**	-0.090**	-0.084**
	(-3.067)	(-2.919)	(-2.697)
Don't know	0.011	0.004	-0.000
	(0.379)	(0.141)	(-0.011)
Covariates			
Age			
Remain		-0.023***	-0.020***
		(-5.524)	(-4.603)
Exit		0.012**	0.012**
		(2.846)	(2.719)
Don't know		0.011**	0.008*
		(2.998)	(2.355)
Age squared			
Remain		0.000***	0.000***
		(5.108)	(4.163)
Exit		-0.000*	-0.000*
		(-2.294)	(-2.249)
Don't know		-0.000**	-0.000*
		(-3.157)	(-2.360)
Female			
Remain		0.004	-0.009
		(0.174)	(-0.401)
Exit		-0.052*	-0.022
		(-2.299)	(-0.994)
Don't know		0.048*	0.032
		(2.527)	(1.714)
Education			
Remain		0.002	0.000
		(0.303)	(0.026)
Exit		0.013	0.010
		(1.940)	(1.384)

Don't know	-0.015**	-0.010
	(-2.621)	(-1.706)
Subjective income		
Remain	-0.013**	-0.009*
	(-3.227)	(-2.316)
Exit	0.009*	0.007
	(2.349)	(1.660)
Don't know	0.004	0.003
	(1.089)	(0.854)
National identity		
Remain	-0.249***	-0.185***
	(-10.754)	(-7.278)
Exit	0.236***	0.190***
	(10.540)	(7.817)
Don't know	0.013	-0.005
	(0.663)	(-0.260)
Economic knowledge		
Remain	0.035**	0.026*
	(2.844)	(2.005)
Exit	0.017	0.020
	(1.416)	(1.587)
Don't know	-0.052***	-0.046***
	(-5.551)	(-4.916)
East Germany		
Remain	-0.024	-0.006
	(-0.812)	(-0.204)
Exit	0.031	0.015
	(1.082)	(0.539)
Don't know	-0.007	-0.009
	(-0.285)	(-0.398)
SPD (Ref: CDU/CSU)		
Remain		0.024
		(0.685)
Exit		-0.020
		(-0.586)
Don't know		-0.004
		(-0.160)
AfD		
Remain		-0.348***
		(-9.312)
Exit		0.369***
		(9.088)
Don't know		-0.021
		(-0.765)
FDP		
Remain		-0.088
		(-1.825)
Exit		0.081
		(1.669)
Don't know		0.007
		(0.192)
Die Linke		
Remain		0.006

			(0.145)
Exit			-0.008
			(-0.181)
Don't know			0.001
			(0.041)
Bündnis90/Die Grünen			
Remain			0.079*
			(2.239)
Exit			-0.116***
			(-3.550)
Don't know			0.037
			(1.388)
Other			
Remain			-0.133*
			(-2.567)
Exit			-0.005
			(-0.103)
Don't know			0.138**
			(2.987)
No party			
Remain			-0.226***
			(-5.481)
Exit			0.128**
			(2.931)
Don't know			0.098**
			(2.737)
Observations	2246	2178	2009

t statistics in parentheses, survey weights included
* p<0.05 ** p<0.01 *** p<0.001

APPENDIX D: Additional tables and figures from the survey experiment

D.1. Average levels of support for Italexit by scenario

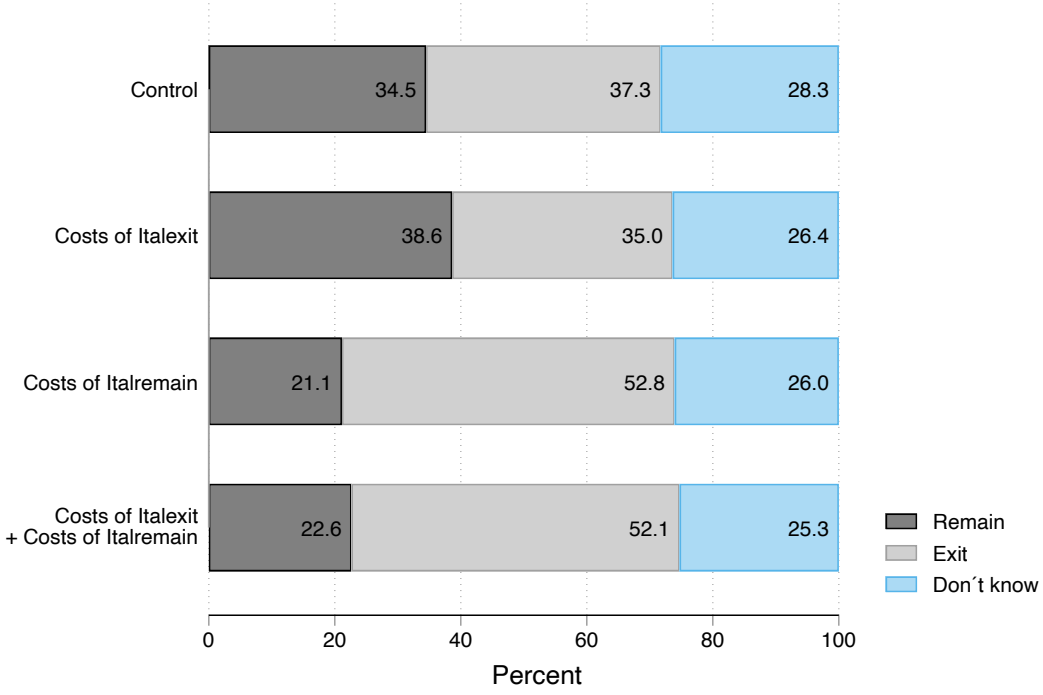

Figure D.1. Average levels of support for Italexit and remain by scenario in Italy

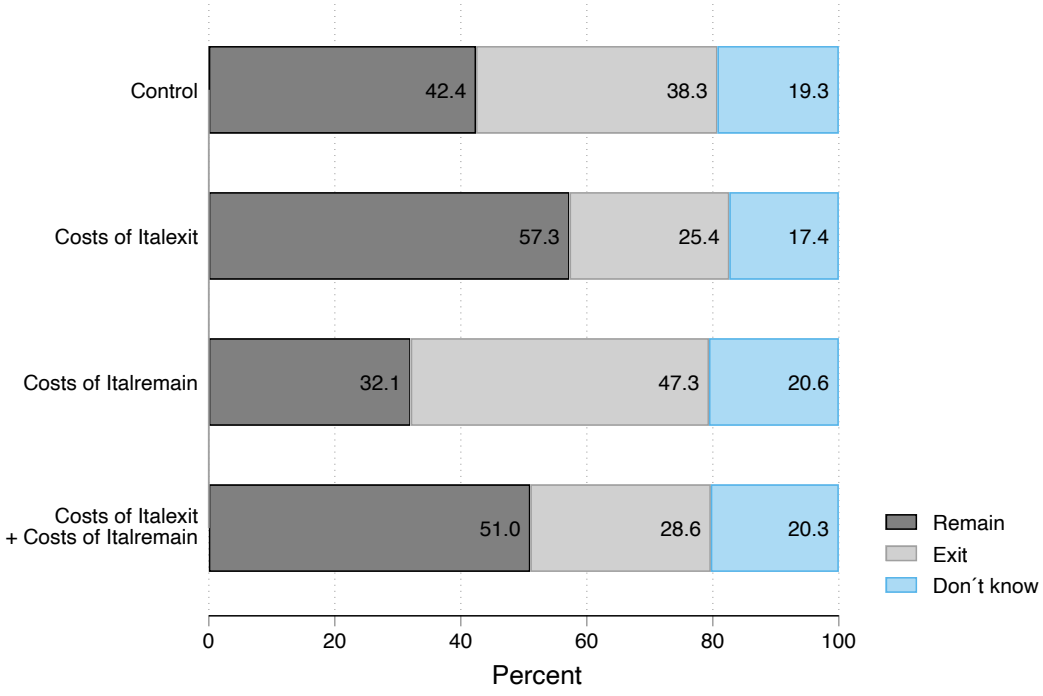

Figure D.2. Average levels of support for Italexit and remain by scenario in Germany

D.2 Results from linear probability models

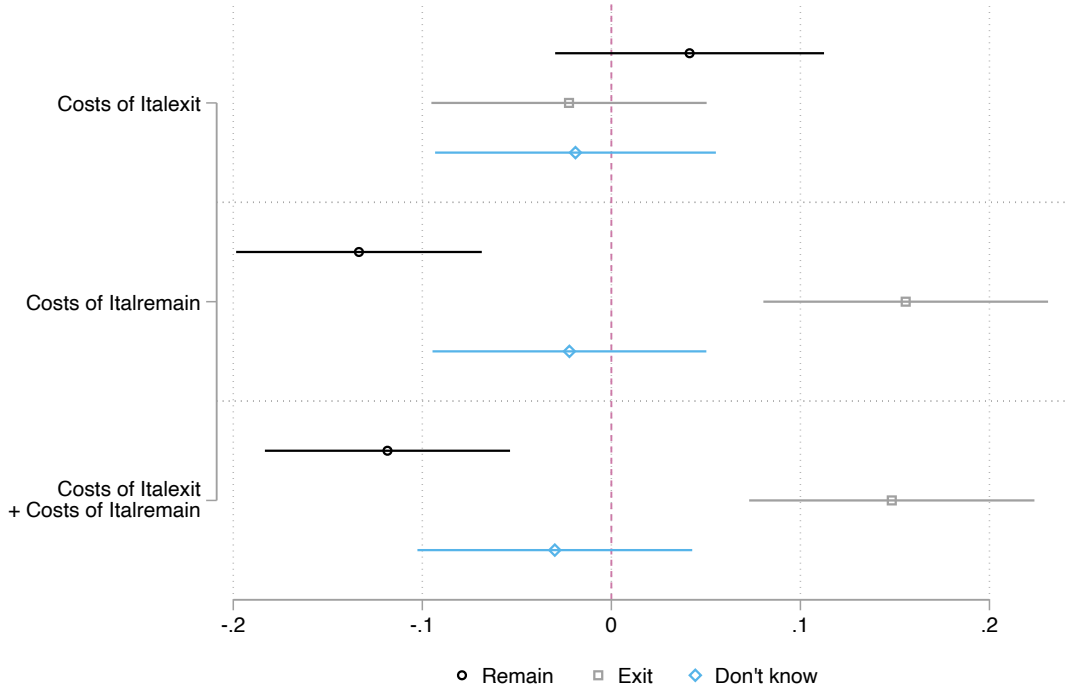

Figure D.3. Average treatment effects of preferences towards Italexit in Italy based on linear probability models

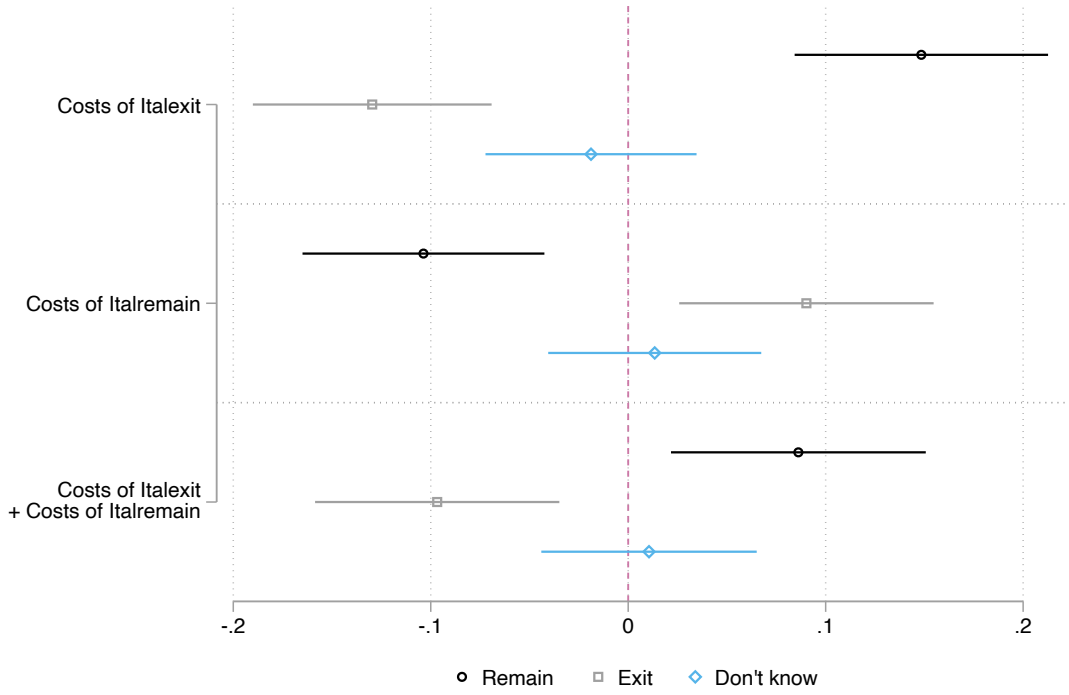

Figure D.4. Average treatment effects of preferences towards Italexit in Germany based on linear probability models

D.3. Testing for survey response time

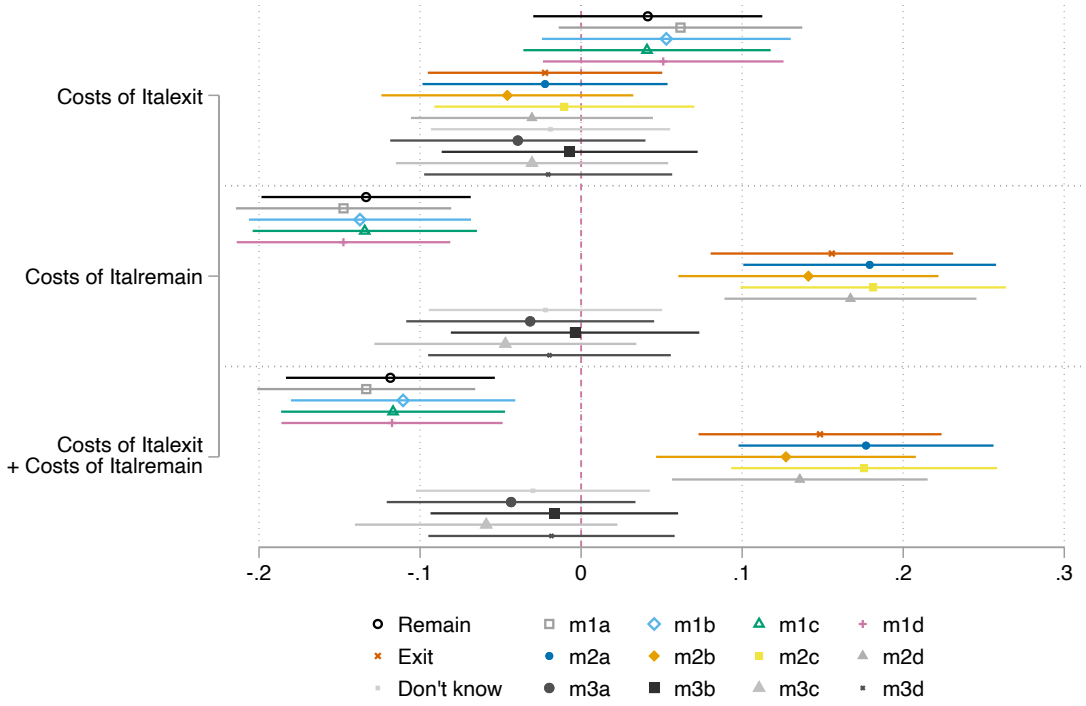

Figure D.5. Replication of Figure 2 from the main analysis; excluding 10% of the fastest and slowest respondents in Italy

Note: Models denoted '1' show treatment effects for remain, '2' for exit, and '3' for don't know. Models denoted 'a' exclude the 10% of respondents with the fastest total survey response time, 'b' for the 10% slowest being excluded. Models denoted 'c' exclude the 10% of respondents with the shortest time spent on reading the experimental scenario, 'd' for the 10% with the longest time spent on reading the experimental scenario being excluded.

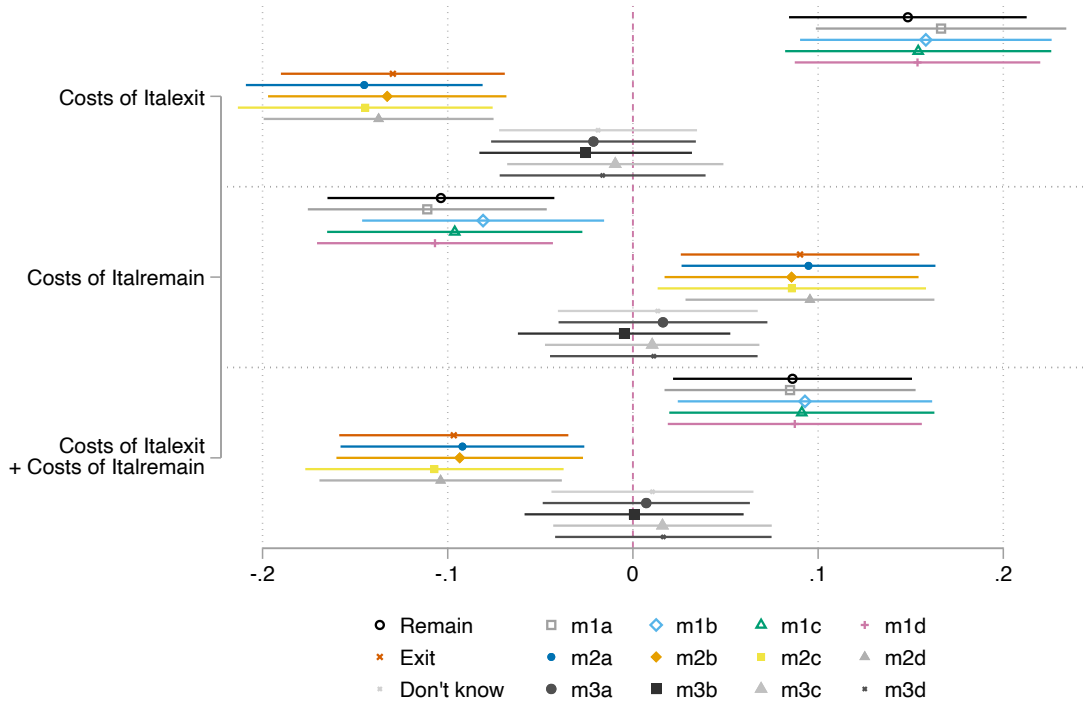

Figure D.6. Replication of Figure 4 from the main analysis; excluding 10% of the fastest and slowest respondents in Germany

Note: Models denoted '1' show treatment effects for remain, '2' for exit, and '3' for don't know. Models denoted 'a' exclude the 10% of respondents with the fastest total survey response time, 'b' for the 10% slowest being excluded. Models denoted 'c' exclude the 10% of respondents with the shortest time spent on reading the experimental scenario, 'd' for the 10% with the longest time spent on reading the experimental scenario being excluded.

D.4. Heterogeneous treatment effects

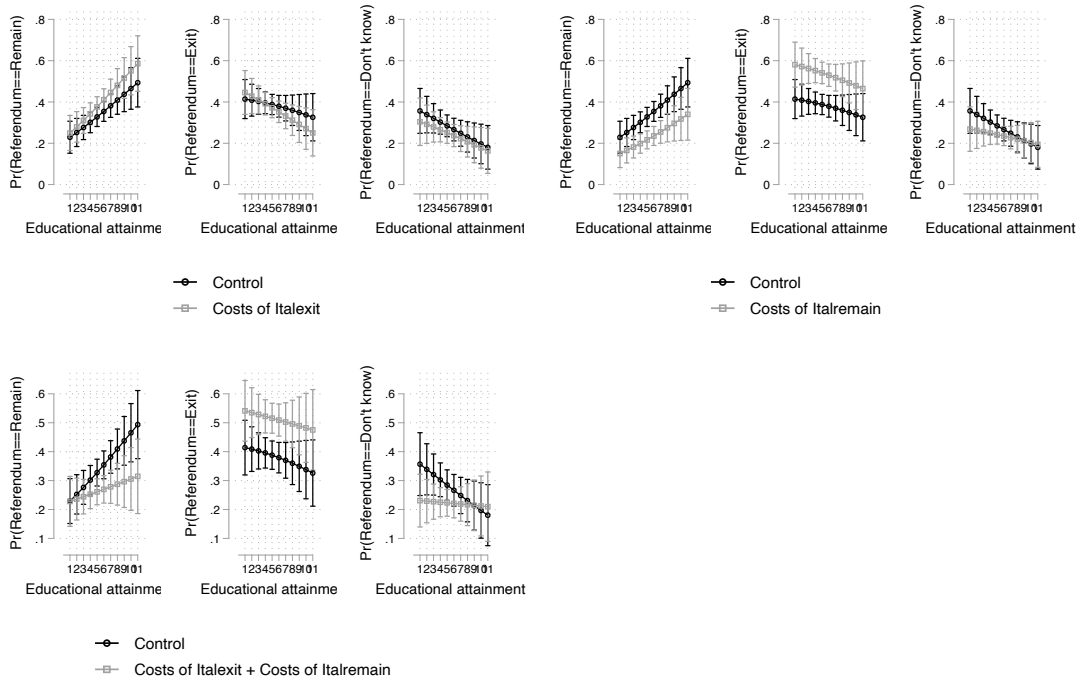

Figure D.7. Heterogeneous treatment effects by educational attainment in Italy

Note: Irrespective of individual educational attainment, individuals tend to react to the treatments in similar ways. Under the combined treatment of costs of exit and remain (lower left panel), individuals with low educational attainment are more likely to become undecided. Nevertheless, the positive effect of this combined treatment on the likelihood to vote exit is evident across education levels.

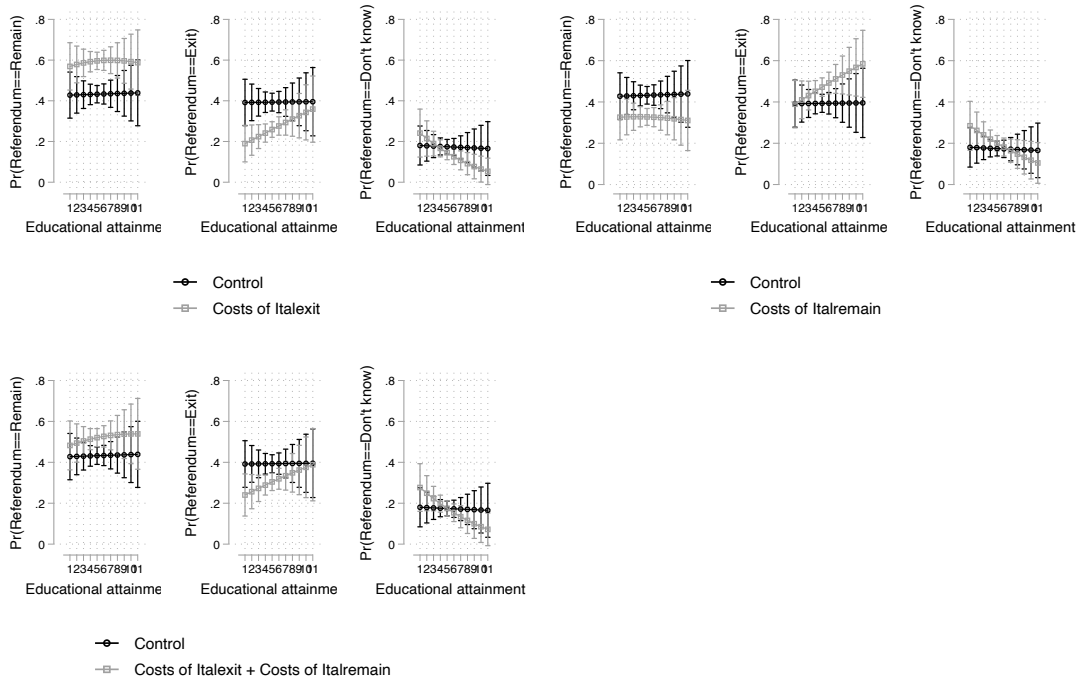

Figure D.8. Heterogeneous treatment effects by educational attainment in Germany

Note: Irrespective of individual educational attainment, individuals tend to react to the treatments in similar ways. As a partial exception, individuals with low education are particularly sensitive to the potential costs of an Italexit, reducing their support for exit (upper left panel). In contrast, individuals with high educational attainment weigh the costs of Italremain more heavily, increasing their support for exit (upper right panel). However, we do not observe any heterogeneous treatment effects by education educational background for the likelihood to support remain. A comparison of the results for the combined frames (lower left panel) with the frames introduced separately (upper left and right panels) similarly demonstrates that the cost of Italexit frame is more decisive for respondents across all educational levels.

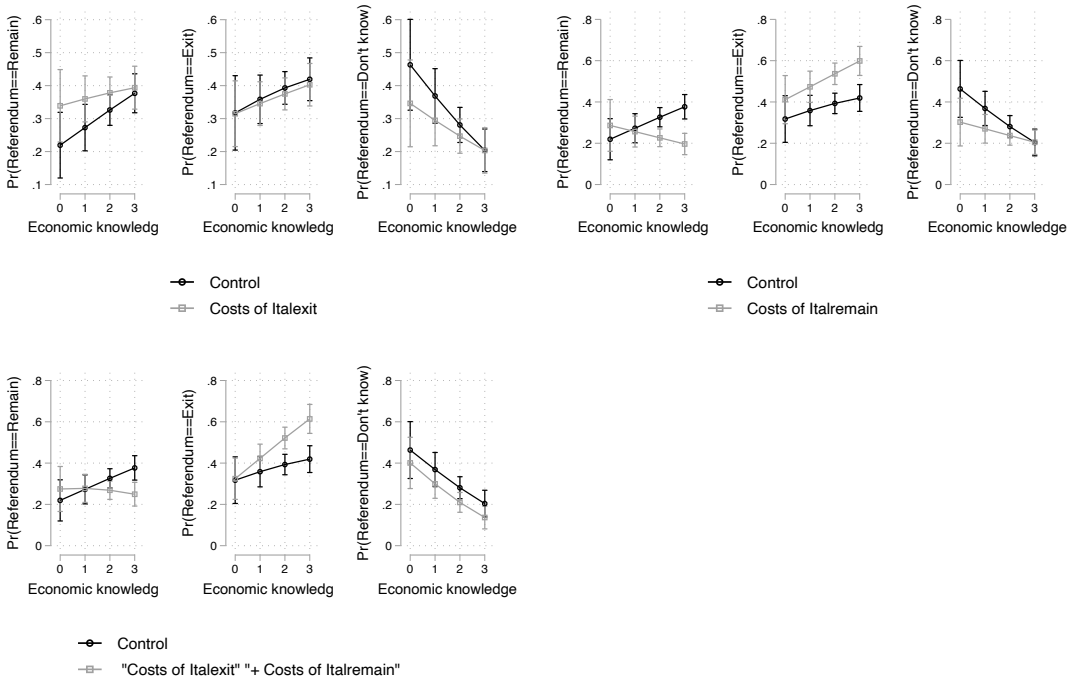

Figure D.9. Heterogeneous treatment effects by economic knowledge in Italy

Note: Those with low economic knowledge react more strongly to the costs of Italexit frame and less strongly to the costs of Italremain frame. Overall, the share of responses in the lowest two knowledge categories is low with 10, respectively 14 percent of respondents answering none or only one of the three factual knowledge questions correctly. Heterogeneous treatment effects are more negligible when comparing medium (2) with high (3) levels of knowledge.

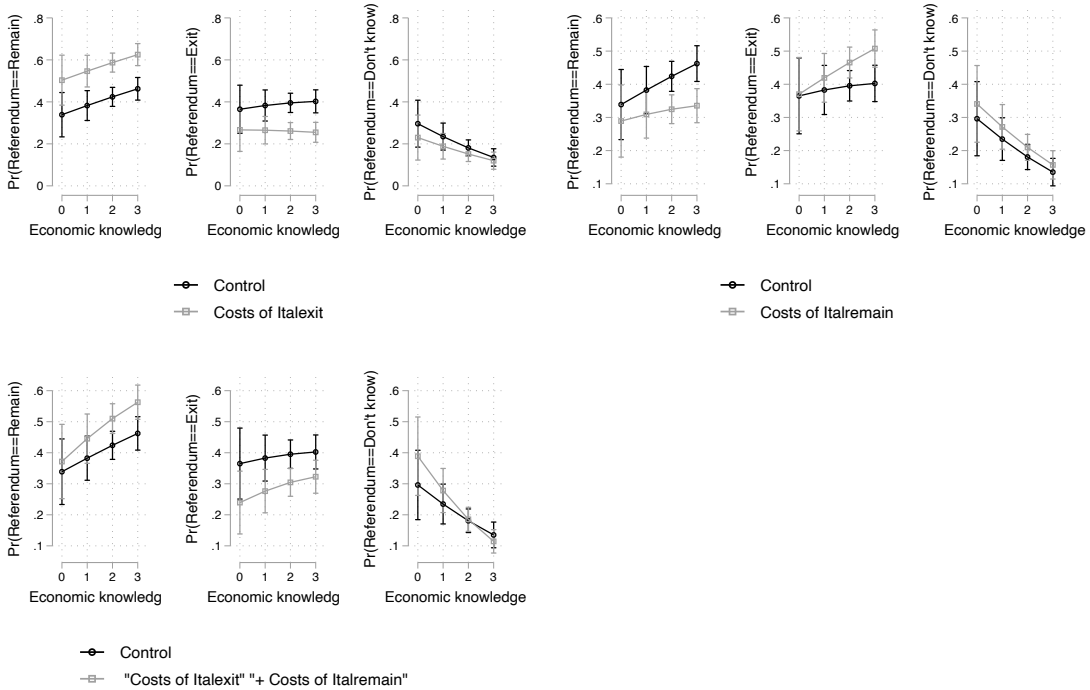

Figure D.10. Heterogeneous treatment effects by economic knowledge in Germany

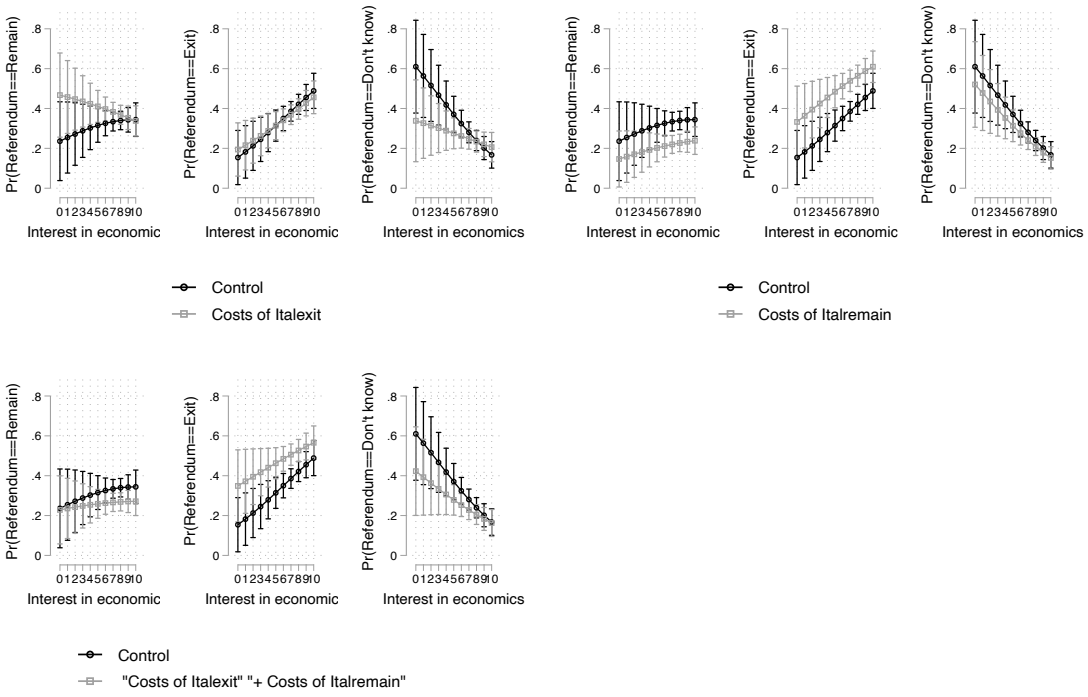

Figure D.11. Heterogeneous treatment effects by economic interest in Italy

Note: Interest in economic issues included as an alternative indicator to economic knowledge. See Table A.1 for variable operationalization. Those with low interest in economics react more strongly to the costs of Italexit frame. There are no strong heterogeneous effects for support for exit.

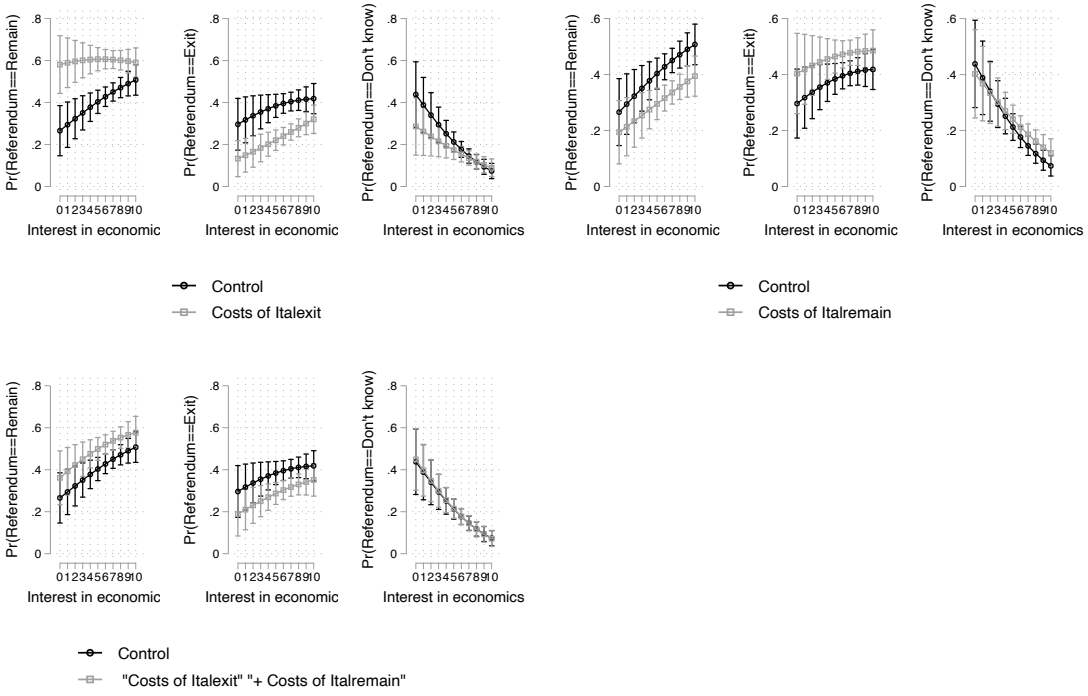

Figure D.12. Heterogeneous treatment effects by economic interest in Germany

Note: Interest in economic issues included as an alternative indicator to economic knowledge. See Table A.1 for variable operationalization.

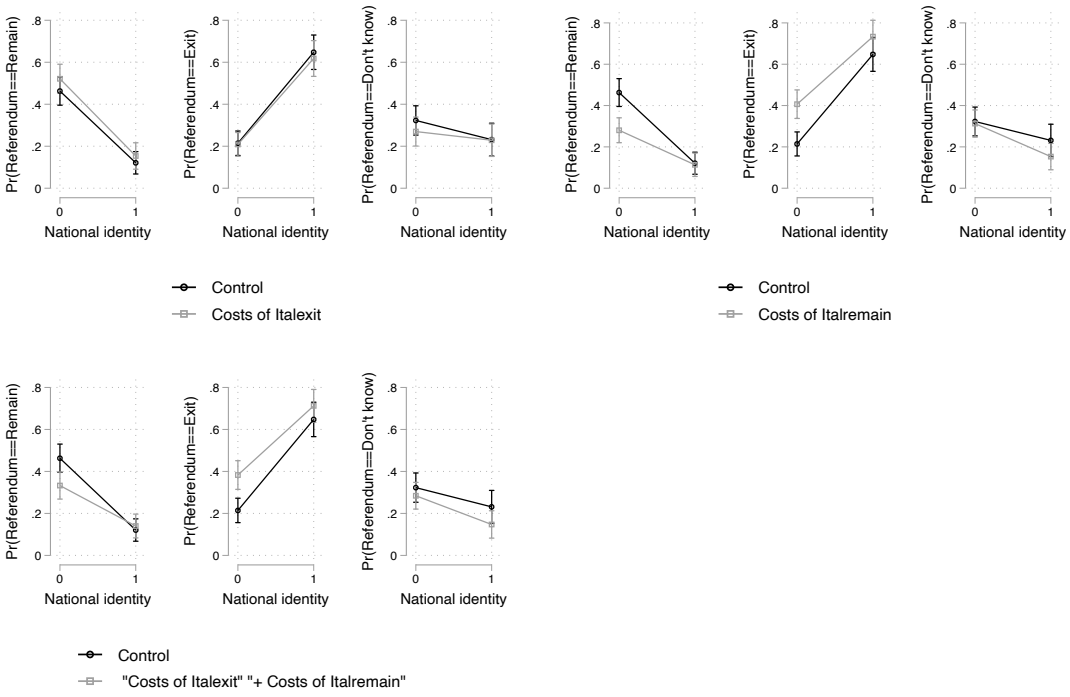

Figure D.13. Heterogeneous treatment effects by national identity in Italy

Note: Those with an exclusive national identity hardly react to the costs of Italremain treatment. Support for remain among those individuals is already at very low levels in the control group. There are no strong heterogeneous treatment effects for support for exit.

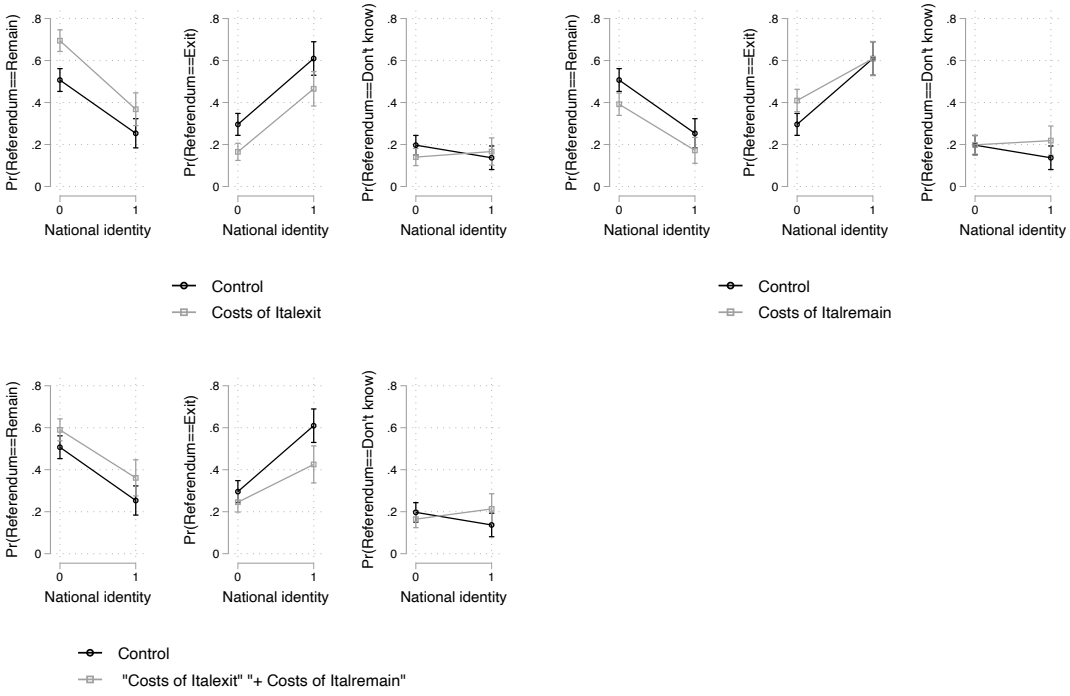

Figure D.14. Heterogeneous treatment effects by national identity in Germany

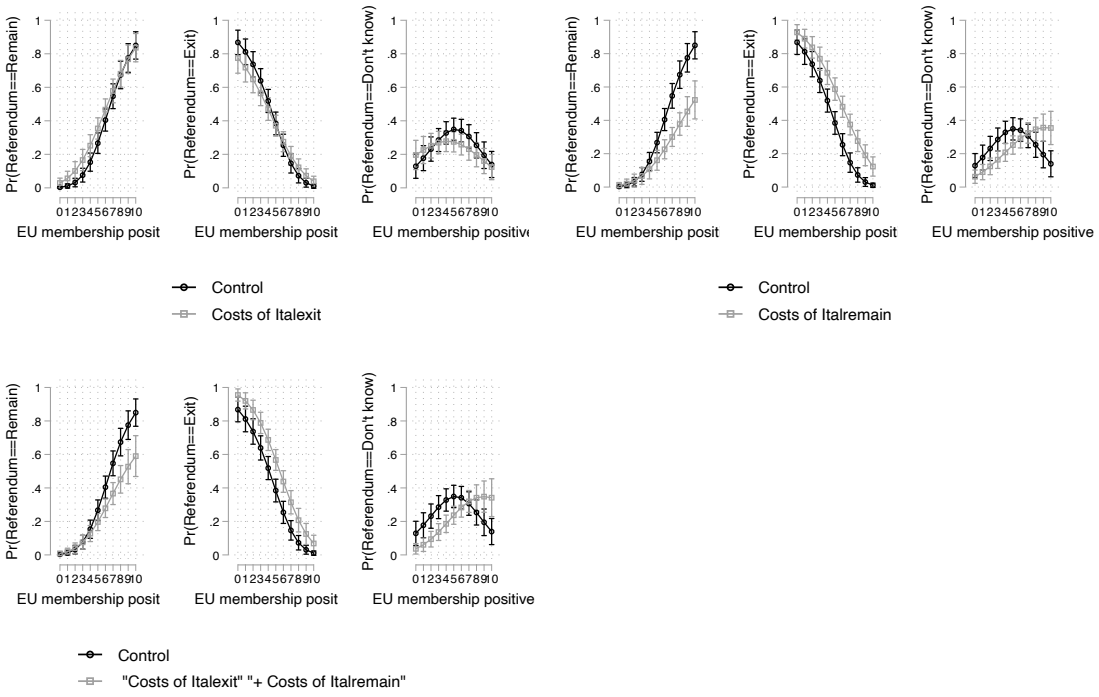

Figure D.15. Heterogeneous treatment effects by assessment of EU membership in Italy

Note: Assessment of EU membership included as an alternative indicator to national identity. See Table A.1 for variable operationalization. Those assessing EU membership more positively react more sensitively to the costs of Italremain with support for remain being reduced accordingly. For support for exit, there are no strong heterogeneous effects.

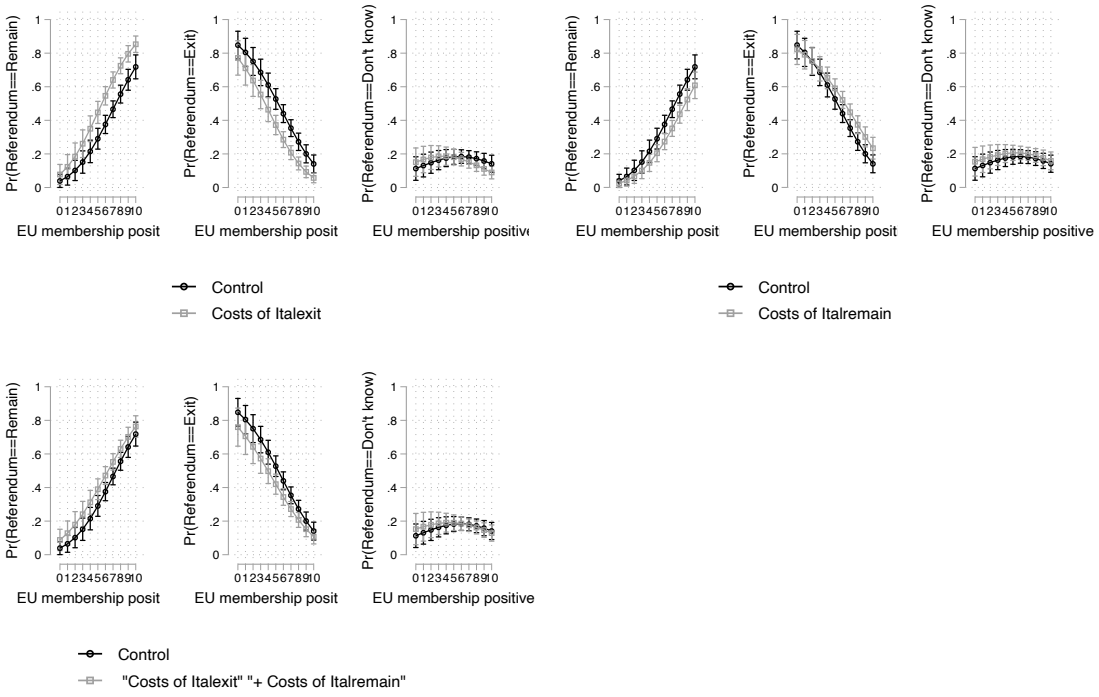

Figure D.16. Heterogeneous treatment effects by assessment of EU membership in Germany

D.5. Replicating main results without non-voters

Policymakers often care most about people who turn out at elections, expressing their preferences. We thus test whether our main results hold if we drop people who indicated that they did not vote in the last election. The figures shown below suggest that this is the case.

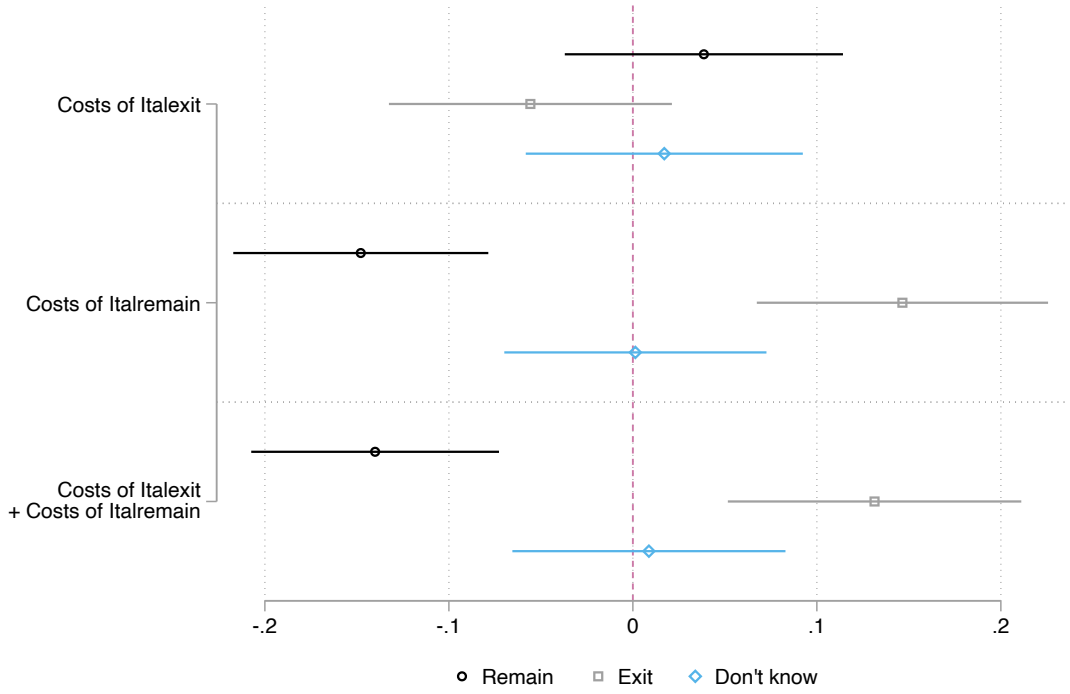

Figure D.17. Average treatment effects of frames on preferences towards Italexit in Italy excluding all non-voters

Note: Average treatment effects and 95 percent confidence intervals based on multinomial probit models.

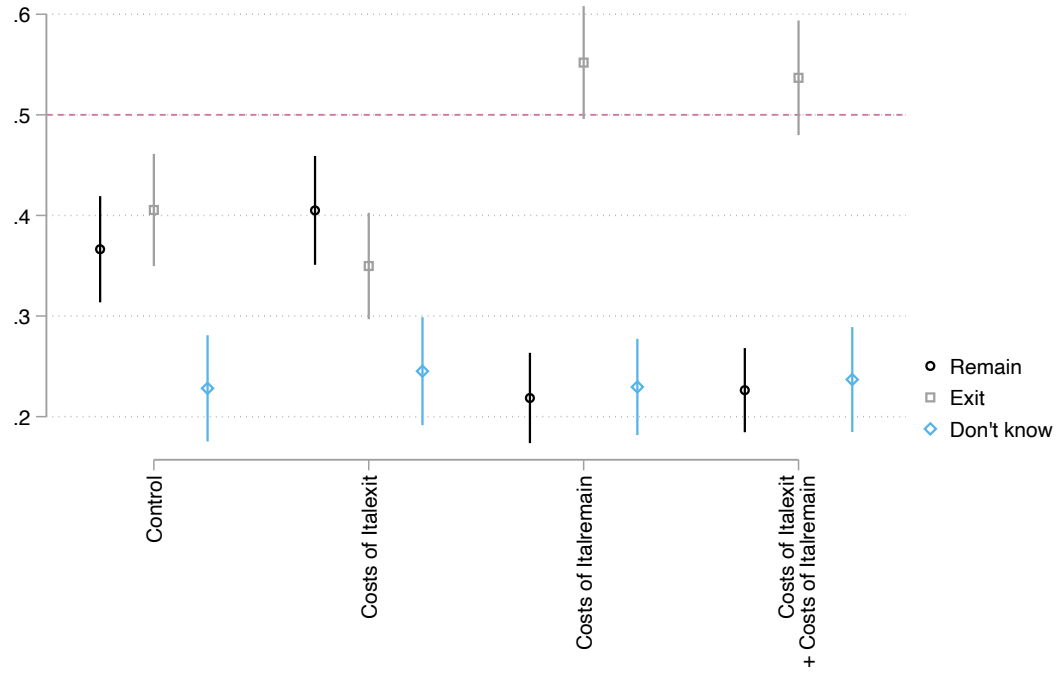

Figure D.18. Predicted probabilities of preferences towards Italexit in Germany excluding all non-voters

Note: The figure shows the predicted probabilities and 95 percent confidence intervals based on the same regression models used to calculate the ATEs shown in Figure D.17.

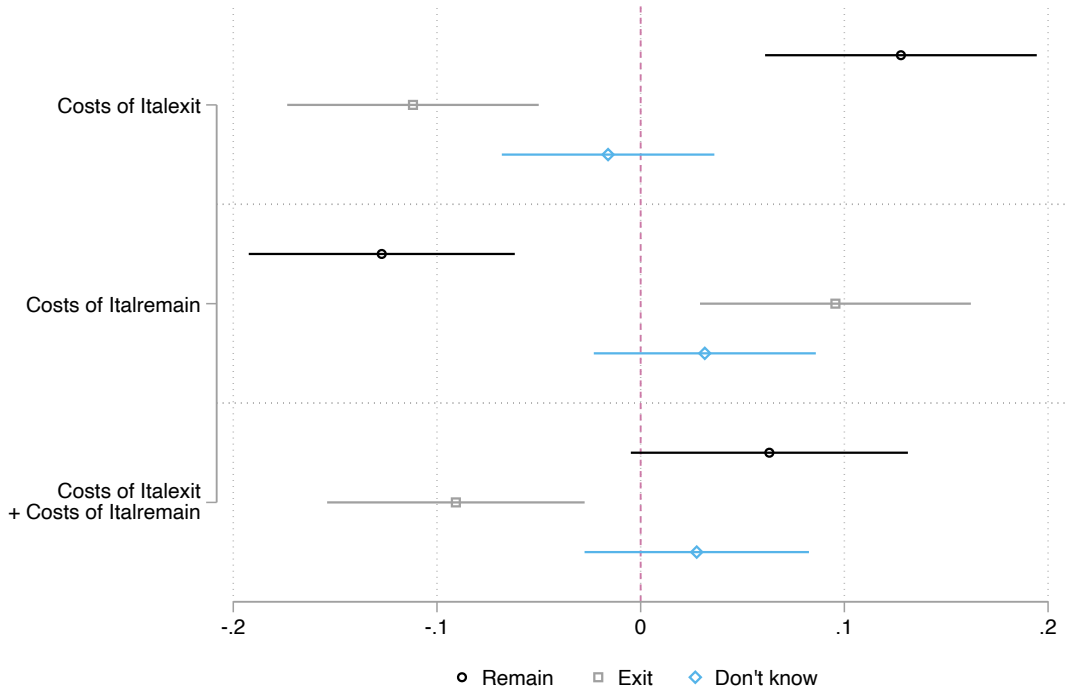

Figure D.19. Average treatment effects of frames on preferences towards Italexit in Germany excluding all non-voters

Note: Average treatment effects and 95 percent confidence intervals based on multinomial probit models.

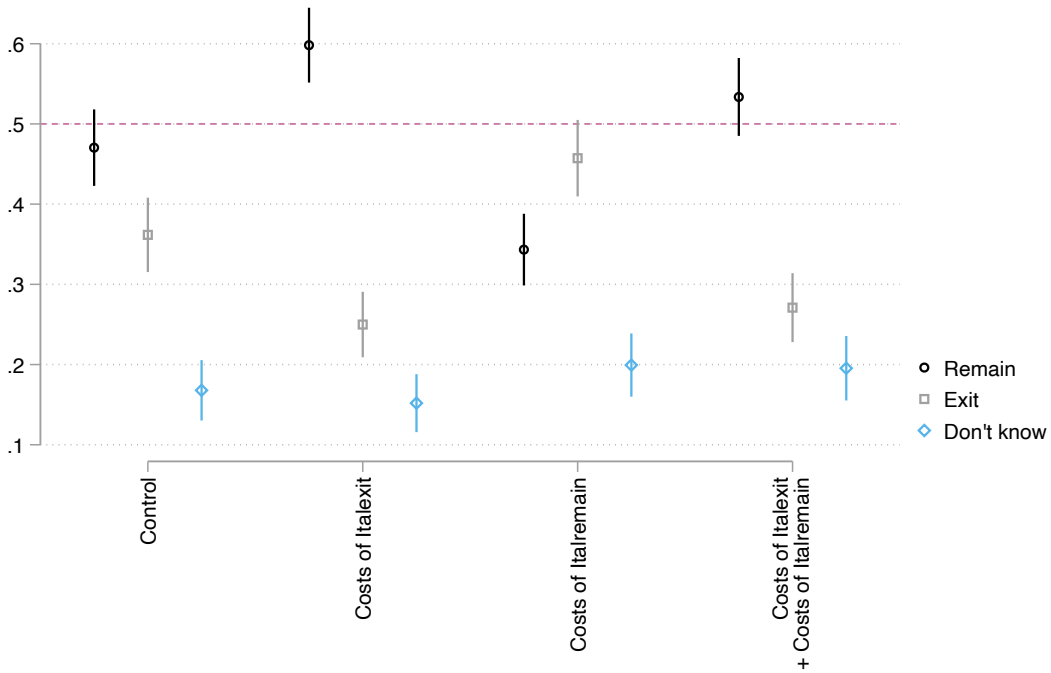

Figure D.20. Predicted probabilities of preferences towards Italexit in Germany excluding all non-voters

Note: The figure shows the predicted probabilities and 95 percent confidence intervals based on the same regression models used to calculate the ATEs shown in Figure D.19.

APPENDIX E: Results from the survey experiment with a second dependent variable

In this appendix, we show results from the analysis with the second variable, as discussed in the robustness checks section. In Italy, respondents could indicate their preferred choice out of the two following options: 1) 'Germany and other European governments do not agree to debt mutualization, and Italy remains in the Euro' and, 2) 'Germany and other European governments do not agree to debt mutualization, and Italy exits the Euro'. In Germany, respondents could choose between 1) 'Germany and other European governments do not agree to debt mutualization, and Italy exits the Euro' and, 2) 'Germany and other European governments agree to debt mutualization, and Italy remains in the Euro'. These choices are crucial for the determination of the equilibrium of the game analyzed in Appendix B.

Table E.1 depicts the relative majorities in preferences in Italy and Germany and summarizes the expected equilibrium outcomes based on the game-theoretical account developed in Appendix B. The table is based on Figures E.1 and E.2. which plot the predicted probabilities for support of different outcomes in Italy and Germany, respectively. Depending on the salience of costs of the different options, the equilibrium solutions for the eurozone fluctuate between Italexit or debt mutualization.

First, if Germany does not agree to debt mutualization, we find that Italians are always more likely to support exit than remain. This gives Italy a credible threat.

Second, the response of German voters is highly contingent upon the frames they receive. If voters receive no additional information (the control group, scenario 1), or information about the costs of mutualization for Germany without information about the costs of Italexit (scenario 3), a majority of voters do not want debt mutualization and would accept Italy exiting the eurozone. Yet, as soon as German respondents take into account the costs of Italexit they consider mutualization as the preferable option (scenarios 2 and 4). Although the difference between mutualization and exit is statistically insignificant in the combined scenario, the pattern is clear: predicted support for mutualization is higher than support for Italexit when Germans are alerted to the costs of Italy leaving the eurozone.

Taken together, Table E.1 demonstrates that the equilibrium outcome depends on the kind of information processed by respondents. Note that the relative majorities for Italexit and remain based on this second dependent variable are very similar to the results in the main analysis (Figures 3 and 5). The results differ in two instances (scenario 2 in Italy; scenario 1 in Germany). In these two scenarios, majority support shifts from remain to exit.

Table E.1. Summary of the results of the simulated strategic interaction between Germany and Italy

	Scenario	**Italy**	**Germany**	**Equilibrium**
1	Control	NE > NR	NE > MR	Italexit
2	Cost of exit	NE > NR	NE << MR	Mutualization
3	Cost of remain	NE > NR	NE >> MR	Italexit
4	Cost of exit + cost of remain	NE > NR	NE < MR	Mutualization

Note: The results are based on predicted probabilities of support. '<<' or '>>' imply that differences are statistically significant at the 95 level. The predicted probabilities are shown in Figures E.1 and E.2.

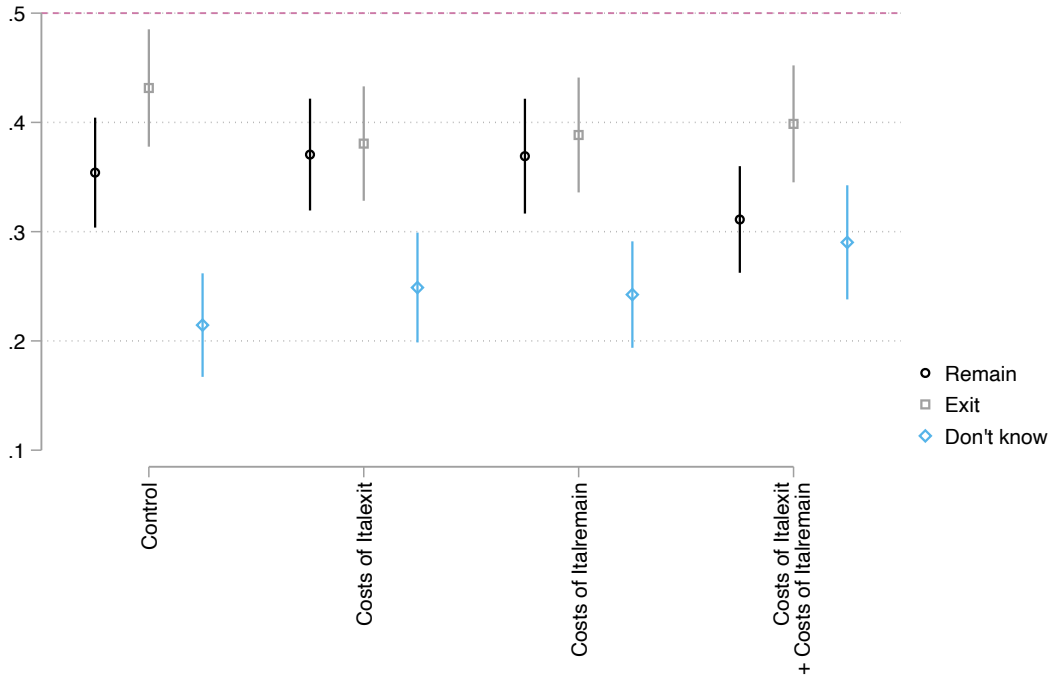

Figure E.1. Predicted probabilities of preferences towards the outcome of the strategic interaction in Italy

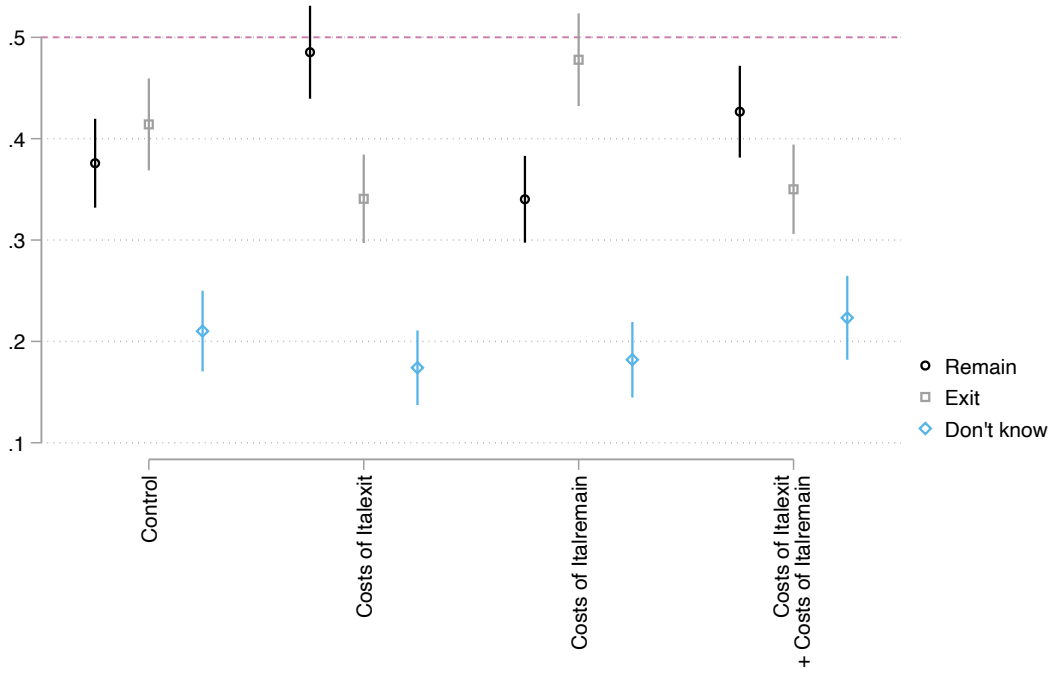

Figure E.2. Predicted probabilities of preferences towards the outcome of the strategic interaction in Germany

APPENDIX F: Additional results for the COVID-19 frame

F.1: Predicted probabilities with the COVID frame in Germany

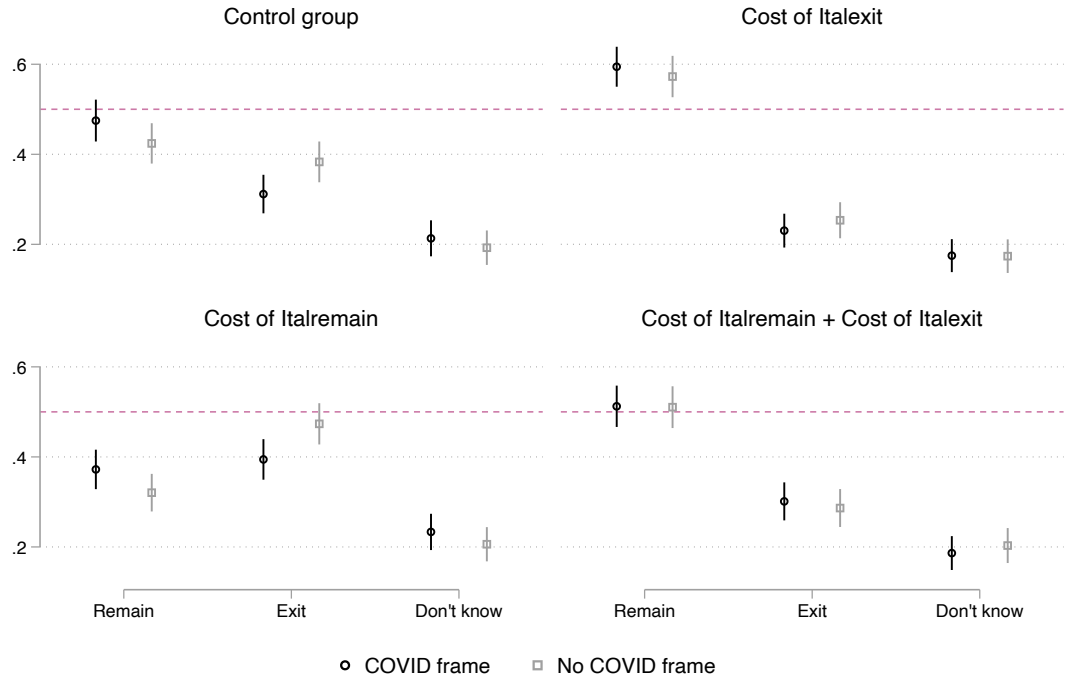

Figure F.1. Predicted probabilities for scenarios with the COVID-19 frame in Germany

Note: The figure shows predicted probabilities and 95 percent confidence intervals based on multinomial probit models based on the same regression models used to calculate the ATEs in Figure 6.

F.2: Results with the COVID frame in Italy

Table F.1. Average treatment effects of the COVID-19 frame in Germany based on multinomial probit regressions

	(1)
Treatment effects	
COVID	
Remain	0.051
	(1.539)
Exit	-0.071*
	(-2.250)
Don't know	0.021
	(0.736)
*COVID + Costs of It*alexit	
Remain	0.170***
	(5.294)
Exit	-0.153***
	(-5.088)
Don't know	-0.018
	(-0.651)
COVID + Costs of Italremain	
Remain	-0.052
	(-1.627)
Exit	0.011
	(0.344)
Don't know	0.041
	(1.441)
COVID + costs of Italexit + costs of Italremain	
Remain	0.088**
	(2.695)
Exit	-0.082**
	(-2.596)
Don't know	-0.006
	(-0.226)
Observations	2830

t statistics in parentheses, survey weights included
* p<0.05 ** p<0.01 *** p<0.001

We also included a COVID-19 frame in Italy. The frame read as follows:

> *The corona crisis has forced the Italian government to significantly increase public expenditures, both to reinforce health care infrastructure at a time of stress and to contain the consequences of the recession. This has led to a large increase in the public deficit as a share of GDP and a downgrade of Italian bonds by rating agencies. As a consequence, now [basic scenario follows …]*

To test the effect of the COVID-frame in Italy we recruited an additional 2092 respondents. We had no prior expectations about the direct effect of this frame, but we hypothesized that the combination between the COVID-19 frame and the cost of remain frame would reduce preferences for remain and increase preferences for exit. Our reasoning was as follows: to the extent that voters understand that Italy needs to increase its public deficit in order to cushion the consequences of the corona crisis, the imposition of austerity should decrease their support for remain and increase their support for exit.

The results shown in Figure F.2 and Table F.2 corroborate this hypothesis. When the COVID-19 frame is paired with the austerity frame, support for Italexit is significantly higher (+17 percent) and support for Italremain significantly lower (-13 percent) than in the control group. Surprisingly, when administered on its own, the COVID frame increases support for remain by 9.68 percentage points. A possible explanation may be that when highlighting the national health emergency due to COVID-19, respondents are less likely to blame the euro for Italy's economic ills.

In general, the effect of the COVID frame tends to be lower when it is combined with the frames that emphasize material considerations. Post-estimation Wald tests show that when the COVID frame is combined with other frames, its effects are statistically insignificant, with one exception: in combination with the costs of Italexit and costs of Italremain frames, the COVID frame has a significant negative effect on the likelihood to support exit (+8 percent). Even in this case, however, exit from the euro is supported by a relative majority of Italians (43 percent), as shown in Figure F.2. Together with evidence from the previous wave, which shows a strong effect of the austerity frame on support for Italexit, this pattern of results makes us confident that the response of Italian voters is primarily driven by consideration of the costs of remaining in the eurozone.

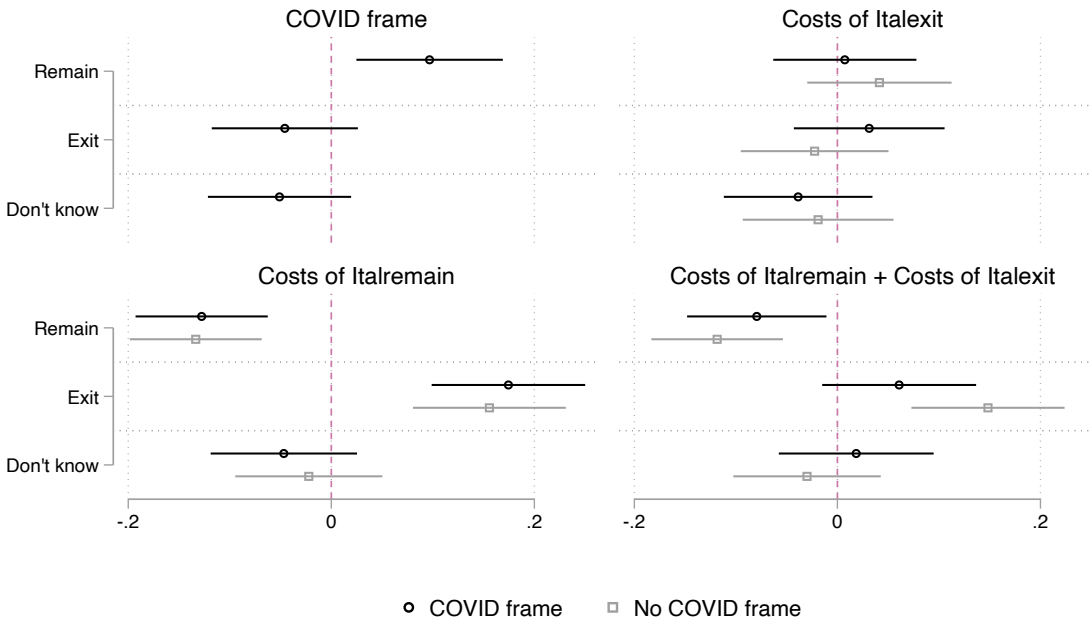

Figure F.2. Average treatment effects of the COVID-19 frame in Italy

Note: The figure shows the average treatment effects and 95 percent confidence intervals based on multinomial probit models. All treatment effects are calculated with reference to the control group which only received the basic scenario and survey weights are applied. The full regression table with the results for the COVID-frame is shown below (Table F.2).

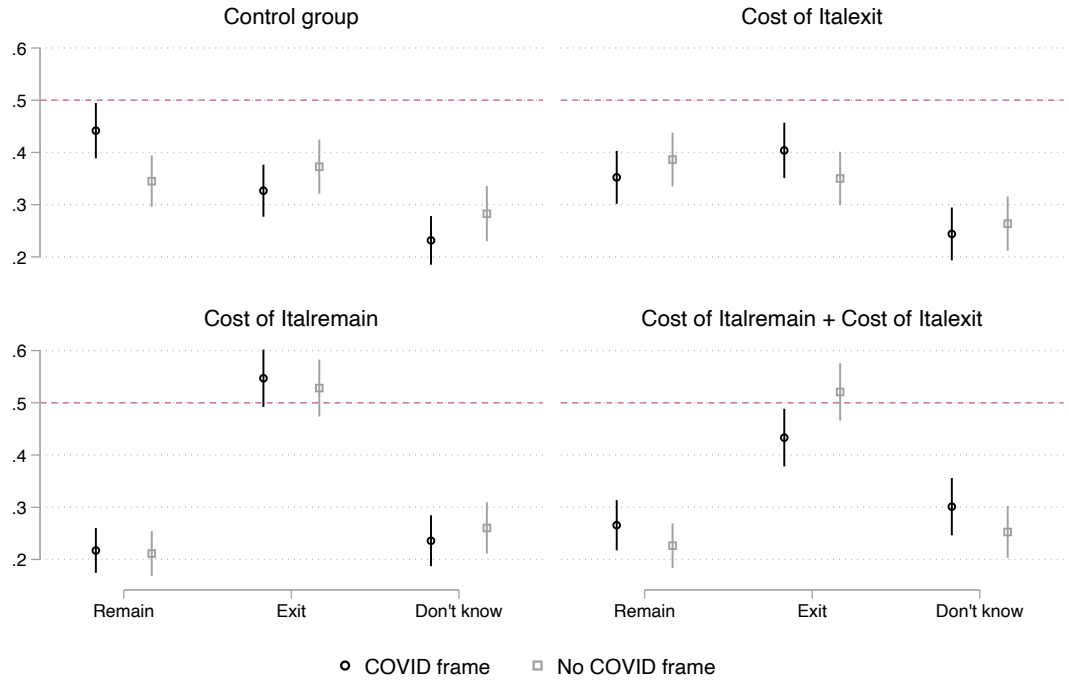

Figure F.3. Predicted probabilities for scenarios with the COVID-19 frame in Italy

Note: The figure shows predicted probabilities and 95 percent confidence intervals based on multinomial probit models based on the same regression models used to calculate ATEs in Figure F.1.

Table F.4. Average treatment effect of the COVID-19 frame in Italy based on multinomial probit regressions

	(1)
Treatment effects	
COVID	
Remain	0.097**
	(2.631)
Exit	-0.046
	(-1.247)
Don't know	-0.051
	(-1.418)
COVID + Costs of Italexit	
Remain	0.007
	(0.203)
Exit	0.031
	(0.828)
Don't know	-0.039
	(-1.035)
COVID + Costs of Italremain	
Remain	-0.128***
	(-3.845)
Exit	0.174***
	(4.525)
Don't know	-0.047
	(-1.272)
COVID + costs of Italexit + costs of Italremain	
Remain	-0.079*
	(-2.269)
Exit	0.061
	(1.574)
Don't know	0.019
	(0.477)
Observations	2626

t statistics in parentheses; survey weights included

* p<0.05 ** p<0.01 *** p<0.001

Table F.5. Average treatment effect of the costs of Italremain frame in Italy in 2019 and 2020

	(1)
Treatment effects	
Outcome = Remain	
Costs of Italremain = 1	-0.190***
	(-5.629)
Year = 2020	-0.153***
	(-4.601)
Costs of Italremain = 1 * Year = 2020	0.042
	(0.851)
Outcome = Exit	
Costs of Italremain = 1	0.148***
	(3.978)
Year = 2020	0.060
	(1.571)
Costs of Italremain = 1 * Year = 2020	0.010
	(0.181)
Outcome = Don't know	
Costs of Italremain = 1	0.042
	(1.245)
Year = 2020	0.093**
	(2.604)
Costs of Italremain = 1 * Year = 2020	-0.051
	(-1.170)
Observations	2463

t statistics in parentheses; only control and costs of Italremain treatment groups included; survey weights included

* p<0.05 ** p<0.01 *** p<0.001

APPENDIX G: Additional information about the newspaper analysis

We examine newspapers to study whether the main mechanism from the experimental part – a threat of a breakup of the euro leads to more favorable preferences towards debt mutualization in Germany – resonates with real-world events. To be clear our intent in this section is not to argue that public opinion was the main explanatory factor accounting for the establishment of Europe's pandemic recovery fund NextGenEU. More narrowly the section illustrates that the threat of a 'new Brexit' was indeed perceived to be a real possibility by German politicians. German politicians used this threat to justify the shift in their positions, from staunch opposition towards debt mutualization to support for it. The section thus mostly serves illustrative purposes, suggesting that citizens' perceptions of strategic interdependencies are important to consider when evaluating the extent to which politicians are constrained by public opinion.

As we highlight in the conclusion, this section does not mean to present an argument that fully explains how Europe's pandemic recovery fund came about. A favorable public opinion in key northern countries is arguably a necessary condition for reform of the economic architecture of the eurozone, but in all likelihood, it is not a sufficient condition. Reform still has to overcome a large set of veto points, both in individual European countries and within European institutions. We thus use the section to make a more circumscribed argument that public opinion was not an obstacle to debt mutualization in Europe in 2020 because politicians became aware of the sensitivity of people's preferences to the importance of economic interdependencies within the eurozone.

To write this section, we first created a corpus of newspapers articles in Germany and Italy. To this end, we used a keyword search in Factiva and LexisNexis. We searched for relevant articles published in the main newspapers in Germany and Italy from the beginning of February until the end of September 2020. Table G.1 shows the full lists of newspapers covered as well as the keywords that we used in each country. The list of newspapers mostly included quality newspapers, but for example, in Germany, we also included the tabloid newspaper *Bild* due to its importance in public discourse. We excluded other media (e.g., TV, radio) because we assumed that the political discourse in each country can be accurately represented by newspaper coverage and because the additional marginal costs of including such media did not seem to be proportionate to the costs of such analysis.

Table G.1 List of newspapers and keywords by country

	Germany	**Italy**
List of newspapers	Frankfurter Allgemeine Zeitung, Süddeutsche Zeitung, Die Bild, Handelsblatt, Die Welt, Der Spiegel, Die Zeit	La Repubblica, Corriere della Sera, La Stampa, Il Sole 24 Ore, Il Giornale, Libero Quotidiano, Il Fatto Quotidiano
List of keywords	('Eurobonds' AND 'Italien') OR ('Coronabonds' AND 'Italien') OR ('Italien' & 'Euro') OR 'Italexit' ('Austr*' AND 'Euro' AND 'Italien') OR ('ESM & Italien') OR ('Merkel-Macron-Plan' 'Italien') OR ('Wiederaufbau*' 'Italien')	('Conte' AND 'Italia farà da sola') OR ('Conte' AND 'faremo da soli') OR 'faremo da soli' OR 'Coronabonds' OR 'Eurobonds' OR 'Uscita dall'euro' OR 'euroscetticismo'

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Berinsky, A. J., Margolis, M. F., & Sances, M. W. (2014). Separating the shirkers from the workers? Making sure respondents pay attention on self-administered surveys. *American Journal of Political Science*, *58*(3), 739-753.

Baccaro L, Bremer B, & Neimanns E. (2021). Till austerity do us part? A survey experiment on support for the euro in Italy. *European Union Politics*, 22(3), 401-423.