Public Support for technology regulation: Evidence from 5 EU countries

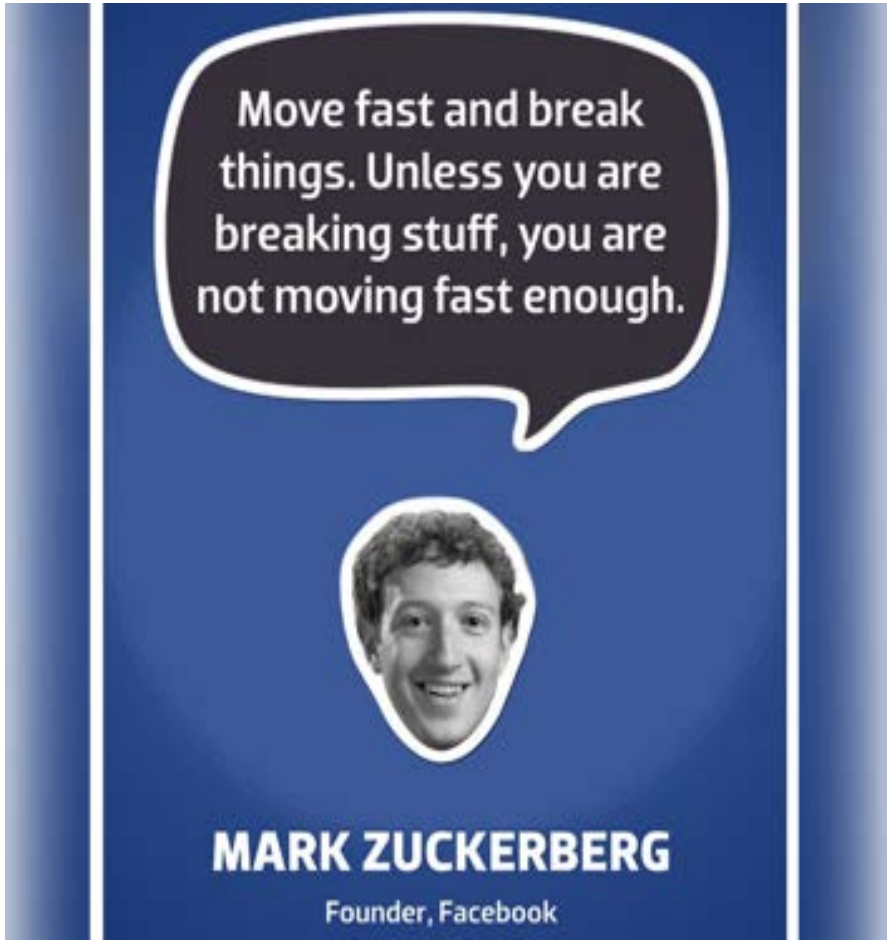
Alexander Kuo, Oxford University

Aina Gallego, Universitat de Barcelona

Norface project: “How Technological Change Reshapes Politics: Technology, Elections, and Policies” (PCI2020-112198)

IPES, Georgetown University October 2023

From “leave us create freely”



To “we have created a monster”

Growing demand of regulation of technology

“Powerful AI systems should be developed only once we are confident that their effects will be positive and their risks will be manageable…we call on all AI labs to immediately pause for at least 6 months the training of AI systems more powerful than GPT-4” [open letter from futureoflife.org]

https://futureoflife.org/open-letter/pause-giant-ai-experiments/

Signals of shifting academic sentiment

Growing academic concern about the impact of technology on workplaces (more recently AI) (e.g. Acemoglu 2022, Autor 2022)

Probable deepening of income inequality

- So far, mostly routine workers were displaced by new technologies
- With the introduction of AI, cognitive workers will *also* be affected

Questioning the idea that technological change always brings prosperity (e.g. Acemoglu and Johnson 2023)

So-so technologies: Self-checkout

RESEARCH QUESTION AND BACKGROUND

Research questions

- Do citizens support policies to regulate or tax technologies in economic settings?
  - Exclude regulations motivated by other considerations
- What are the correlates of support for such policies?
- Can basic arguments often made for or against regulation change people's opinions? And which arguments are more persuasive?

Literature: technological change and political preferences

Research on automation risks and support forms of **compensation and redistribution** (e.g., Thewissen and Rueda 2019, Gallego and Kurer 2022, Weistanner 2021, Kurer and Hausermann 2022, Busemeyer and Tober 2023)

Core findings:

- Workers do not seem to be aware of automation risks (low correlation between objective and subjective risks) (Wu 2022)
- Emerging evidence that they may demand protection (Gallego, Kuo, Manzano, Fernandez-Albertos 2022, Bürgisser, Häusermann, and Kurer 2023)

Arguments about technological regulation

There is an increasing case for government regulation or ‘steering’ of technology (Acemoglu and Johnson, 2023). But what are the sources of such preferences and what are arguments?

Two core arguments we test in terms of framing the issue:

- Classic CPE income-maximizing/self-interest or risk-oriented rationalist views, akin to arguments explaining support for redistribution to compensate for tech change
- Narratives about regulation harming economic growth and consumers, broadly linked to ‘socio-tropic’ framings of technology [promoted by many tech elites]

Hypotheses

Winners-losers distributive arguments

H1a: Individuals at *higher objective risk* of being negatively affected by technological change are *more likely* to support government regulation of technology.

H1b: Individuals at *higher subjective risk* of being negatively affected by technological change are *more likely* to support government regulation of technology.

H2: Individuals at higher objective risks from technology are more supportive of technological regulation when *policy beneficiaries are made salient*.

H3: Making salient individuals or communities that are harmed by technological change increases overall support for government regulation of technology.

Core technological narrative: Technology = Economic growth

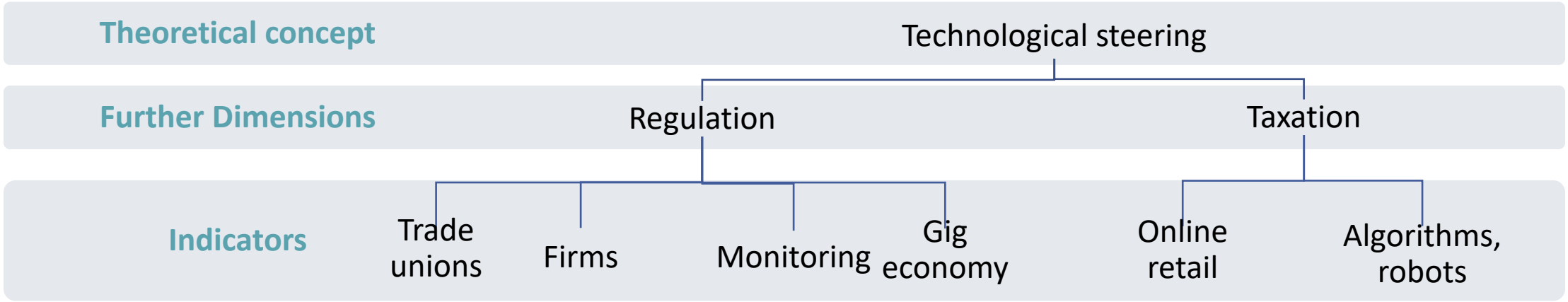
H4: Making *salient the potential negative impact of technological regulation* on economic growth *reduces support* for such policies.

DATA AND EXPERIMENTAL DESIGN

Data

- Survey in five EU countries (Mar-April 2023 – GER/ITA/POL/SWE/POL)
  - Three largest: Germany, France, Italy
  - Two from smaller illustrative cases: Sweden and Poland
- 3500 respondents per country
- Online survey with education, gender, age and region quotas
- Conducted by Respondi-Bilendi

Measurement



Searched for six plausible steering policies and developed questions that can be asked in different contexts:

a) Policies discussed in the academic literature (e.g. role of unions in Germany according to Dauth et al 2021)

b) Policies discussed in different countries (e.g. online retail in France)

Experimental design

- The design acknowledges that we are transiting from a context in which most people don't have attitudes towards these topics to a context in which debate about protection from technological disruption may increase:
  - We suspect that most people still do **not yet** have very well-formed attitudes:
    - We ask people in the control group if they support a set of protectionist policies and don't give them further information -- > similar to the status quo where these policies are not widely debated
  - We examine how attitudes may emerge given more debate:
    - The treatment groups gives people information about two types of consequences of protectionist policies: distributional consequences and overall economic consequences [key tech elite narrative]

Experimental design

	No information about aggregate economic effects	Information about aggregate economic effects
No information about distributional effects	Status quo	Only considerations about aggregate effects
Information about distributional effects	Only distributional considerations	Both considerations → more debate

Informational treatments across six specific technological regulation policies

The order of the 6 questions is randomized.

Each respondent receives the *same type of statement* across all policies, to reduce risk of priming/contamination workers

Sample wording

Control The government should give trade unions or workers more power to decide whether new technologies are adopted at work and how they are implemented

Distributional The government should give trade unions or workers more power to decide whether new technologies are adopted at work and how they are implemented. **This policy could protect workers whose jobs are more threatened by technology, such as the older and less educated**

Overall The government should give trade unions or workers more power to decide whether new technologies are adopted at work and how they are implemented. **This policy could reduce economic growth and make [country] less economically competitive compared to other countries**

Both The government should give trade unions or workers more power to decide whether new technologies are adopted at work and how they are implemented. **This policy could protect workers whose jobs are more threatened by technology (such as older and less educated workers), but it could reduce economic growth and make [country] less economically competitive compared to other countries**

Other wordings

Num	Policy	Distributive argument	Socio-tropic/Price argument
1	The government should give trade unions or workers more power to decide whether new technologies are adopted at work and how they are implemented.	This policy could protect workers whose jobs are more threatened by technology, such as the older and less educated.	This policy could reduce economic growth and make [COUNTRY] less economically competitive compared to other countries.
2	The government should make it harder for firms to adopt new technologies or machines, if they reduce salaries or jobs.	This policy could protect workers whose jobs are more threatened by technology, such as the older and less educated.	This policy could reduce economic growth and make [COUNTRY] less economically competitive compared to other countries.
3	The government should increase taxes and regulations on firms that adopt software, robots, or algorithms that do the work that their workers do (for instance text translation, accountants, checkout machines, and customer service chats).	This policy could protect workers that currently perform tasks such as translators, accountants or sales people.	This policy could raise the prices of these services.
4	The government should adopt more regulations about how companies use digital technologies to monitor what people do at work.	to protect workers in these companies.	even if this reduces service quality for customers or clients.
5	The government should more strongly regulate “platform” companies (like Uber, Airbnb or Deliveroo).	to protect workers in these companies or workers in the competing sectors.	even if this increases prices for consumers.
6	The government should increase taxes on larger Internet retailers like Amazon.	protect smaller businesses that compete with these retailers.	if this could raise the prices of goods sold online.

Content of the survey:Covariates

A. Socio-demographics

Region (NUTS 2/3), age, gender, education, employment status (including retired/student), labor contract, sector, income, occupation, type of place (city vs. town, etc), whether born in country, broad ethnicity/nationality

B. Objective risk variables

Occupation at 4-digit ISCO level; 5 tasks performed at work; use of technology at work. Coding ongoing: transformation of these objective variables into i) RTI (with caveats), ii) task-based risk, iii) AI-risk (Webb, et al.). Using open-ended occupational responses.

C. Subjective 'concern' or 'risk' regarding technology

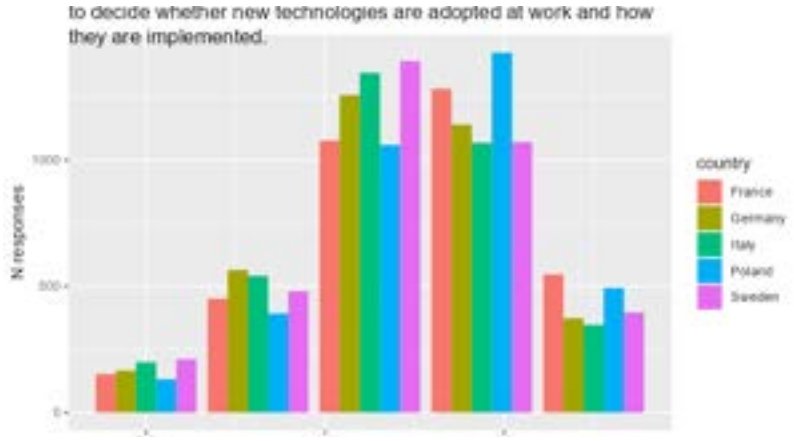
Concern about workplace technology, substitutability concern (% task substitution), technostress, view toward 'big-5' tech companies, app use, Internet-consumer use

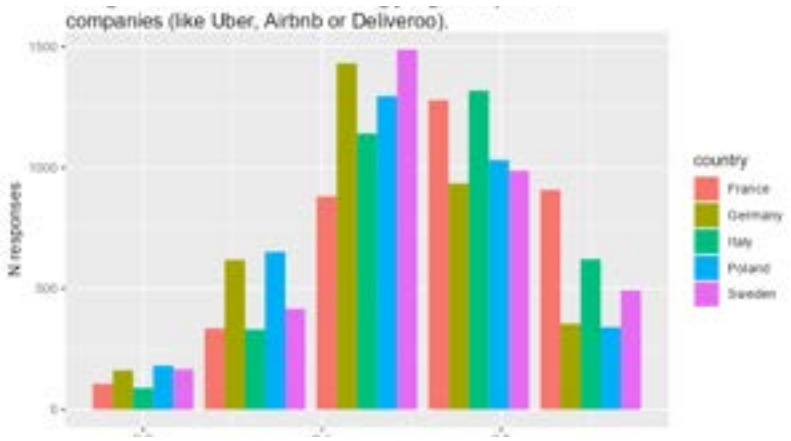
D. Other variables of potential interest

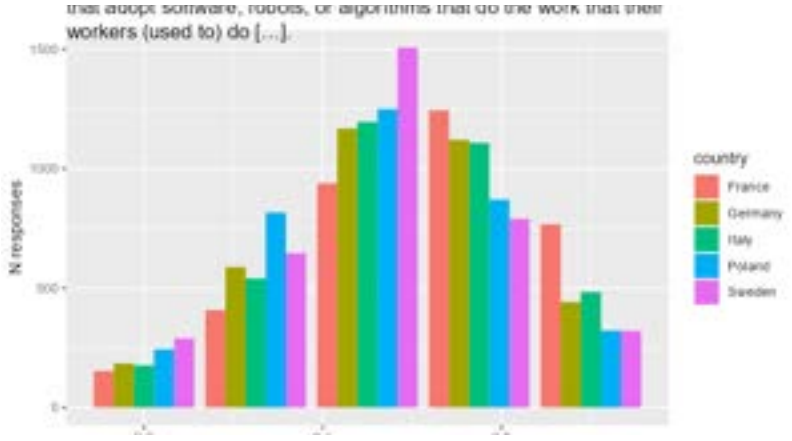
Support for redistribution, political vote choice, trust in political institutions, globalization views.

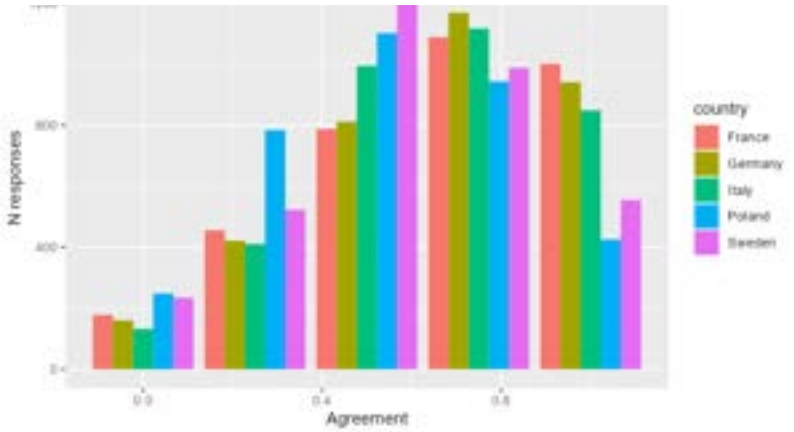
RESULTS

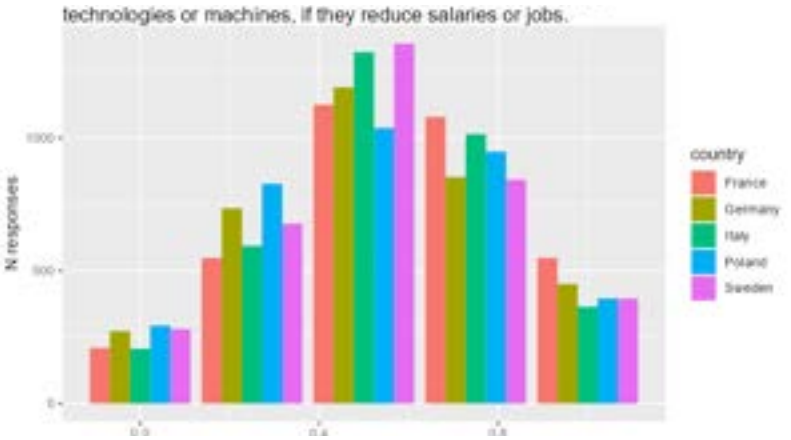
Descriptive results

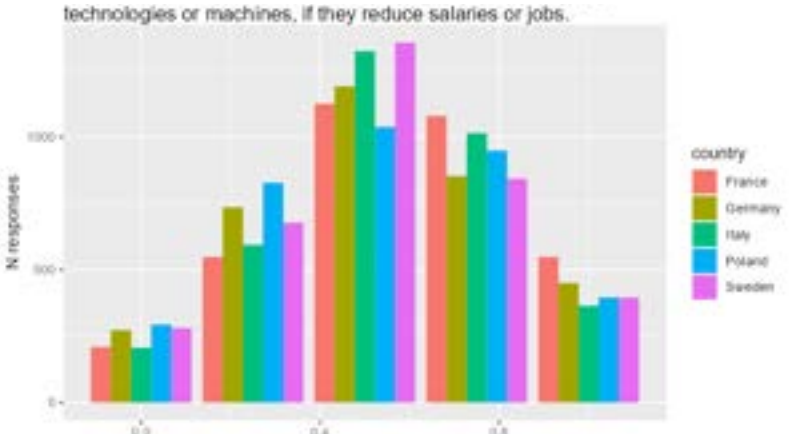












Socio-demographic correlates

$$Support\ for\ policy_{pi} = \alpha + \beta_p \mathbf{X}_i + \pi_{p\ Country} + \epsilon_{ip}$$

No clear correlation with demographic proxies of risk (age, education, place of residence, employment situation, gender). No support for H1a

Table 2: Correlates of support. Objective measures of risk in the control condition

	Unions	Governments	Gig economy	Monitoring	Amazon	Algorithms tax
Age: 45-64	-0.035 ***	-0.015	0.038 ***	-0.015	0.031 **	-0.004
	(0.009)	(0.010)	(0.009)	(0.010)	(0.009)	(0.009)
Age: 65+	-0.076 ***	-0.046 *	0.052 **	-0.011	0.048 **	-0.001
	(0.016)	(0.019)	(0.016)	(0.018)	(0.018)	(0.018)
Education: Vocational	0.007	-0.006	0.020 *	0.039 ***	0.001	0.005
	(0.010)	(0.012)	(0.010)	(0.011)	(0.011)	(0.011)
Education: University	-0.008	-0.041 **	0.029 **	0.012	0.035 **	-0.029 *
	(0.011)	(0.013)	(0.011)	(0.012)	(0.012)	(0.012)
Education: Postgraduate	-0.006	-0.023	0.020	0.039 *	0.029	-0.034
	(0.017)	(0.020)	(0.017)	(0.020)	(0.019)	(0.019)
Place: A country village	0.001	-0.003	0.033	0.024	0.037	0.006
	(0.017)	(0.020)	(0.018)	(0.020)	(0.019)	(0.019)
Place: A town or a small city	0.009	0.000	0.019	0.017	0.031	-0.007
	(0.016)	(0.019)	(0.016)	(0.018)	(0.018)	(0.018)
Place: The suburbs of big city	0.008	0.007	0.032	0.035	0.054 **	0.020
	(0.018)	(0.022)	(0.018)	(0.021)	(0.021)	(0.020)
Place: A big city	0.017	0.000	0.037 *	0.023	0.031	0.008
	(0.017)	(0.020)	(0.017)	(0.019)	(0.019)	(0.019)
Employment: Temporary	-0.001	-0.022	-0.021	-0.014	-0.016	-0.007
	(0.018)	(0.021)	(0.018)	(0.021)	(0.020)	(0.020)
Employment: Unemployed	0.039 **	0.011	0.006	-0.009	-0.030	0.018
	(0.015)	(0.017)	(0.015)	(0.017)	(0.016)	(0.016)
Employment: Student	-0.018	-0.068 ***	-0.011	-0.033	-0.020	-0.050 **
	(0.016)	(0.018)	(0.016)	(0.018)	(0.017)	(0.017)
Employment: Pensioner/Retired	0.013	-0.025	0.020	-0.014	0.030	0.008
	(0.014)	(0.017)	(0.014)	(0.016)	(0.016)	(0.016)
Employment: Other	-0.016	-0.016	-0.011	-0.021	-0.023	0.003
	(0.011)	(0.013)	(0.011)	(0.012)	(0.012)	(0.012)
Gender: Female	0.033 ***	0.032 ***	-0.042 ***	-0.033 ***	-0.042 ***	0.005
	(0.007)	(0.009)	(0.007)	(0.008)	(0.008)	(0.008)

Substitution risk: Objective measures

We also do not find support for hypothesis 1a (objective risks) when looking at more specific measures of occupational risk

$$Support\ for\ policy_{pi} = \alpha + \beta \mathbf{X}_i + \gamma Occupation\ risk_{mi} + \pi_{p\ Country} + \epsilon_{pmi} \quad (2)$$

Table 3: Correlates of support: Objective measures of substitution in the control condition

	Unions	Governments	Gig economy	Monitoring	Amazon	Algorithms tax
Webb AI score	-0.059 **	-0.056 *	0.006	-0.040	0.015	-0.058 *
	(0.022)	(0.026)	(0.022)	(0.025)	(0.025)	(0.025)
Webb software score	-0.009	-0.002	0.025	-0.023	-0.007	-0.017
	(0.025)	(0.030)	(0.026)	(0.029)	(0.028)	(0.028)
Webb robot score	0.009	0.009	0.004	-0.004	-0.018	-0.001
	(0.010)	(0.012)	(0.010)	(0.011)	(0.011)	(0.011)
Felten	-0.008	-0.008	0.006	-0.002	0.019 ***	-0.004
	(0.005)	(0.006)	(0.005)	(0.006)	(0.006)	(0.006)
Brynjolfson	0.011	0.050	0.033	0.059	0.157 **	0.049
	(0.048)	(0.056)	(0.048)	(0.055)	(0.053)	(0.053)
RTI (Autor)	0.006	0.005	-0.002	0.003	0.005	0.004
	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)
Frey & Osborne	0.031 *	0.037 *	0.005	0.008	-0.008	0.025
	(0.013)	(0.016)	(0.013)	(0.015)	(0.015)	(0.015)

Substitution risk: Subjective measures

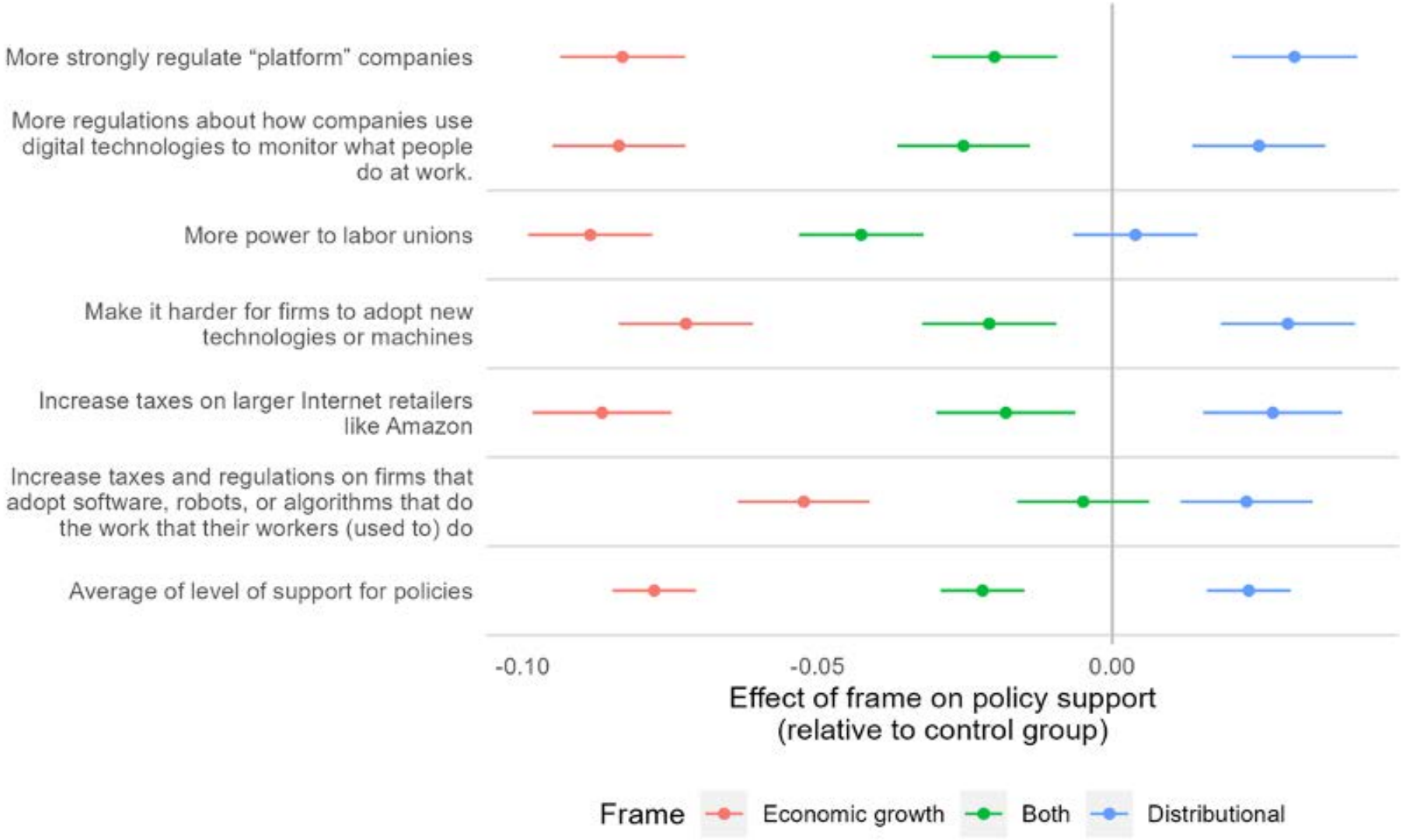
There is partial evidence for Hypothesis 1b (subjective risks)

$$Support\ for\ policy_{pi} = \alpha + \beta \mathbf{X}_i + \gamma Subjective\ attitude_{si} + \pi_{p\ Country} + \epsilon_{psi} \quad (3)$$

Table 4: Correlates of support. Subjective measures of risk in the control condition

	Unions	Governments	Gig economy	Monitoring	Amazon	Algorithms tax
Impact of technology at work is positive	0.013	-0.143 ***	-0.019	-0.030	-0.039	-0.157 ***
	(0.020)	(0.024)	(0.021)	(0.023)	(0.023)	(0.023)
% of tasks that can be substituted	0.032	-0.043 *	-0.004	0.019	-0.059 **	0.015
	(0.018)	(0.021)	(0.018)	(0.020)	(0.020)	(0.020)
Globotics	0.092 ***	0.090 ***	0.036 *	0.025	0.002	0.111 ***
	(0.015)	(0.018)	(0.015)	(0.017)	(0.017)	(0.017)
Learn 1	0.023	-0.014	0.061 ***	0.045 *	0.059 ***	0.038 *
	(0.016)	(0.019)	(0.016)	(0.018)	(0.018)	(0.018)
Learn 2	0.081 ***	0.077 ***	0.055 ***	0.052 ***	0.045 ***	0.108 ***
	(0.012)	(0.014)	(0.012)	(0.014)	(0.013)	(0.013)
Learn 3	0.075 ***	0.086 ***	0.049 ***	0.028 *	0.040 **	0.102 ***
	(0.012)	(0.014)	(0.012)	(0.014)	(0.013)	(0.013)
Attitude towards big tech firms	0.036 *	-0.095 ***	-0.077 ***	-0.042 *	-0.245 ***	-0.087 ***
	(0.017)	(0.020)	(0.017)	(0.019)	(0.019)	(0.019)
Use of new technologies at work	-0.017	-0.023	0.038 *	0.020	0.016	-0.021
	(0.015)	(0.018)	(0.015)	(0.017)	(0.017)	(0.017)
Perceived probability of losing job in the next 5 years	0.070 ***	0.090 ***	0.070 ***	0.057 **	0.059 ***	0.086 ***
	(0.016)	(0.019)	(0.016)	(0.018)	(0.018)	(0.018)
Perceived employment options if job loss	0.011	0.007	0.021	0.053 **	0.005	-0.036
	(0.017)	(0.020)	(0.017)	(0.019)	(0.019)	(0.019)

Experimental results



Take-away - Treatment effects

- The information about the general economic effects (H4) reduces support for/agreement with the policy
- The information about the distributional implications of protectionist policies (H3) slightly increases agreement, lower magnitude
- In presenting both arguments, the effects are additive. Given that socio-tropic considerations have stronger impact on opinion, when given both, socio-tropic considerations seem to dominate
- Results seem very similar within the 5 EU countries

Moderators

In the PAP we specify some moderators that we think should matter for all 6 policies (ex: education), and some that are policy-specific (ex: app use, concern about workplace monitoring, union trust)

We find very small to no effects among the most likely candidates of "objective" moderators

Moderators: Example

Recall H2: Individuals at higher objective risks from technology are more supportive of technological regulation when policy beneficiaries are made salient.

We find no clear support

Table 5: Beneficiaries mentioned in the items: Age and education

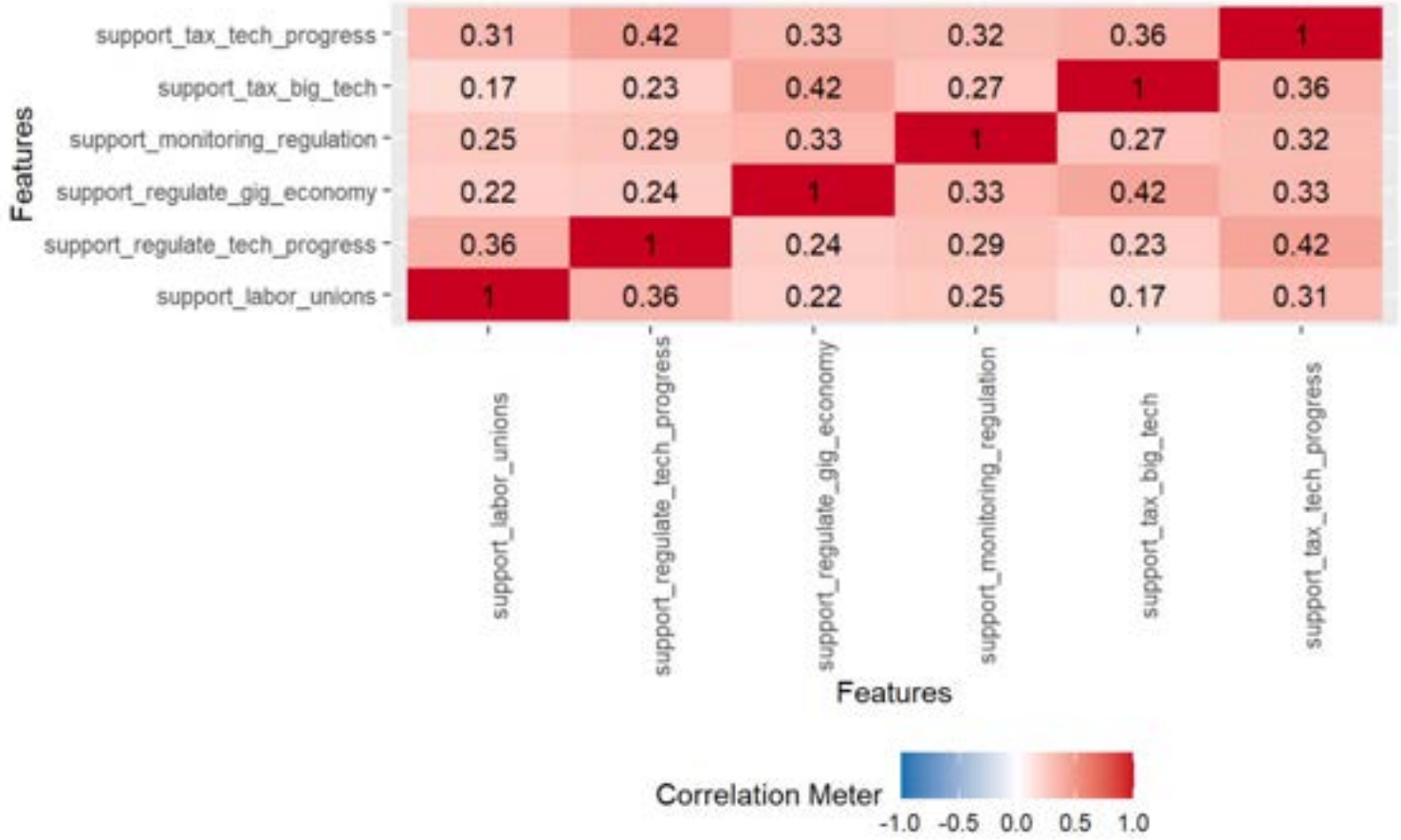
	Trade unions 1	Trade unions 2	Regulation 1	Regulation 2
Distributional frame * Age: 45-64	0.011		0.021	
	(0.012)		(0.012)	
Distributional frame * Low education	0.012		-0.008	
	(0.013)		(0.014)	
Distributional frame	-0.017		0.025	
	(0.012)		(0.013)	
Economic growth frame * Age: 45-64		-0.020		-0.011
		(0.011)		(0.012)
Economic growth frame * Low education		0.017		-0.006
		(0.013)		(0.014)
Economic growth frame		-0.092 ***		-0.063 ***
		(0.012)		(0.014)
Age: 45+	-0.034 ***	-0.038 ***	-0.023 *	-0.023 *
	(0.009)	(0.008)	(0.009)	(0.009)
Low education	0.008	0.012	0.031 **	0.034 **
	(0.010)	(0.009)	(0.010)	(0.010)
Baseline support (intercept)	0.662 ***	0.638 ***	0.577 ***	0.576 ***
	(0.014)	(0.013)	(0.014)	(0.015)
N	6880	8787	8783	8787
R2	0.026	0.055	0.022	0.035
logLik	86.927	-285.223	-1007.477	-1189.533
AIC	-133.854	612.446	2056.953	2421.067

Summary

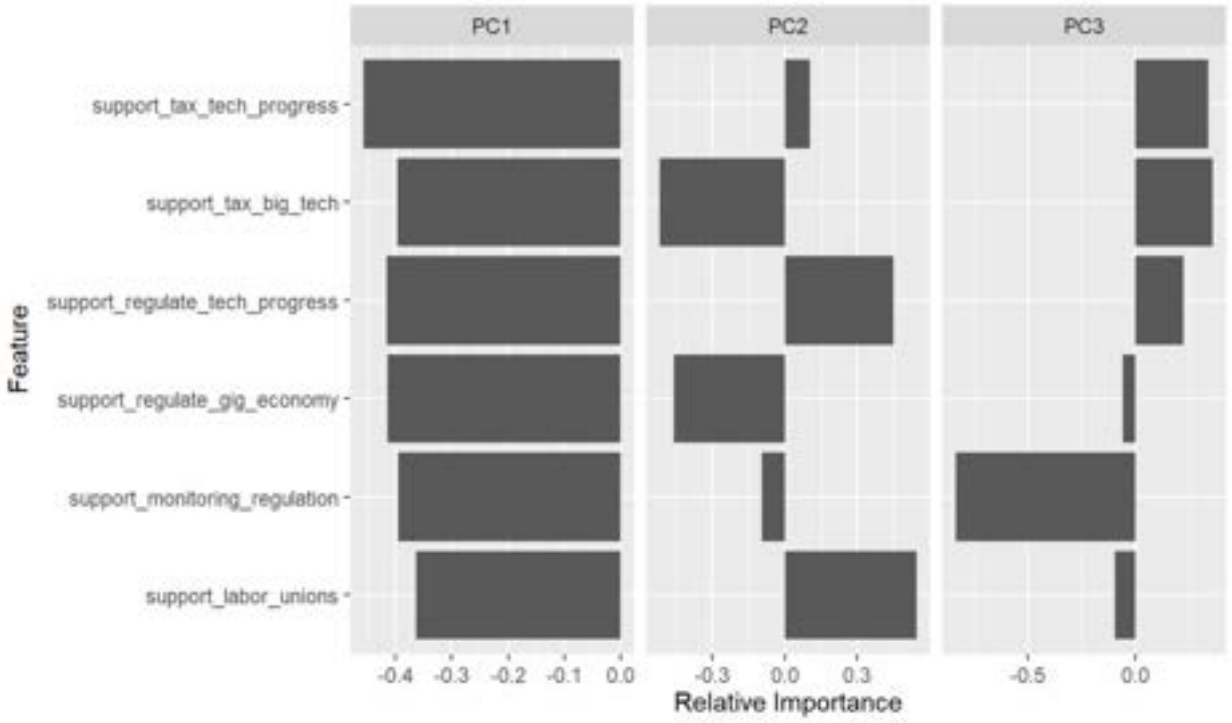
- Overall we find support for greater technology regulation in economic domains
- How are attitudes structured?:
  - Our questions seem to capture different aspects of attitudes
  - Demographic variables don't predict very well who supports these policies
  - Subjective concerns seem more important at structuring attitudes
- Socio-tropic narratives are more powerful than distributional concerns at changing attitudes
- But sensible objective indicators don't seem to moderate treatment effects or drive results

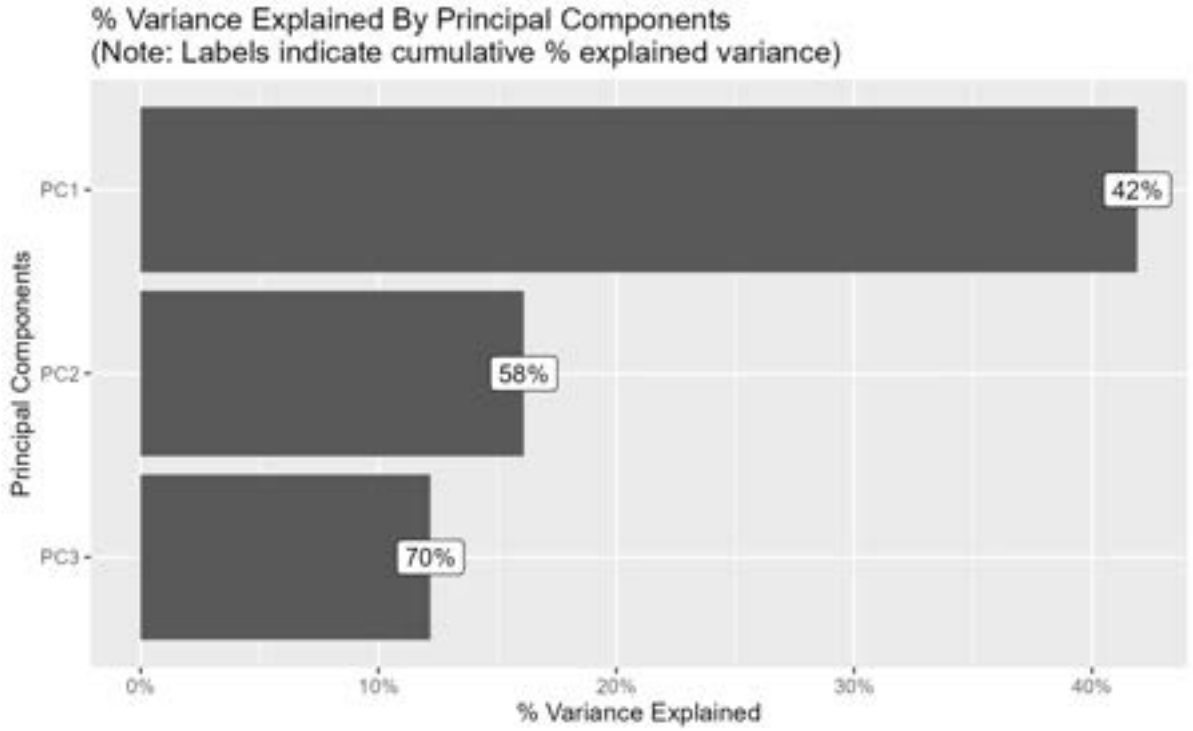
Thank you!

Data structure: correlation between variables (all conditions)



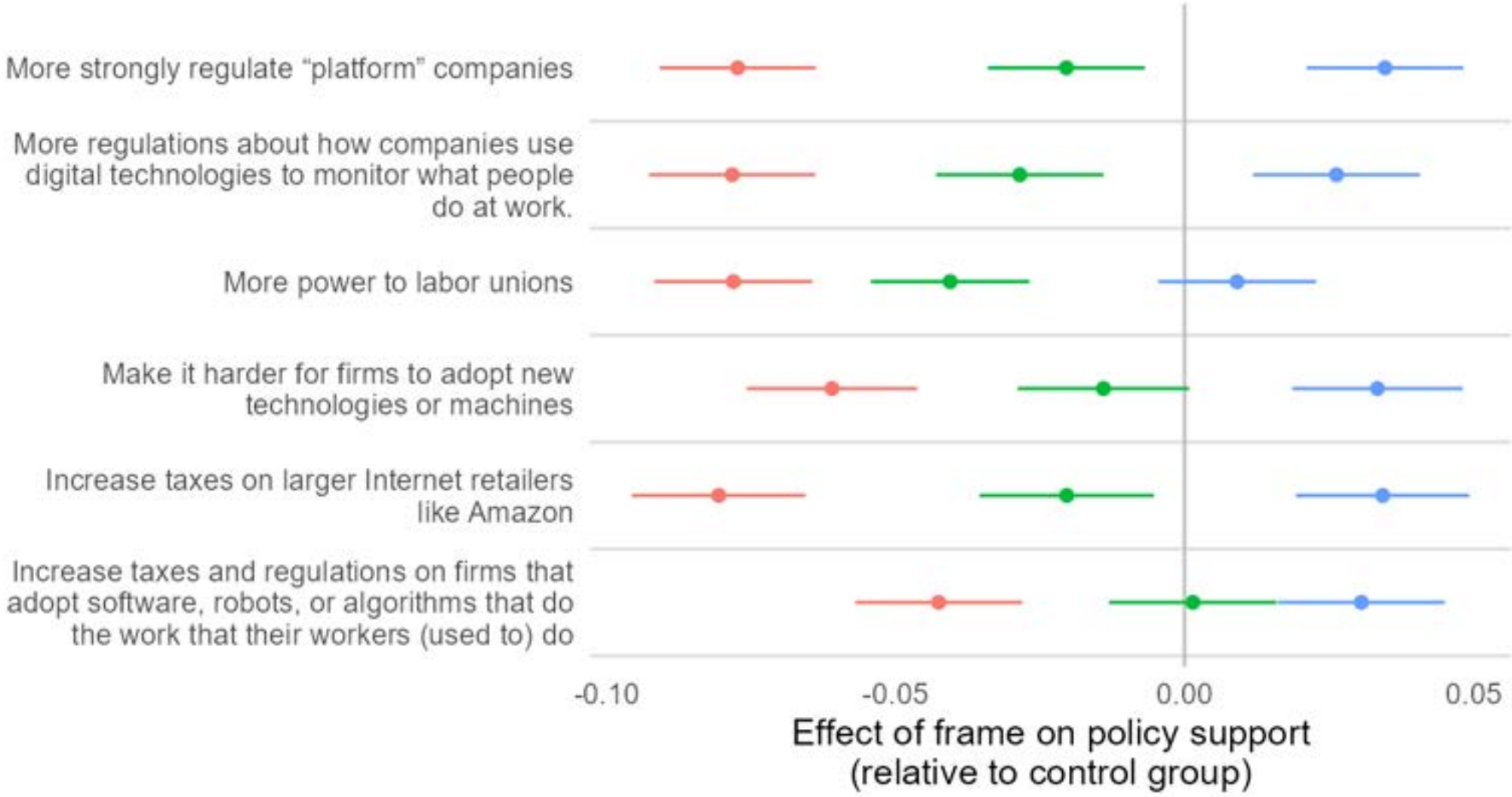
Data structure: Principal components



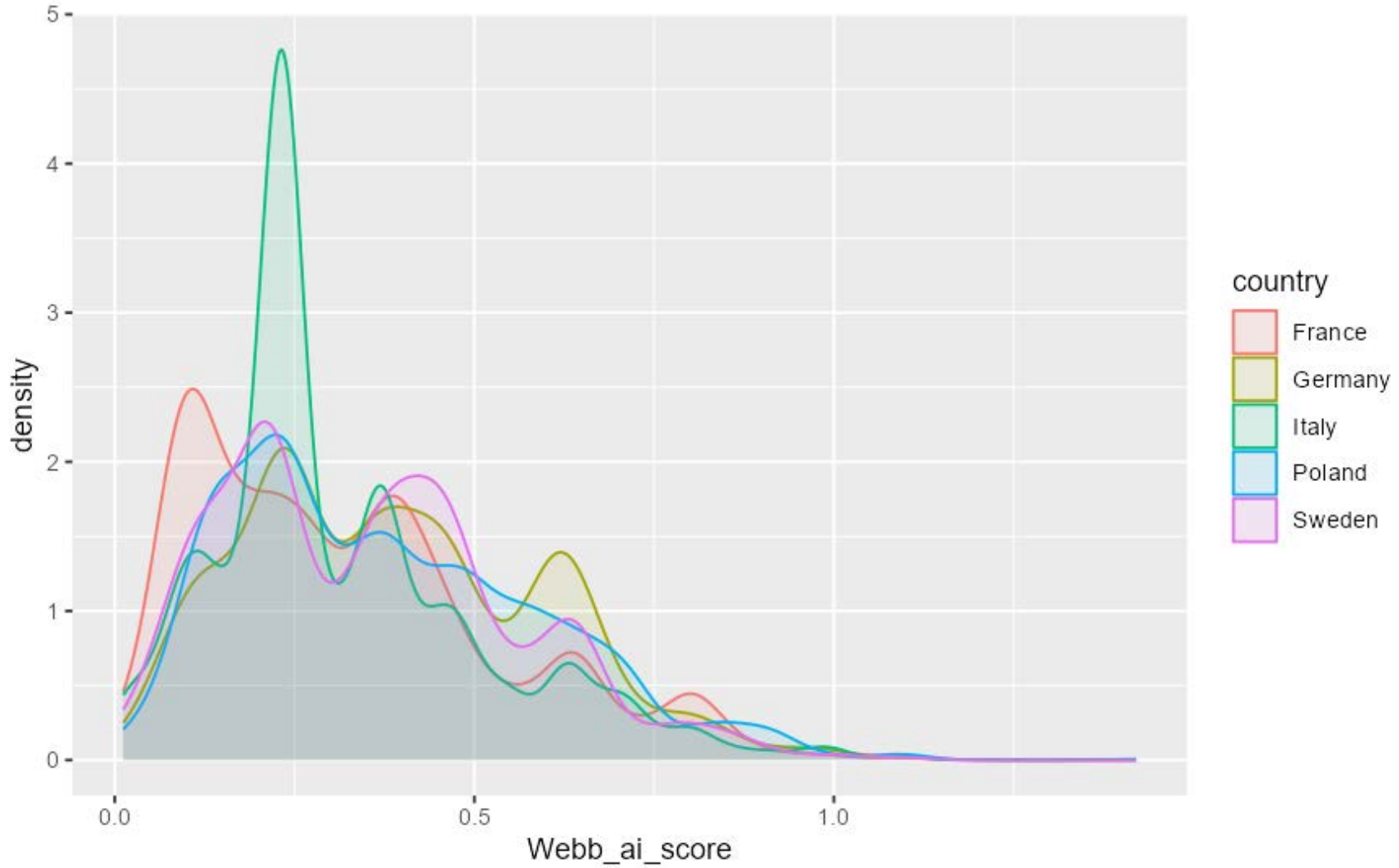


First component: General agreement with the policies
Second component: Attitudes toward big tech (Amazon, gig economy)
Third component: Monitoring
→ Seems to suggest that three of the questions are more clearly about labor market risks (unions, regulate, tax algorithms), while the other three capture attitudes on different dimensions

Treatment results with demographic controls



Webb AI


density
5
4
3
2
1
0
0.0
0.5
1.0
Webb_ai_score
country
France
Germany
Italy
Poland
Sweden