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NETWORK FOR THE ADVANCEMENT OF SOCIAL AND POLITICAL STUDIES

# Political belief systems as networks of attitudes: conceptualization and implications

Arturo Bertero[1]

[1]Ph.D. Student at POLS (NASP)
University of Milan

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# Contents

1. **Background**
2. **Attitudes toward inequality**
3. **Italian political belief system (IPBS)**
4. **Propensity to vote (PTV) in Europe between 1989 and 2019**

# 1: Political belief systems in Political Science

- Attitudes are part of a broader **structure** of beliefs (Converse, 1964)
- Describing this structure, scholars **avoid** using the term **ideology**:
  - "A term like ideology has been thoroughly muddled by diverse uses" (Ibid., p.3)
  - "The most elusive concept in the whole of social science" (McLellan, 1986, p.1), characterized by "semantic promiscuity" (Gerring, 1997, p. 957)
- Attitudes are part of a **Belief System**:
  - "Configuration of **ideas** and **attitudes** in which the elements are bound together by some form of **constraint** or functional interdependence" (Converse, 1964, p.3).
  - Despite the network conceptualization, Converse studied Belief systems through **few pairwise correlations**
  - More recent contribution computed **correlation networks** from survey items (Boutyline and Vaisey, 2017; DellaPosta, 2020)

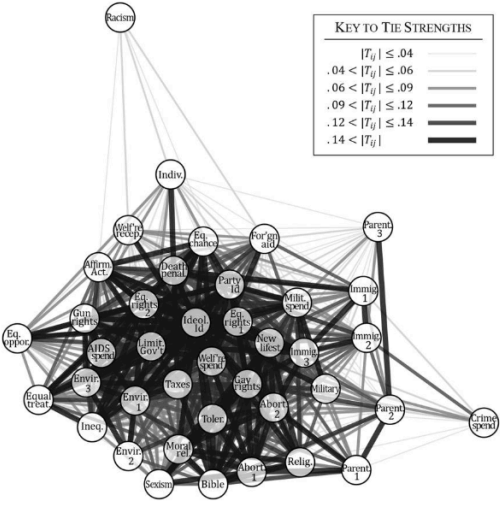



Figure: Correlation network of political attitudes (Boutyline and Vaisey, 2017). Estimated edges are possibly **spurious**, and **not signed**

# 2: Heterogeneity of construals

- Scholars from cultural sociology highlighted the **heterogeneity** of survey samples (DiMaggio and Goldberg, 2018; DiMaggio et al., 2018)
  - The meaning of a survey item varies across respondents, as they **structure** their attitudes in **different** ways
  - As a consequence, full **sample** analyses can be **misleading**
  - Importantly, most studies on belief systems estimate an **average** network model from a given sample

- Important contributions showed different **construals** of political attitudes (Baldassarri and Goldberg, 2014; Daenekindt et al., 2017)

- These works use **Correlational Class Analysis** (Boutyline, 2017) or other variations (e.g.: RCA, from Goldberg, 2011)

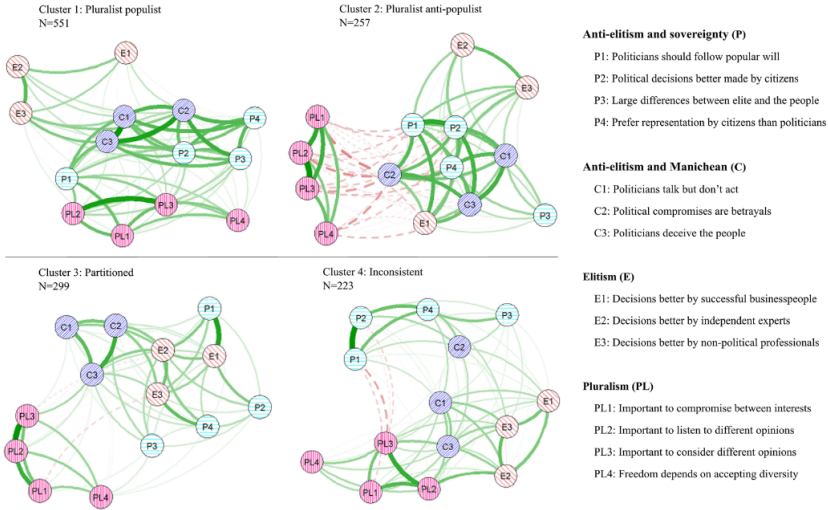



Figure: Correlation networks of CCA sample partitions (Dekeyser et al., 2021). Networks are dense, signed, and used as a **visualization** tool only

# 3: Attitude network in Psychology

- The **Causal Attitude Network** model seeks to study a single attitude as a network of connected evaluative reactions (Dalege et al., 2016)
- A **measurement** approach alternative to that of the latent variable model
- This stream of research relies on **Pairwise Random Markov Field** [PRMF] models (Lauritzen, 1996)

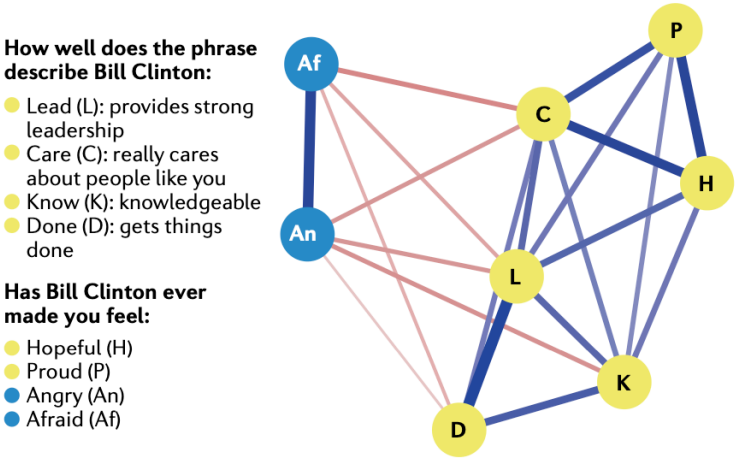



Figure: PRMF of attitude towards Clinton (Borsboom et al., 2021). Network are sparse and do model **signed** edges

# Research Question

- **RQ:** How can these three streams of research be combined to study political belief systems?
- **Aims:**
  1. Contribute to formalize a networked theory of belief systems
  2. Outline multi-methods analytical strategies
- **Relevance:** Studying attitudinal structures enriches our understanding of attitudinal levels and gives us insights on their dynamics

# Project Overview

**Three-stage analytical strategy**

**1. Attitudes towards inequality**

*What is the structure of a single attitude?*

**2. Italian Political Belief System**

*How do political attitudes relate?*

**3. Comparative and Longitudinal analysis**

*How do political belief systems differ between countries?*

# Inequality Belief Systems: What They look like, How to Study Them, and Why They Matter

A. Bertero, G. Franetovic, J. Mijs

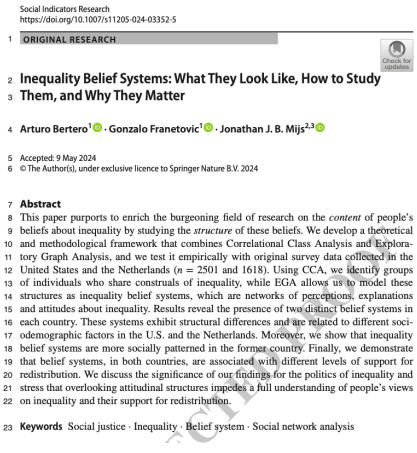
# Introduction

**Background:**

- Enduring attention on objective inequality
- A new focus on its subjective dimension

**Our contribution:**

- Inequality belief system
- Structural heterogeneity
- Country-comparison (USA and NL)



Social Indicators Research
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ORIGINAL RESEARCH

Check for updates

**Inequality Belief Systems: What They Look Like, How to Study Them, and Why They Matter**

Arturo Bertero[1] · Gonzalo Franetovic[1] · Jonathan J. B. Mijs[2,3]

Accepted: 9 May 2024


**Abstract**
This paper purports to enrich the burgeoning field of research on the *content* of people's beliefs about inequality by studying the *structure* of these beliefs. We develop a theoretical and methodological framework that combines Correlational Class Analysis and Exploratory Graph Analysis, and we test it empirically with original survey data collected in the United States and the Netherlands ($n$ = 2501 and 1618). Using CCA, we identify groups of individuals who share construals of inequality, while EGA allows us to model these structures as inequality belief systems, which are networks of perceptions, explanations and attitudes about inequality. Results reveal the presence of two distinct belief systems in each country. These systems exhibit structural differences and are related to different sociodemographic factors in the U.S. and the Netherlands. Moreover, we show that inequality belief systems are more socially patterned in the former country. Finally, we demonstrate that belief systems, in both countries, are associated with different levels of support for redistribution. We discuss the significance of our findings for the politics of inequality and stress that overlooking attitudinal structures impedes a full understanding of people's views on inequality and their support for redistribution.

**Keywords** Social justice · Inequality · Belief system · Social network analysis

# Data

| Label | Item |
|---|---|
| p_income | Differences in income in (country) are too large |
| p_wealth | Differences in wealth in (country) are too large |
| p_poor | Children in poor families do not have the same opportunities for getting ahead as children in rich families |
| p_black | (Black/minority-group) children do not have the same opportunities for getting ahead as (white/majority-group) children |
| e_weafam | How important would you say is coming from a wealthy family |
| e_edupar | How important would you say is having highly educated parents |
| e_edu | How important would you say is having a good education |
| e_work | How important would you say is hard work |
| e_people | How important would you say is knowing the right people |
| e_race | How important would you say is race or skin color |
| e_migra | How important would you say is legal or immigration status |
| e_relig | How important would you say is religion |
| e_sex | How important would you say is being born a man or woman |
| a_merit | Society is fair when hard-working people earn more than others |
| a_diversity | (Racial diversity/immigration) makes (country) stronger |
| a_equality | For society to be fair, differences in people's standard of living should be small |

Table: Label and wording of each item. Samples: USA = 2501 (Prolific); NL = 1618 (LISS)

# Analytical strategy

**Four-stage analytical strategy applied symmetrically in the Netherlands and the United States**

**1. Detect construals of inequality**

**CCA**
*Pearson correlations*

**2. Model construals as belief system**

**EGA**
*Regularized partial correlations*

**3. Socio-demographic determinants of belief systems**

**Logit models**
*on belief system type*

**4. Association between belief systems and redistribution**

**OLS models**
*on support for redistribution*

# Method 1: CCA

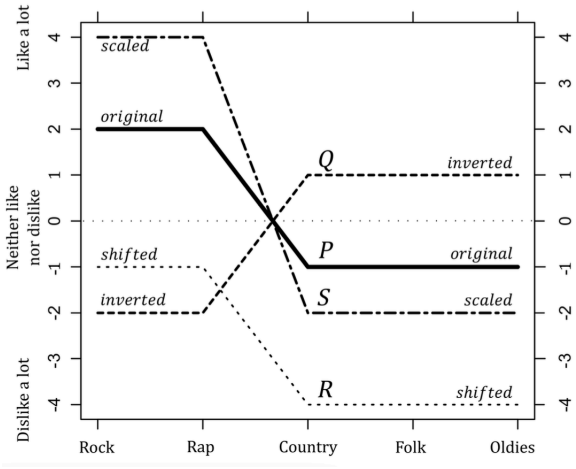
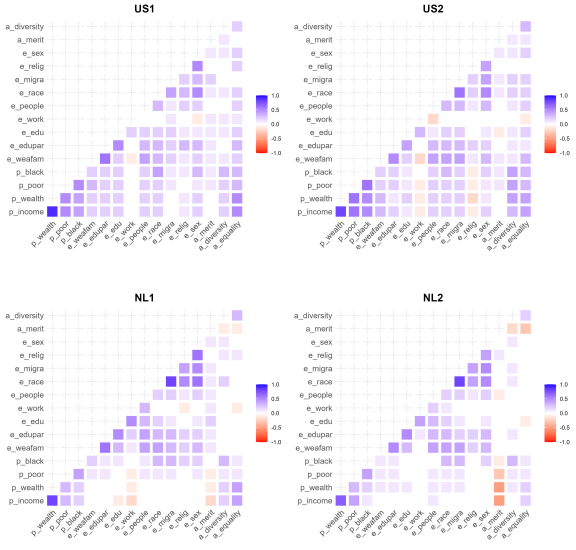



Figure: Functioning of CCA (Boutyline, 2017)




- Two construals of similar size (US1: 53.1%, NL1: 52.7%) in each country.
- **Within-country differences:**
  1. **U.S.:** hard work and religion
  2. **NL:** meritocracy
- **Between-country differences:**
  1. Americans show higher structural heterogeneity
  2. Americans see no conflict between meritocratic principles and egalitarian beliefs

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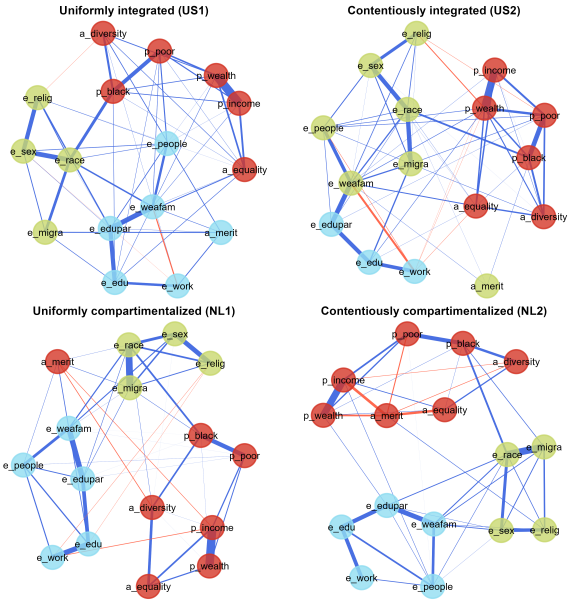
# Method 2: EGA

1. **GGM** between the selected survey variables.
   - *Covariance Matrix* Estimation: calculate the **covariance** between each pair of variables
   - *Precision Matrix* Estimation: equal to the inverse of the covariance matrix. It encodes the **partial correlations** between variables.
   - *L1 regularization (LASSO)*: **Shrinks weaker edges** towards zero, in order to avoid working with spurious partial correlation, and to increase parsimony.
   - *Model Selection:* Determine the **optimal level of regularization**. This is done minimizing Bayesian Information Criterion (BIC).
   - Interpretable as **Partial Correlation** networks.
2. **Walktrap Community detection algorithm**: applied on the absolute weighted adjacency matrix obtained with the GGM. It identifies clusters. It is based on **random walks** with four steps. Communities are defined based on how likely the random walks are to remain within the same community.




- Perceptions, explanations, and attitudes towards inequality form **belief systems**
- **Same dimensionality:** views (red), factors (blue), and identities (green)
- US1 and NL1 are uniform, US2 and NL2 are contentious
- US1 and US2 are integrated, NL1 and NL2 are compartimentalized

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# Method 3: Logit

$$P(Y = 1|X_1, X_2, \ldots, X_n) = \frac{\exp\left(\beta_0 + \sum_{i=1}^{n} \beta_i X_i\right)}{1 + \exp\left(\beta_0 + \sum_{i=1}^{n} \beta_i X_i\right)} \quad (1)$$

- $P(Y = 1|X_1, X_2, \ldots, X_n)$ = probability of belonging to CCA group 1
- $X_1, X_2, \ldots, X_n$; $X_i$ = sociodemographic variables
- $i = 1, 2, \ldots, n$; $\beta_0$ = intercept
- $\beta_i$ = coefficients for the sociodemographic

| | Contentiously integrated (US2) Odds Ratios | Contentiously compartimentalized (NL2) Odds Ratios |
|---|---|---|
| Gender: Male | 0.86 | 1.25 * |
| | (0.72 1.04) | (1.00 1.56) |
| Gender: Other | 1.90 | |
| | (0.68 6.29) | |
| Age: 28-37 years old | 1.09 | 0.83 |
| | (0.82 1.46) | (0.49 1.42) |
| Age: 38-47 years old | 1.50 ** | 1.11 |
| | (1.10 2.06) | (0.64 1.91) |
| Age: 48-57 years old | 1.26 | 1.07 |
| | (0.90 1.75) | (0.65 1.78) |
| Age: 58+ years old | 1.51 *** | 1.23 |
| | (1.14 2.01) | (0.77 1.96) |
| Origin: Foreign-born | 0.82 | 0.94 |
| | (0.58 1.15) | (0.62 1.44) |
| Race: White | 0.85 | 0.91 |
| | (0.69 1.06) | (0.62 1.35) |
| Education: Some college | 1.46 ** | 0.78 |
| | (1.05 2.04) | (0.54 1.14) |
| Education: College or more | 1.56 *** | 0.92 |
| | (1.15 2.12) | (0.72 1.19) |
| Work status: Employed | 0.92 | 0.84 |
| | (0.74 1.14) | (0.64 1.09) |
| Household income: Medium | 0.56 *** | 1.01 |
| | (0.42 0.75) | (0.78 1.31) |
| Household income: High | 0.46 *** | 0.44 *** |
| | (0.33 0.63) | (0.24 0.78) |
| Marital status: Married | 0.94 | 1.00 |
| | (0.76 1.16) | (0.80 1.26) |
| Political ideology | 0.71 *** | 0.77 *** |
| | (0.69 0.74) | (0.73 0.81) |
| Religion: None or not declared | 2.23 *** | 0.77 |
| | (1.71 2.90) | (0.56 1.07) |
| Religion: Other | 1.55 *** | 0.69 |
| | (1.15 2.08) | (0.31 1.54) |
| Religion: Protestant | 1.40 ** | 0.91 |
| | (1.05 1.87) | (0.60 1.37) |
| (Intercept) | 2.45 *** | 4.54 *** |
| | (1.53 3.92) | (2.34 8.88) |
| Observations | 2501 | 1618 |
| R2 Tjur | 0.238 | 0.086 |
| AIC | 2849.095 | 2129.514 |

* p<0.1, ** p<0.05, *** p<0.01

- Attitudes towards inequality are more **socially patterned** in the US
- People with low hh income, higher age, higher education, non Catholic religion, and progressive ideology, tend to have the **US2** belief system
- People with high income and right-wing political ideology tend to have the **NL1** belief system.

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# Method 4: OLS

$$Y = \beta_0 + \sum_{i=1}^{n_1} \beta_{1i} X_{\text{CCA}_i} + \sum_{j=1}^{n_2} \beta_{2j} X_{\text{EGA}_j} + \sum_{k=1}^{n_3} \beta_{3k} X_{\text{Sociodem}_k} + \epsilon \quad (2)$$

- $Y =$ support for redistribution
- $X_{CCA_i} =$ CCA groups
- $X_{EGA_j} =$ EGA community indexes
- $X_{Sociodem_k}$ are the sociodemographic variables

| | M1-NL Estimates | M2-NL Estimates | M3-NL Estimates |
|---|---|---|---|
| CCA group: NL2 | 1.41 *** | | 0.87 *** |
| | (1.29 - 1.54) | | (0.76 0.97) |
| EGA index: Views community | | 1.19 *** | 1.09 *** |
| | | (1.11 - 1.27) | (1.01 1.16) |
| EGA index: Factors community | | 0.05 | -0.01 |
| | | (-0.05 0.16) | (-0.11 0.09) |
| EGA index: Identities community | | -0.02 | -0.12 *** |
| | | (-0.10 0.06) | (-0.19 -0.04) |
| (Intercept) | 2.96 *** | 0.59 * | -0.06 |
| | (2.76 - 3.15) | (-0.01 1.19) | (-0.62 0.51) |
| Sociodemographic controls[1] | No | Yes | Yes |
| Observations | 1618 | 1618 | 1618 |
| R2 / R2 adjusted | 0.230 / 0.229 | 0.486 / 0.480 | 0.559 / 0.553 |
| AIC | 5429.999 | 4812.367 | 4567.551 |

* p<0.1, ** p<0.05, *** p<0.01

| | M1-US Estimates | M2-US Estimates | M3-US Estimates |
|---|---|---|---|
| CCA group: US2 | 1.65 *** | | 0.10 |
| | (1.52 1.78) | | (-0.03 0.23) |
| EGA index: Views community | | 1.02 *** | 1.01 *** |
| | | (0.97 1.08) | (0.95 1.06) |
| EGA index: Factors community | | -0.00 | 0.03 |
| | | (-0.10 0.09) | (-0.08 0.13) |
| EGA index: Identities community | | 0.20 *** | 0.18 *** |
| | | (0.14 0.27) | (0.12 0.25) |
| (Intercept) | 2.53 *** | -0.50 * | -0.63 ** |
| | (2.33 2.74) | (-1.00 0.00) | (-1.15 -0.10) |
| Sociodemographic controls[1] | No | Yes | Yes |
| Observations | 2501 | 2501 | 2501 |
| R2 / R2 adjusted | 0.200 / 0.199 | 0.614 / 0.611 | 0.615 / 0.611 |
| AIC | 9606.196 | 7820.569 | 7820.155 |

* p<0.1, ** p<0.05, *** p<0.01

- Membership to type 2 belief system predict **greater support** for redistribution in the NL, not in the US
- In the US, content trumps structure

# The Italian Political Belief System

A. Bertero

# Introduction

**Background:**

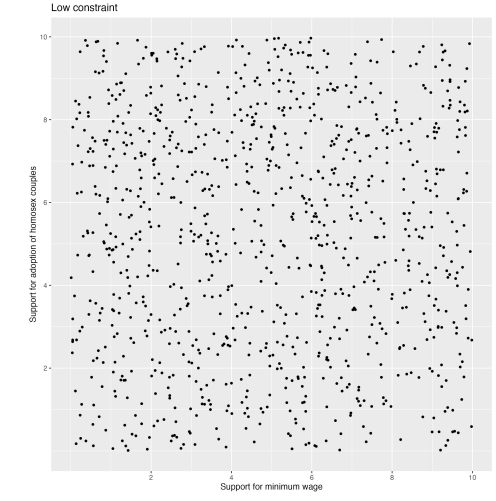
- Scholar who focused on political belief systems are interested on their *constraint*
- It is the mean of the absolute value of network edges
- Where edges represent absolute pairwise correlation coefficients
- **Top-down model:** political elites are cognitive authorities sending cues to the public (Martin, 2000; 2002). Party polarization (Gonthier and Guerra 2023) and institutionalization (Keskinturk, 2022)
- At the **individual level**, it is associated with political interest (Brandt et al., 2019)

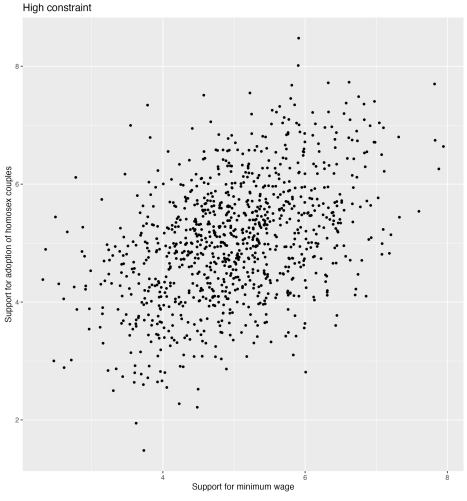
**My contribution:**

- Decomposition of constraint: tightness and consensus
- Investigation of the determinants of tightness
- Explore consensus of Italian political attitudes

# Constraint

- The amount of **organization/non randomness/restriction of movement** within the *belief space*



# Decomposition of Constraint

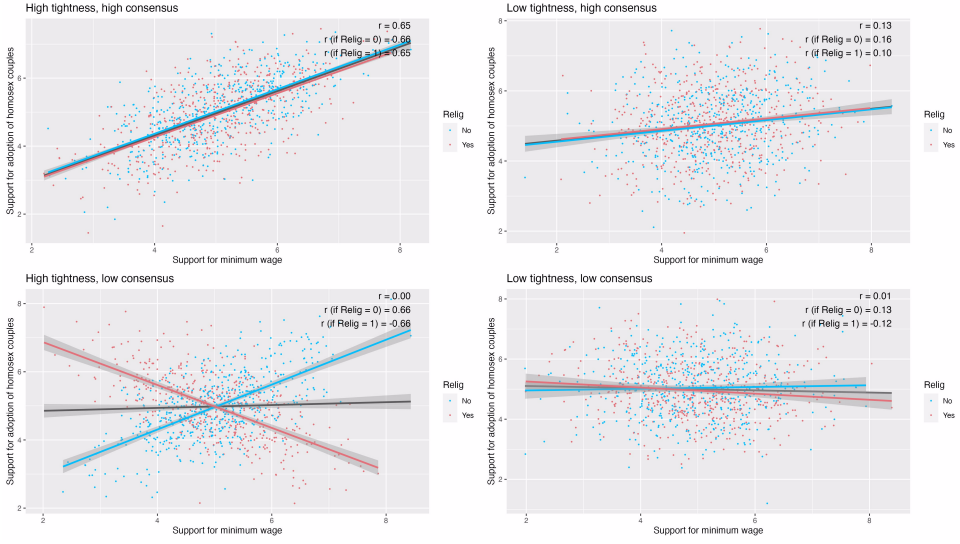
Even in an oversimplified belief space, two variables are not enough to study constraint accurately. I argue it is a **bi-dimensional construct**

Constrain as **Tightness**

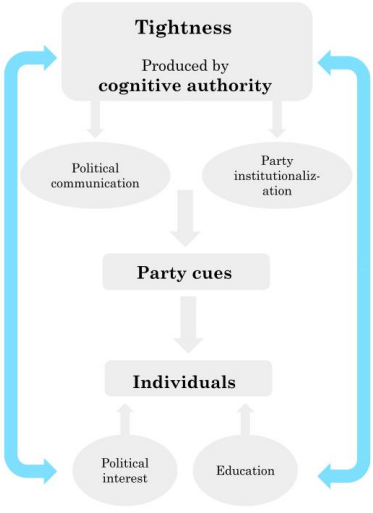
- Amount of **interdependence** between political attitudes
- Extent to which attitudes *predict* each other

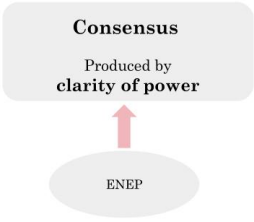
Constrain as **Consensus**

- Level of **relational homogeneity** of the belief space
- Extent to which people *organize* their attitudes in a *similar* way


High tightness, high consensus
r = 0.65
r (if Relig = 0) = 0.66
r (if Relig = 1) = 0.65
Low tightness, high consensus
r = 0.13
r (if Relig = 0) = 0.16
r (if Relig = 1) = 0.10
High tightness, low consensus
r =.0.00
r (if Relig = 0) = 0.66
r (if Relig = 1) = -0.66
Low tightness, low consensus
r = 0.01
r (if Relig = 0) = 0.13
r (if Relig = 1) = -0.12
Support for adoption of homosex couples
Support for minimum wage
Relig
No
Yes

# Hypotheses




**H1:** the belief system of people with high *political interest* is **tighter** than that of people with low political interest

**H2:** the belief system of people with high *education* is **tighter** than that of people with low political interest

**H3:** the belief system of *voters* of the left, right and 5SM show low **consensus**

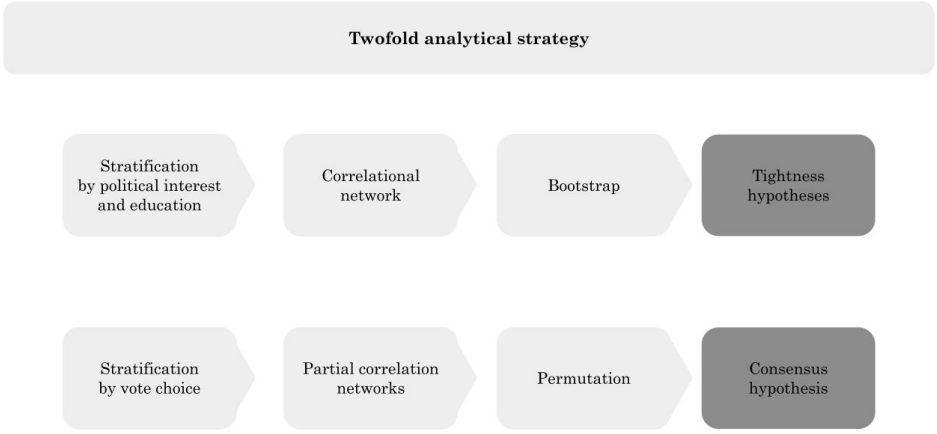
# Data

| Label | Question |
|---|---|
| L_R | Many people when talking about politics use the terms "left" and "right." Thinking about your political views, where do you stand? |
| PTV_PD | [Among the various parties we have in Italy, each would like to have your vote in the future. Regardless of how you plan to vote in the next election,] how likely are you to vote for the Partito Democratico in the future? |
| PTV_FI | [...] how likely are you to vote for Forza Italia in the future? |
| PTV_L | [...] how likely are you to vote for Lega in the future? |
| PTV_M5S | [...] how likely are you to vote for the 5 Stars Movement in the future? |
| PTV_FDI | [...] how likely are you to vote for Fratelli d'Italia in the future? |
| adopt | [On political issues people have different opinions. What is your level of agreement with the following statements? Do you strongly agree, somewhat agree, slightly agree, or strongly disagree?] Gay and lesbian couples should have the same right to adopt a child as heterosexual couples |
| abort* | [...] Abortion must be made more difficult |
| eutha | [...] Euthanasia should be legal |
| marria | [...] Legalization of same-sex marriage is a good thing |
| redis | [Now we would like to know your opinion on some political issues. For each of the following statements, indicate your position on a scale ranging from 1=completely disagree, to 6=completely agree. If your opinion is roughly in the middle between the two, you may choose any other point on the scale.] It is necessary to reduce income differences between those with high incomes and those with low incomes. |
| flat_t | [...] It is necessary to introduce a flat tax (fixed tax rate, regardless of income). |
| m_wage | [...] A minimum hourly wage must be introduced by law. |
| cit_in | [...] It is necessary to maintain a guaranteed citizenship income for those below the poverty line. |
| globa* | [...] It is necessary to limit economic globalization. |
| immig | [...] It is necessary to give citizenship more easily to the children of legal immigrants born and raised in Italy. |
| big_go | Some say taxes should be reduced even at the cost of reducing public services. Others say services should be expanded even at the cost of raising taxes. Where would you place your opinion on a scale of 1 to 7? |
| pub_pri* | Resources to counter the negative effects of unemployment are limited. In such a situation, do you think it is more effective to give subsidies to people in economic hardship or to help businesses that hire? Please indicate where you would place your opinion on a scale of 1 to 7. |
| ukrai* | Thinking about the war in Ukraine, do you favor or oppose supplying arms to Ukraine |

Created with Datawrapper

Figure: ResPOnsE COVID-19 data; fielded Sept 25 2022; $n = 1149$

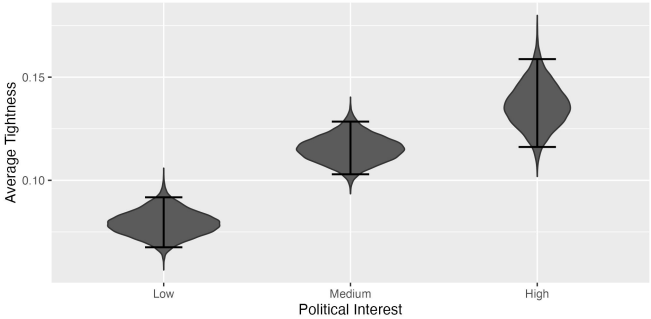
# Analytical strategy

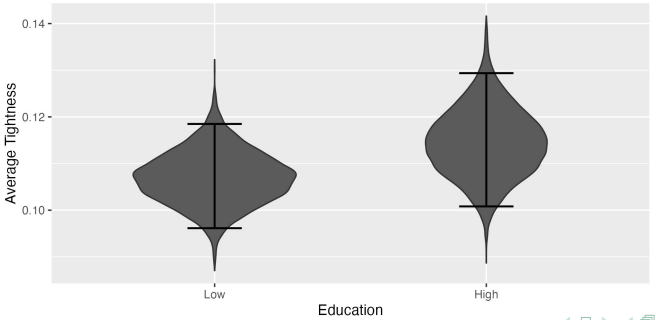


# Network estimation

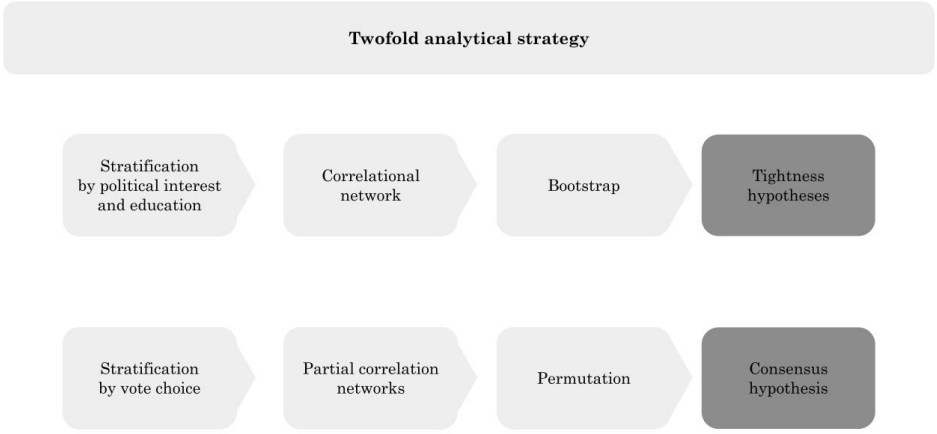
1. **Correlational network** [Social sciences, e.g.: Boutyline and Vaisey, 2017]
   - Attitudes as nodes, their *squared correlations* as edges
   - *Tightness* is measured as the mean value of all edge weights

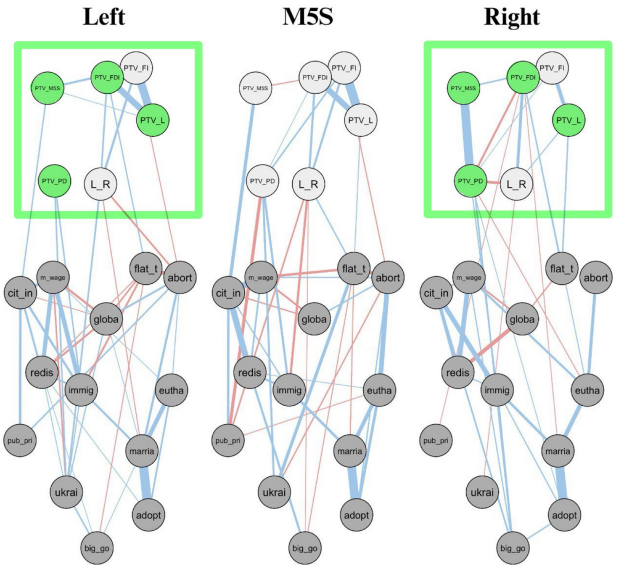
2. **Partial correlation network** [Psychology, e.g.: Borsboom et al. 2021]
   - *Partial correlation* matrix: edges indicative of unique variance shared by each pair of attitudes
   - Graphical lasso *regularization* to exclude weaker edges from the model, increasing its specificity (Epskamp, 2018)


Average Tightness
0.15
0.10
Low
Medium
High
Political Interest

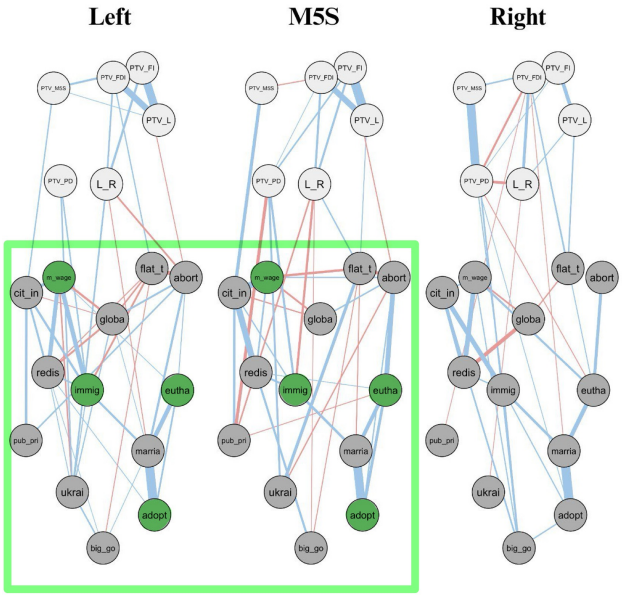

Average Tightness
0.14
0.12
0.10
Low
High
Education

# Analytical strategy

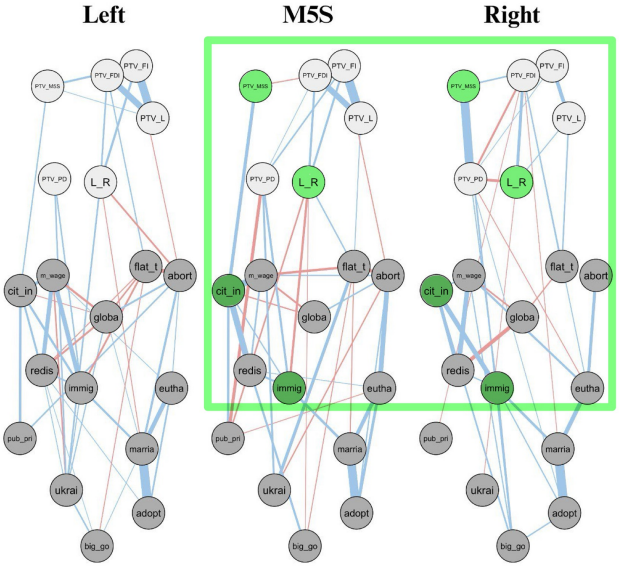





- Left and right supporters organize their propensity to vote differently
- PD and M5S are unlinked for the left
- FDI and L are unlinked for the right




- Left and M5S supporters also organize their political attitudes differently
- Support for minimum wage and immigration are uncorrelated for M5S' supporters




- Right and M5S supporters organize their (1) propensity to vote, (2) political attitudes differently. Moreover, they also pack issues and propensity to vote in a different way.
- Right wing supporters do not show an association between citizenship income and propensity to vote for the M5S
- Unlike right wing voters, those of the M5S perceive that being against migrants is correlated with being rightist

# Consequences and determinants of PTV network characteristics

A. Bertero, M. Brandt

# Introduction

**Background:**

- Voting behavior has long been analyzed through **self-reported vote choice**
- Propensity To Vote (PTV) represented a huge breakthrough (van der Eijk et al., 2006)
- However, these are analyzed with multidimensional scaling, or **simplified** to dummies
- We consider PTV as behavioral intentions embedded in a belief system regarding vote choice

**Our contribution:**

- The **structure** of PTV varies across countries and is predicted by **party institutionalization**
- The structure of PTV **predicts turnout**
- PTV networks deal with the **whole population** of relevant variables (key criticism from Neal and Neal, 2023; Neal et al., 2022)

# Background

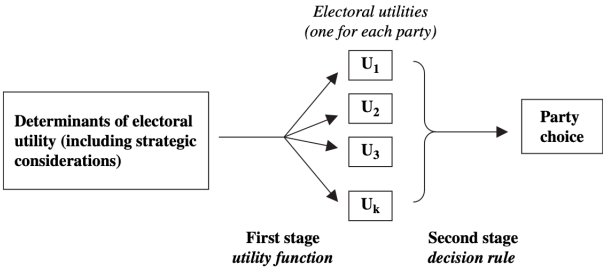
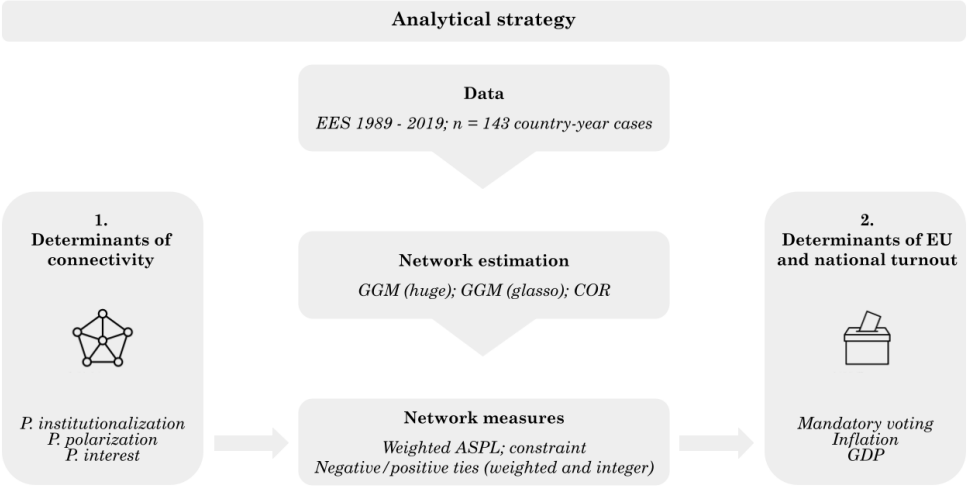
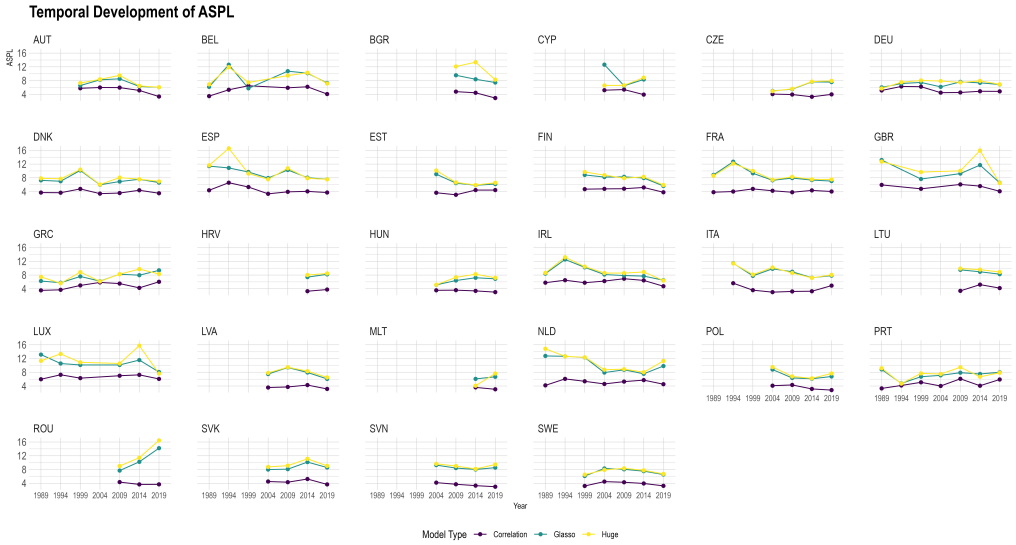


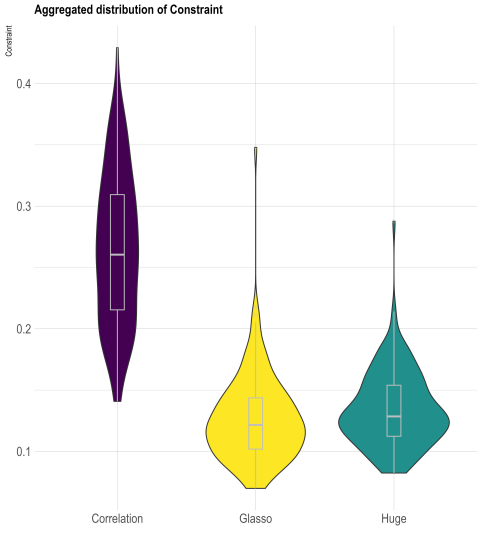

Figure: van der Eijk et al. 2006

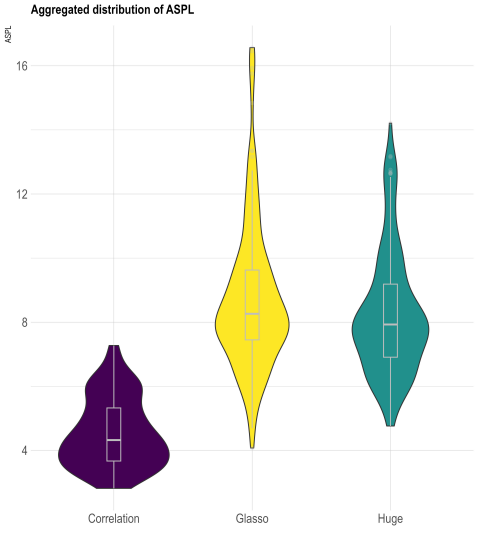
- PTV **validly** measure electoral utilities
- *"Some people are quite certain that they will always vote for the same party. Others reconsider in each case to which party they will give their vote. I shall mention a number of parties. Would you indicate for each party how probable it is that you will ever vote for that party?"*
- PTV scores are **non-ipsative**.
- According to the authors: parties are valued independently
- We think: they are embedded in a belief system which may or may not be constrained

# Analytical strategy




Temporal Development of ASPL
AUT
BEL
BGR
CYP
CZE
DEU
DNK
ESP
EST
FIN
FRA
GBR
GRC
HRV
HUN
IRL
ITA
LTU
LUX
LVA
MLT
NLD
POL
PRT
ROU
SVK
SVN
SWE
ASPL
16
12
8
4
1989 1994 1999 2004 2009 2014 2019
Year
Model Type
Correlation
Glasso
Huge


Aggregated distribution of Constraint
Constraint
0.4
0.3
0.2
0.1
Correlation
Glasso
Huge


Aggregated distribution of ASPL
ASPL
16
12
8
4
Correlation
Glasso
Huge

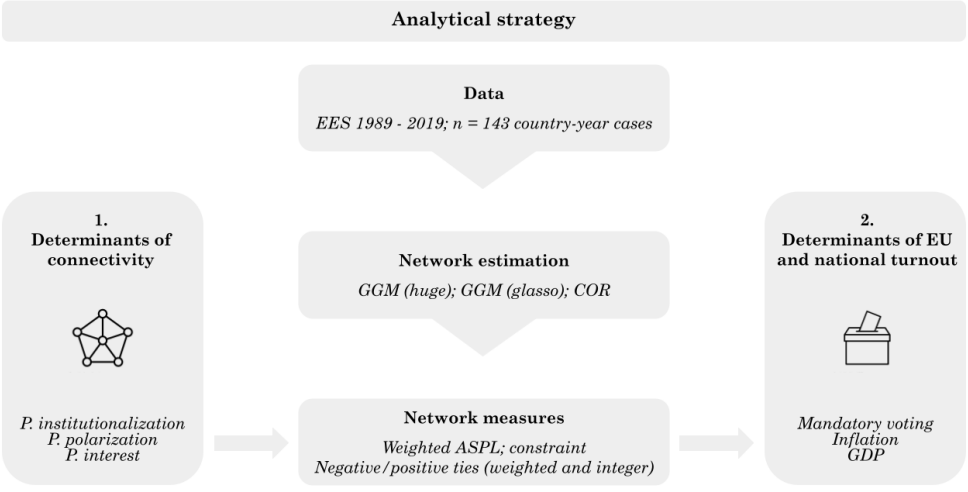
**OLS fixed effects (country and years) on ASPL of PTV networks**

| | M1 (Baseline) | M2 (Controls) |
|---|---|---|
| | *Estimates* | *Estimates* |
| Party institutionalization | -0.90 *** | -0.88 *** |
| | (-1.42 – -0.38) | (-1.42 – -0.33) |
| Party polarization | -0.66 ** | -0.68 ** |
| | (-1.21 – -0.12) | (-1.23 – -0.14) |
| Political interest | 0.09 | 0.12 |
| | (-0.18 – 0.36) | (-0.18 – 0.43) |
| Observations | 138 | 138 |
| $R^2$ / $R^2$ adjusted | 0.539 / 0.375 | 0.551 / 0.373 |
| AIC | -78.009 | -75.734 |

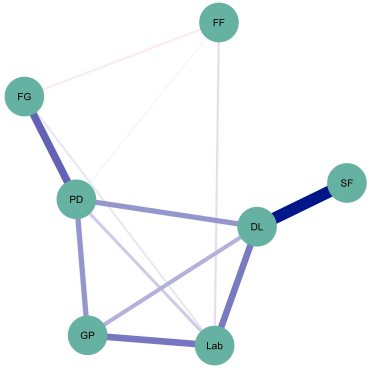
** p<0.1 ** p<0.05 *** p<0.01*

- Controls: country, year, ENEP, gallagher, ihdi
- Results hold for constraint
- Results hold when estimating glasso or correlational networks

# Analytical strategy

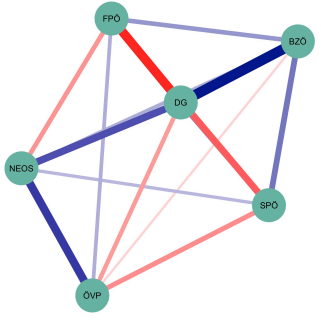


Ireland 1994

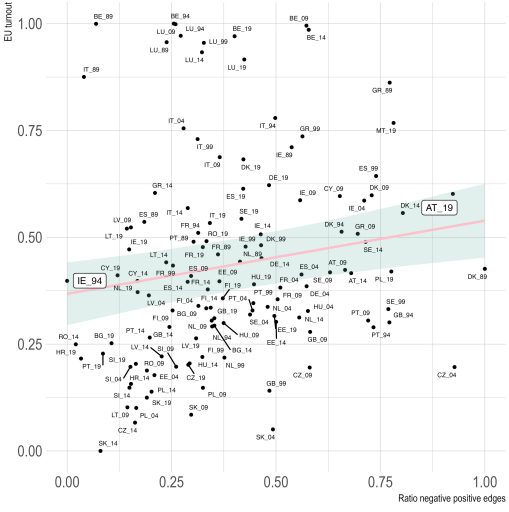



GP: Green Party
DL: Democratic Left
Lab: Labour Party
PD: Progressive Democrats
FG: Fine Gael
FF: Fianna Fail
SF: Sinn Fein

Austria 2019




ÖVP: Austrian People's Party
SPÖ: Austrian Social Democratic Party
NEOS: The New Austria and Liberal Forum
DG: The Greens
FPÖ: Austrian People's Party
BZÖ: Austrian Social Democratic Party


EU turnout
1.00
0.75
0.50
0.25
0.00
0.00
0.25
0.50
0.75
1.00
Ratio negative positive edges
AT_19
IE_94
BE_89
BE_94
LU_04
LU_09
LU_89
LU_99
LU_14
BE_19
BE_09
BE_14
LU_19
IT_89
GR_89
IT_04
IT_94
GR_99
MT_19
IT_99
IE_89
IT_09
DK_19
ES_89
DE_19
GR_14
ES_19
IE_09
CY_09
DK_09
IE_04
DK_14
ES_89
IT_14
IT_19
SE_19
LV_09
FR_94
IE_14
DK_94
GR_09
RO_19
LT_19
PT_89
IE_19
IE_99
DK_99
SE_14
FR_19
FR_89
NL_89
LT_14
DE_14
AT_09
CY_19
ES_09
ES_04
EE_09
HU_19
FR_04
SE_09
AT_14
PL_19
DK_89
CY_14
FR_99
FR_14
FI_19
NL_19
ES_14
PT_99
FR_09
DE_04
LV_04
FI_04
FI_14
PT_04
HU_04
NL_04
SE_99
BG_09
GB_19
PT_09
GB_94
FI_09
SE_04
NL_14
NL_09
EE_19
PT_14
GB_14
HU_09
GB_09
PT_94
RO_14
BG_19
NL_04
EE_14
HR_19
LV_14
SI_09
LV_19
FI_99
BG_14
PT_19
SI_19
RO_09
HU_14
NL_99
CZ_09
CZ_04
SI_04
HR_14
EE_04
CZ_19
GB_99
SI_14
PL_14
PL_09
SK_19
SK_09
LT_09
PL_04
CZ_14
SK_04
SK_14

| | **EU turnout** | **National turnout** |
|---|---|---|
| | *Estimates* | *Estimates* |
| Negative/positive | 0.17 *** (0.07 – 0.28) | 0.11 ** (0.02 – 0.20) |
| ASPL | 0.15 * (-0.02 – 0.33) | 0.09 (-0.06 – 0.24) |
| Observations | 126 | 126 |
| $R^2$ / $R^2$ adjusted | 0.916 / 0.876 | 0.923 / 0.885 |
| AIC | -229.393 | -270.208 |

** p<0.1 ** p<0.05 *** p<0.01*

- Controls: country, year, mandatory voting, GDP, inflation, ihdi, party polarization, ENEP
- Results hold for other network models
- Results hold for the integer measure of negative/positive ratio

# General conclusions

- In a single population, **multiple** belief systems might coexist. Moreover, attitudinal **structures** can **influence** attitudinal **levels**
- **Constraint** is influenced by political interest, but low consensus might render this measure **imprecise**
- The network approach offers **new ways** to address established research question, such as voter turnout in political science

# Thank you!

arturo.bertero@unimi.it

https://artbert96.github.io/arturobertero.github.io/