

The Spatial Theory of Electoral Competition

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Political Science is Hard Stuff

- Politics is the most complicated aspect of human society
- Groups coordinate to achieve goals
- Money matters in a complicated manner
- People contribute money as tokens of support
- People vote

Paradigms in Analytical Politics

- The spatial theory of elections
- This is more than the median voter result
- Downs's thesis was about political information
- Read Enelow & Hinich (1984) and Hinich & Munger (1994) to get the picture

Condorcet's Counter Example

One	Two	Three
A	C	B
B	A	C
C	B	A

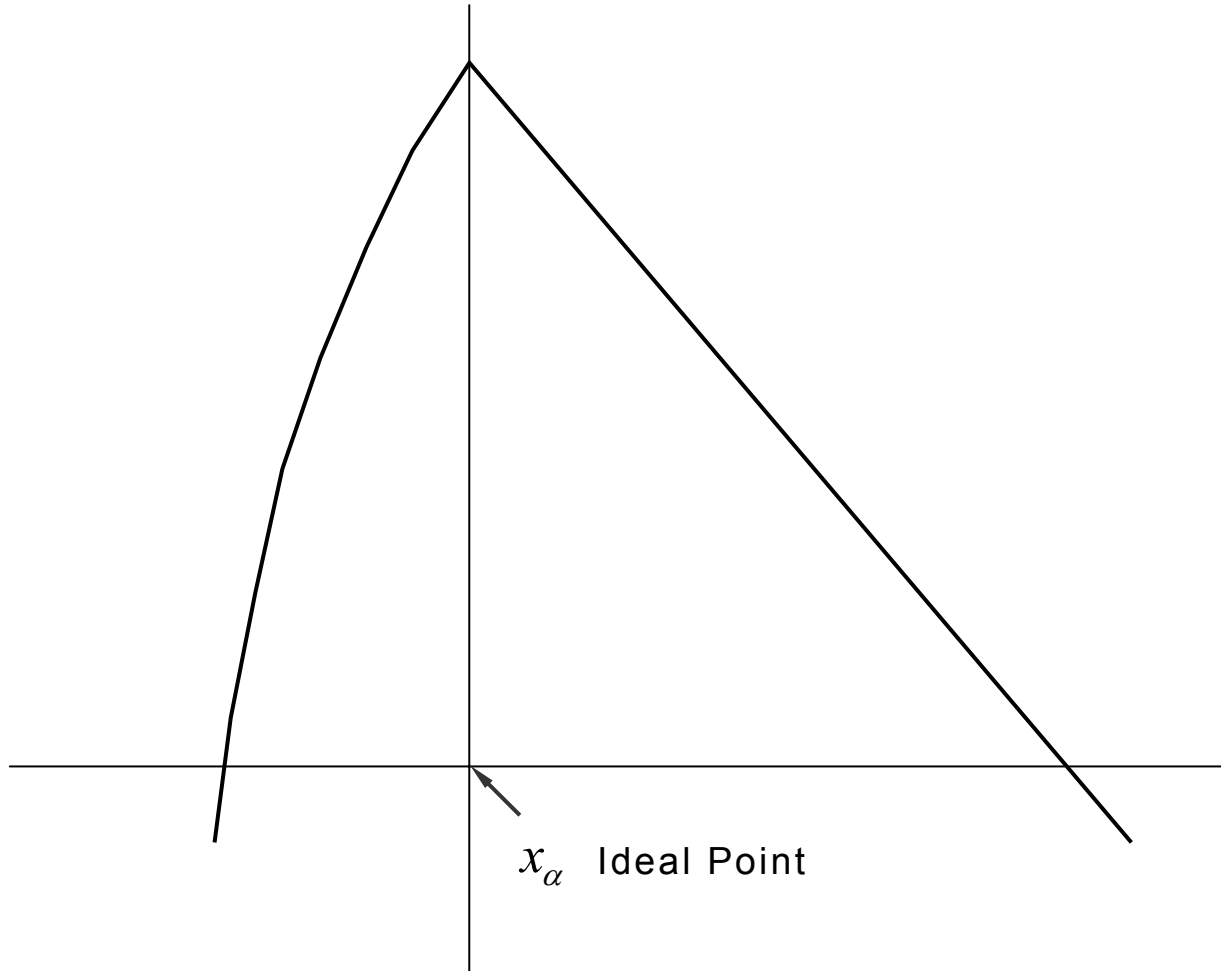
A is preferred to B by One & Two

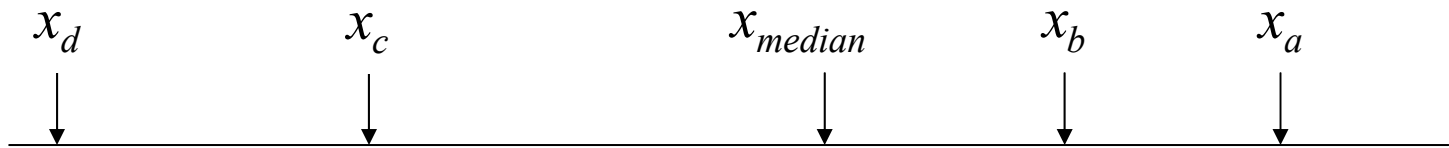
B is preferred to C by One & Three

C is preferred to A by Two & Three

Majority rule can yield a cycle over the choices!

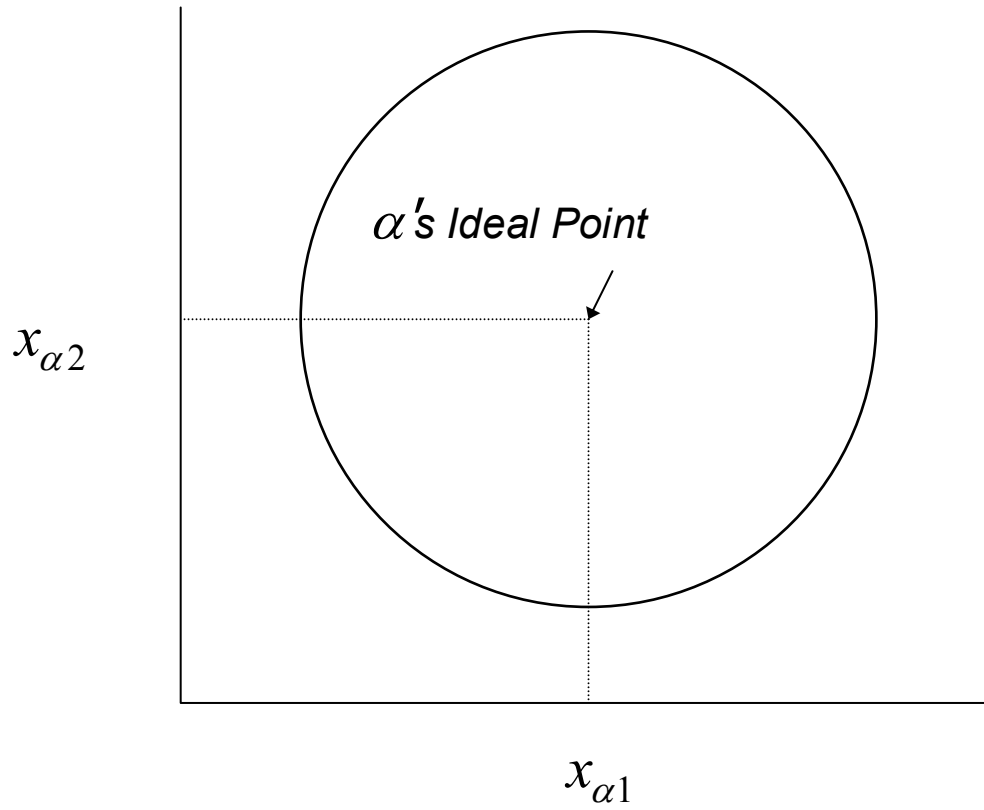
Single Peaked Preference

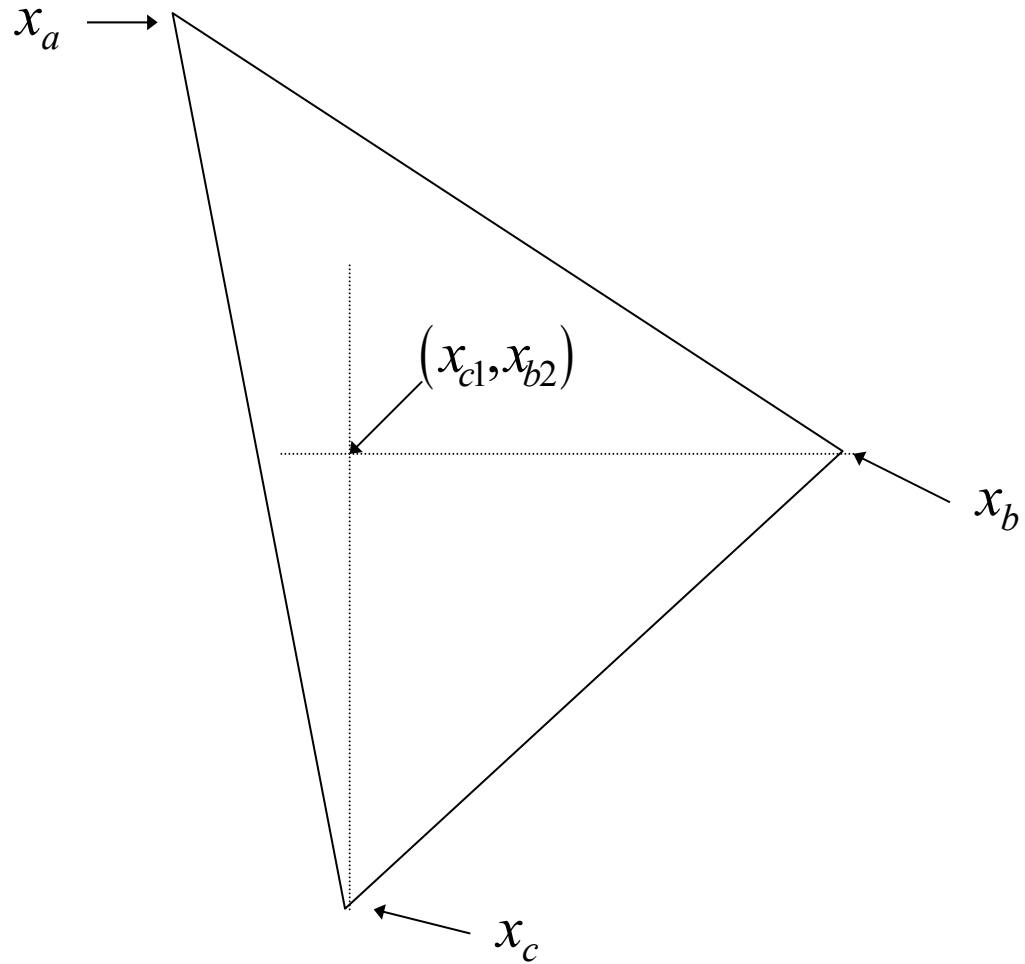




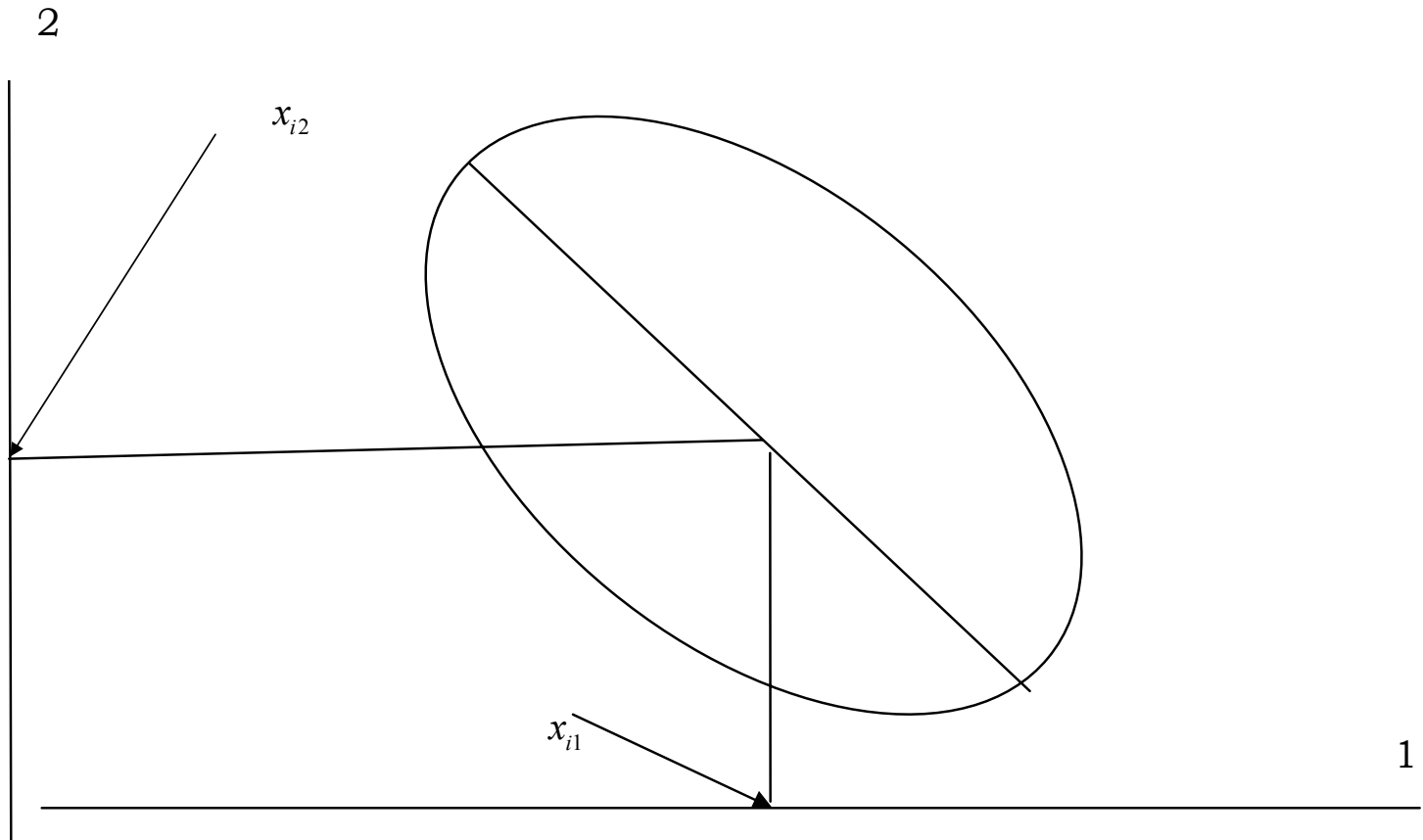
Median Ideal Point

Circular Preference





Three Individuals with Circular Preferences



Weighted Euclidean Preference

Rent Seeking Paradigm

- Rent seeking requires coalition formation
- Cooperative game moves
- Non-cooperative game moves

Mathematics & Statistics

- Mathematics is the language of science
- Mathematics is NOT science
- Statistics uses mathematics

Application of a statistical analysis of data should connect to the theory of the data generating mechanism

Political Survey Design

- We need good survey instruments
They should be connected with some viable theory about behavior
Do not ask silly or complicated questions
Do not try to make theories about silly issue questions
Statistics can not save bad data

Multidimensional Unfolding

Multidimensional unfolding is a statistical estimation problem where the data structure is a set of measures that are monotonic functions of Euclidean distances between a number of observers and targets.

The critical issues of the sampling properties of parameter estimates for this statistical problem have been obscured by the dominance of this literature by measurement psychologists such as Coombs and Torgerson.

This psychometric literature concentrates on representing stimuli response data in a lower dimensional space, and rarely orients the methodology to estimating models derived from theory.

The spatial theory of electoral competition developed by Davis and Hinich (1966) rests on the assumption that voter choices are functions of the squared Euclidean distance between a voter's position in a political space and the positions of the candidates (or parties) standing for election.

Euclidean Distance Model

Suppose that there are N observers and targets. Each observer at position

$$\mathbf{x}_i = (x_{i1}, x_{i2})'$$

reports the squared Euclidean distance

$$\|\boldsymbol{\pi}_m - \mathbf{x}_i\|^2$$

to the targets at locations $\boldsymbol{\pi}_m = (\pi_{m1}, \pi_{m2})'$

Distances with Errors

$$\|\boldsymbol{\pi}_m - \mathbf{X}_i\|^2 + e_{im} = \boldsymbol{\pi}_m' \boldsymbol{\pi}_m - 2\boldsymbol{\pi}_m' \mathbf{X}_i + \mathbf{X}_i' \mathbf{X}_i + e_{im}$$

For each error e_{im}

$$E(e_{im}) = 0$$

$$\psi_m^2 = E(e_{im}^2)$$

Removing the Nonlinear Terms

The nonlinearity is removed by subtracting the distances to one target, target $m=0$ from the distances to the other targets. Then compute the sample covariance matrix of the distance differences.

$$D(\boldsymbol{\pi}_m, \mathbf{x}_i) = \boldsymbol{\pi}_m' \boldsymbol{\pi}_m - 2\boldsymbol{\pi}_m' \mathbf{x}_i + e_{im} - e_{i0}$$

Assume that the errors e_{im} are independently & identically distributed and that they are independent of the observer positions \mathbf{x}_i

Covariance Matrix of Distance Differences

- Assume that the observer positions x_{i1} & x_{i2} are uncorrelated random variables whose variances are denoted σ_{i1}^2 & σ_{i2}^2

Then the covariance matrix of the distance differences is

$$\Sigma_D = 4\Pi \Sigma_x \Pi' + \Psi + \psi_0^2 \mathbf{1}'\mathbf{1}$$

$$\Pi = \left(\boldsymbol{\pi}_1', \dots, \boldsymbol{\pi}_M' \right)' \quad M \times 2 \text{ matrix of target positions}$$

$$\mathbf{\Sigma}_x = \begin{pmatrix} \sigma_{i1}^2 & 0 \\ 0 & \sigma_{i2}^2 \end{pmatrix}$$

$$\mathbf{\Psi} = \begin{pmatrix} \psi_1^2 & 0 & 0 \\ 0 & \ddots & 0 \\ 0 & 0 & \psi_M^2 \end{pmatrix}$$

$$\psi_m^2 = E(e_{im}^2)$$

Estimating the Loading & Parameters

Sample Covariance Matrix

$$\mathbf{S} = \frac{1}{N-1} \sum_{i=1}^N (\mathbf{D}_i - \bar{\mathbf{D}})(\mathbf{D}_i - \bar{\mathbf{D}})'$$

Factor analysis estimate of the loading matrix is

$$\hat{\mathbf{\Lambda}} = 2\mathbf{\Pi}\mathbf{\Sigma}_x^{1/2}\mathbf{R} + \text{error}$$

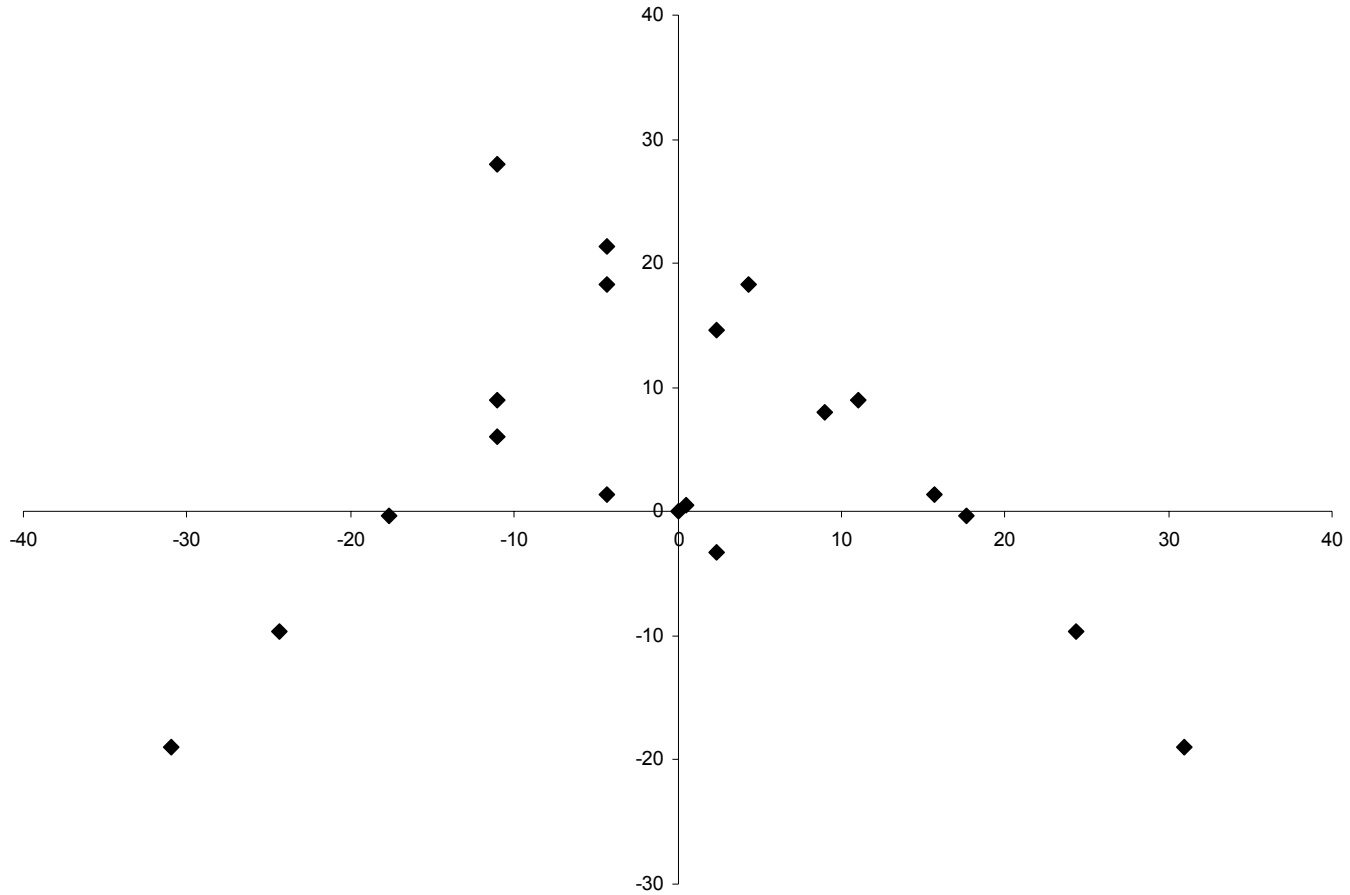
$$\mathbf{R} = \begin{pmatrix} \cos \delta & -\sin \delta \\ \sin \delta & \sin \delta \end{pmatrix} \quad \text{2D rotation matrix}$$

- Joreskog (1967) shows that maximizing the likelihood is equivalent to minimizing the function $f(\Psi) = \sum_{k=3}^M (\theta_k - \log \theta_k - 1)$

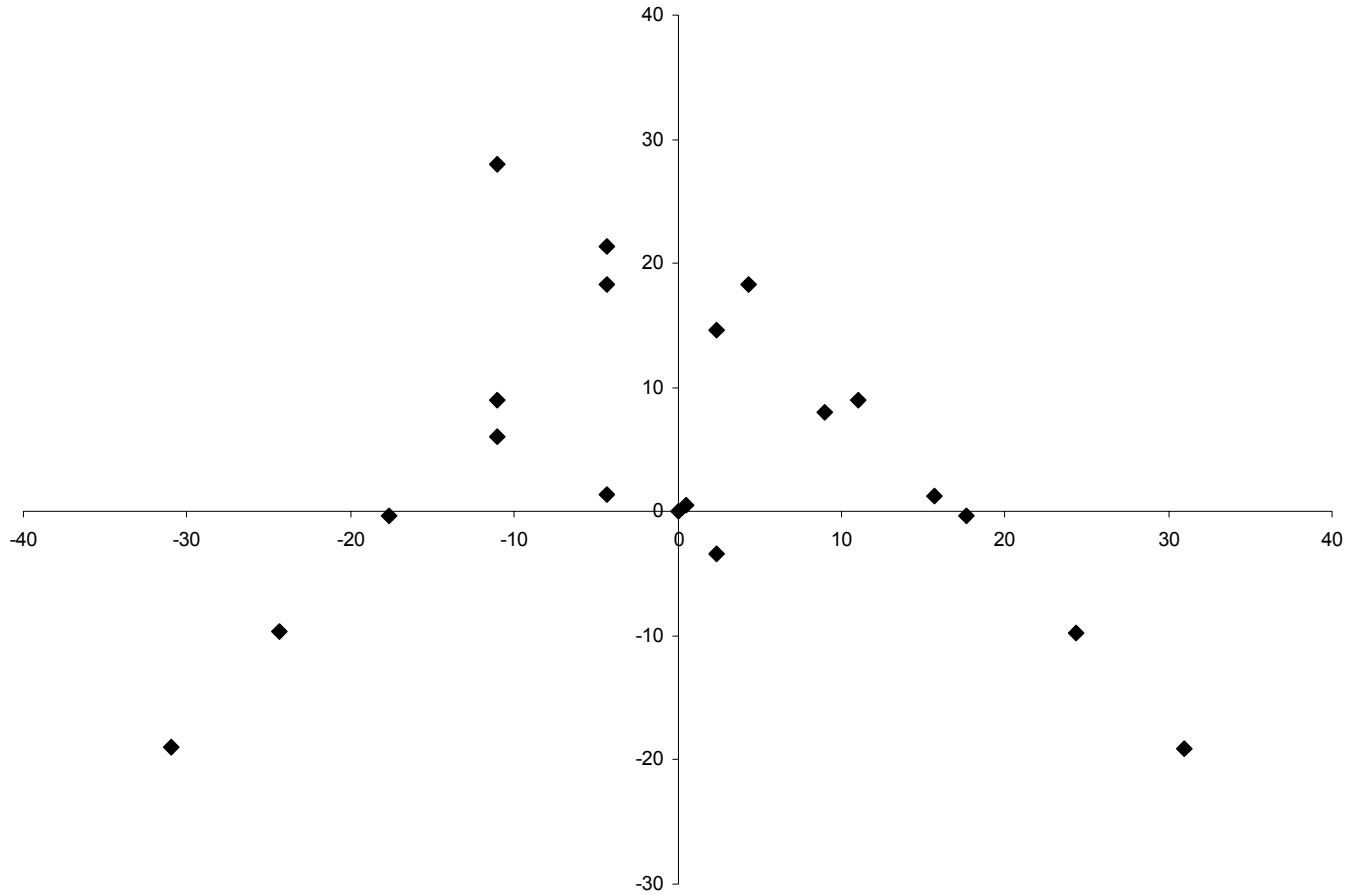
$$\theta_1 > \dots > \theta_M$$

are the ordered eigenvalues of the matrix $A(\Psi) = \Psi^{-1/2} \mathbf{S} \Psi^{-1/2}$

Twenty Simulated Targets



Estimates of the Twenty Targets



Linkage between the Latent Political Space and Issues

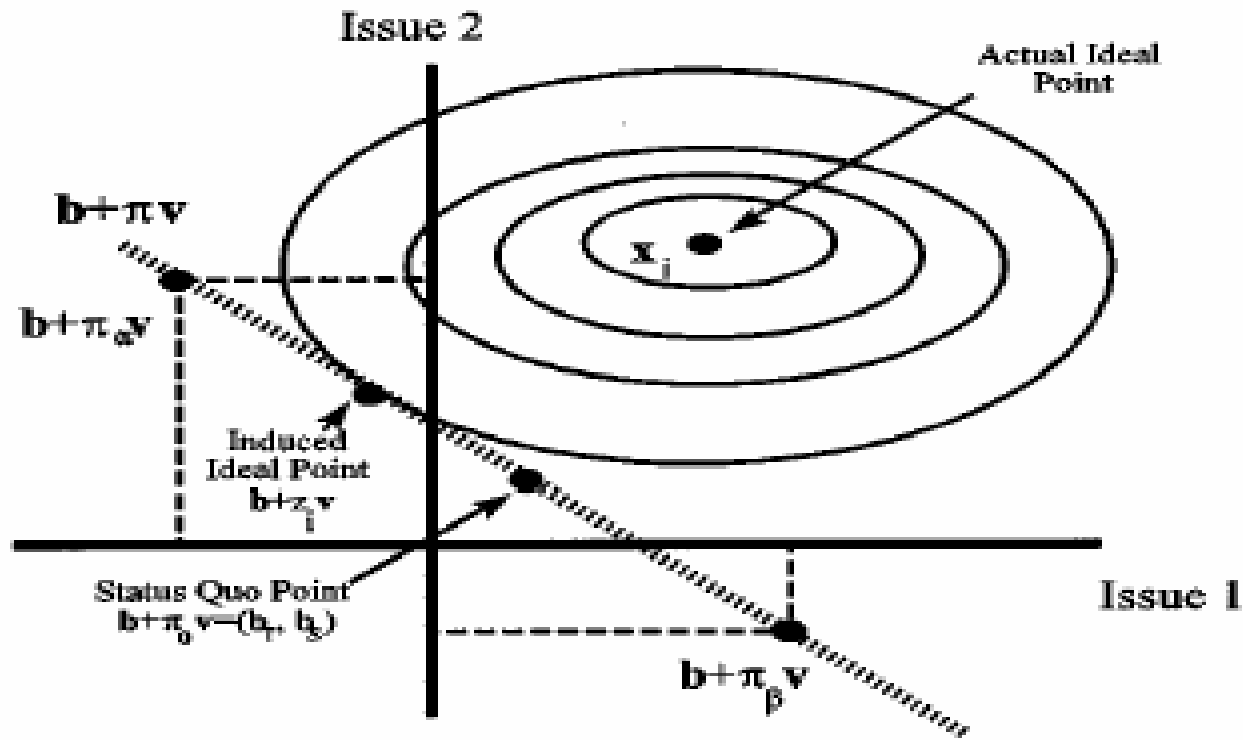


Figure 1.

The Spatial Map of Turkish Politics

Ali Çarkođlu

Melvin J. Hinich



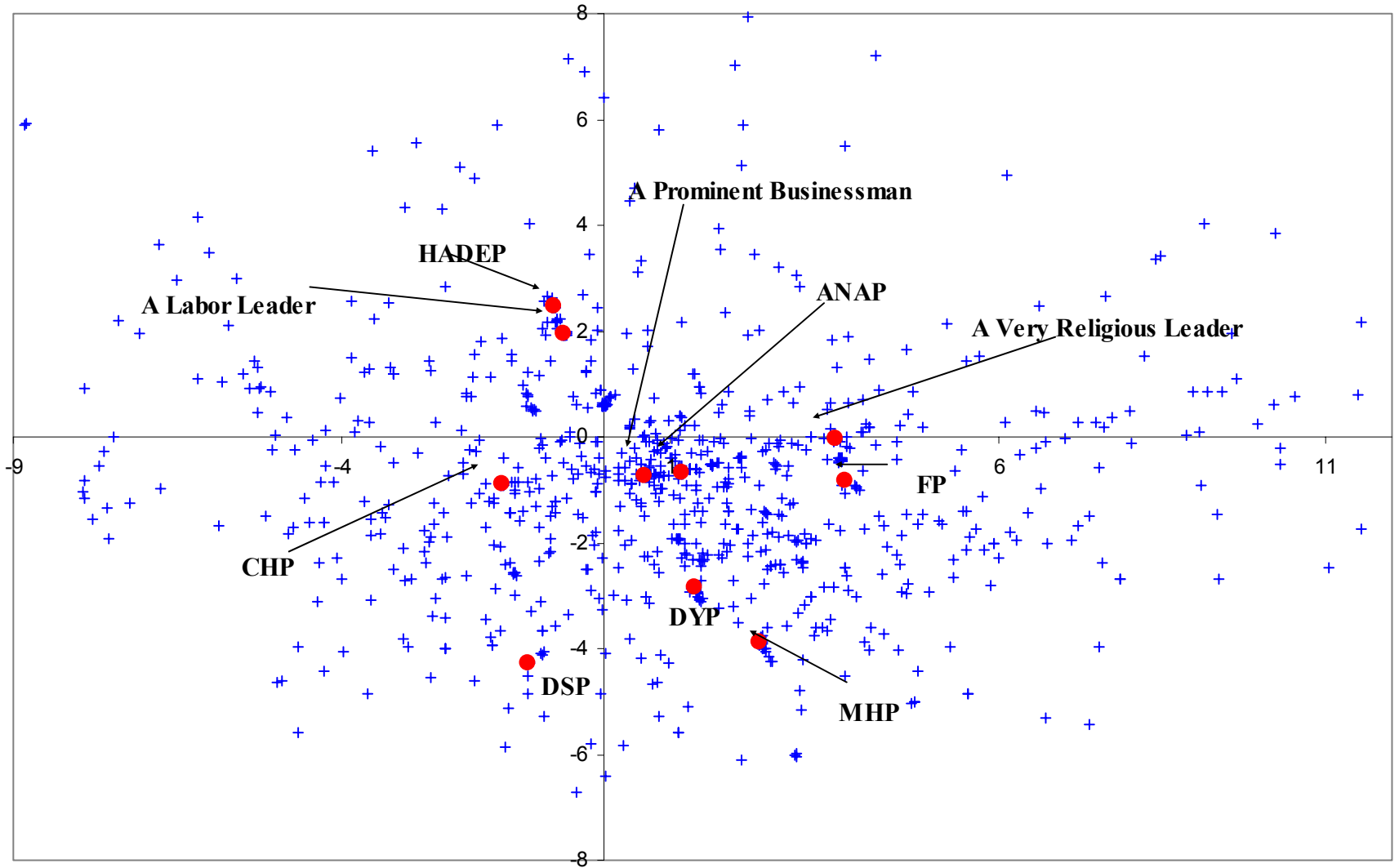
Austin, Texas

Faculty of Arts and Social Sciences

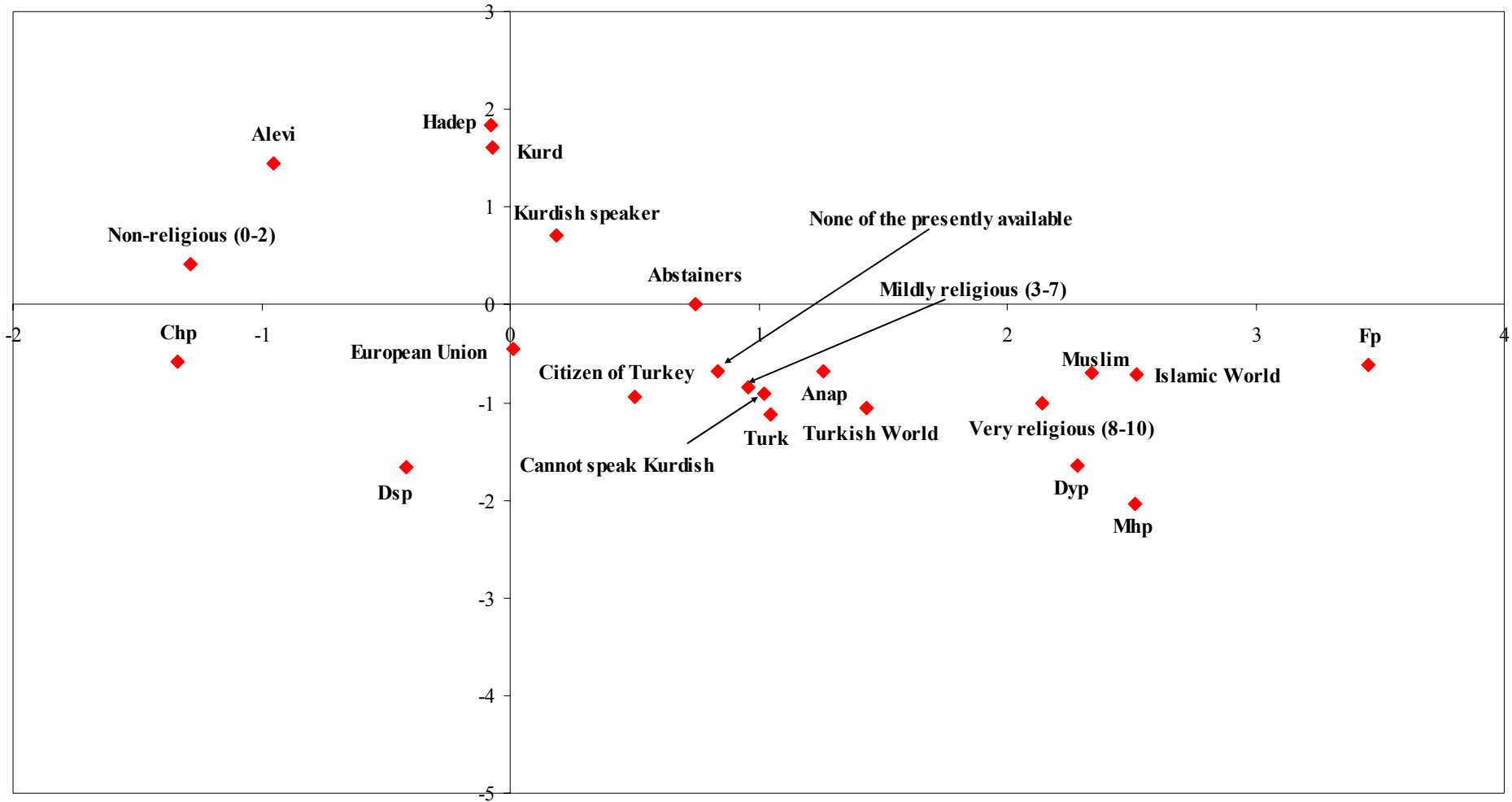
2001 Survey

Our data comes from a nation-wide representative survey of urban population conducted during the chaotic weeks of the second economic crisis of February 2001. A total of 1201 face-to-face interviews were conducted in 12 of the 81 provinces. The questionnaires were administered during 2-20 & 3-16 using a “random sampling” method with an objective to represent the nation-wide voting age urban population living within municipality borders, in which the urban population figures of 1997 census data were taken as the basis.

Estimated ideal points & party positions - 2001 survey



Mean ideal points of primary identity groups - 2001



KEY DATA ABOUT THE SURVEY

- The target of the sample was the nation-wide urban and rural settlers who are 18 years or older.
- The sample consisted of a total of 2028 face-to-face interviews conducted in 54 districts, 291 neighborhoods and 95 villages of a total 33 provinces.
- Under the restrictive assumption of simple random sampling this sample has a confidence interval of 95% with an error margin of +/- 2,2%.
- Provinces chosen according to probability proportionate to size (PPS) principle on the basis of their registered voter population in 1999 general election.
- The questionnaire was administered between the 10th and 25th of October 2002.

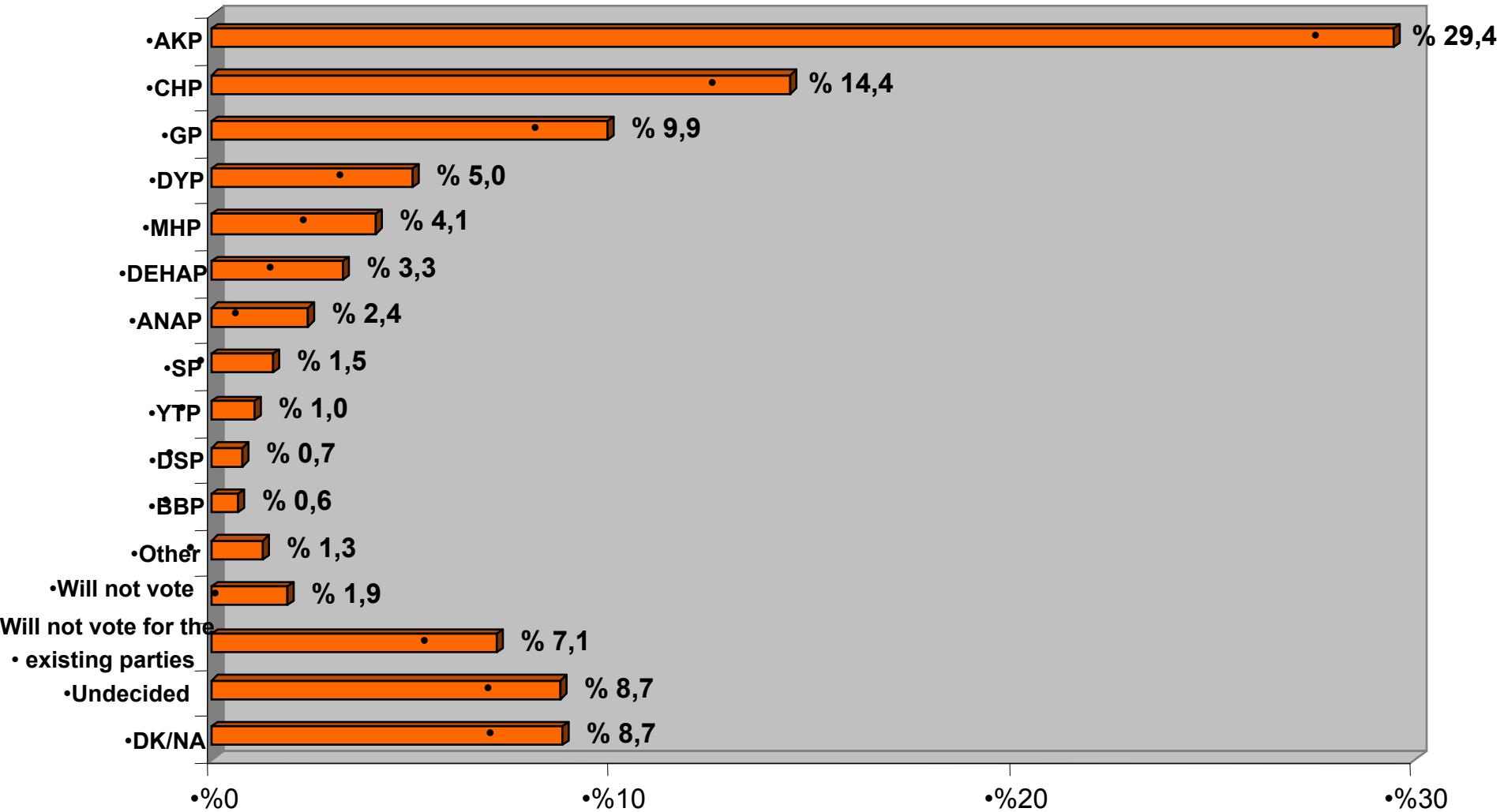
FACTS ABOUT THE FIELD RESEARCH

- Training for questionnaire implementation was given by Ali Çarkoğlu and Ersin Kalaycıoğlu on October 4. The questionnaire was tested and necessary corrections made after a pilot study on October 5-6.
- During the project 9 experts, 35 supervisors and 186 interviewers were assigned.
- 45% of the interviews were completed in the first trial. The rest is completed by either trying for a second time or selecting new streets and households.
- Interviews lasted 35 minutes on average.
- 45% of the interviews were randomly controlled. Controls are made either by phoning or going to the households one more time. 332 interviews were cancelled and conducted with replacements.

Basic Independent Variables

Sex	Male	52	Socio-economic status	Low	59
	Female	48		Medium	31
Age	18-24	20		High	10
	25-34	25	Religious conservatism	Low	29
	35-44	22		Medium	41
	45-54	15		High	30
	55+	17	Ethnic nationalism	Low	12
Education	No schooling-illiterate	13		Medium	29
	Primary school	46	High	59	
	Junior high school	11	Xenophobia	Low	28
	High school	22		Medium	38
	University+	8		High	34
Kurdish	Can speak	12	Political efficacy	Low	23
	Cannot speak	88		Medium	40
Inhabitant of	Province centre	46		High	37
	District centre	20	EU membership	Supports	73
	Rural village	34		Does not support	27
Dwelling type	Shanty town	21			
	Medium registered	73			
	Luxurious registered	5			

Vote Intentions for the November 3rd Election



Xenophobia & Political Efficacy

- **Xenophobia**
- Foreigners who settle in our country harm our culture.
- Foreigners who settle in our country make our chances of finding a job more difficult
- Some should either love Turkey or leave it.
- I would not want a foreigner to be my neighbor
- **Political efficacy**
- Regular citizens like me have no power for changing political decisions in Turkey for their advantage.
- Turkey is being ruled by a small and powerful group.
- Whatever I do I don't think I can reach a better position in society

Descriptive Statistics of the Grade Scores 2002

Party/ (Hypothetical Politician)	N	Mean	Std. Deviation
AKP	1904	6.06	3.44
CHP	1889	4.28	3.11
GP	1877	4.06	3.06
A prominent businessman	1830	3.74	3.10
DYP	1907	3.69	2.65
A very religious leader	1848	3.31	2.94
MHP	1899	3.23	2.61
SP	1880	3.06	2.49
ANAP	1900	3.00	2.43
YTP	1847	2.98	2.37
BBP	1829	2.81	2.25
DSP	1926	2.31	2.19
DEHAP	1850	2.10	2.19
Valid N (listwise)	1727		

Question - I'm going to give to you a series of promises and would like to get your evaluation as to which party do you find most convincing in realizing each one.

- 1 Limiting the MP immunity
- 2 Reducing unemployment
- 3 Reducing taxes
- 4 Membership in the EU
- 5 Increased effort to combat corruption
- 6 Revitalizing the economy
- 7 Resolving the Cyprus problem

8 Reducing inflation

9 Resolving education and health
policy problems

10 Resolving the headscarves
problem

11 Resolving the problems in
agriculture

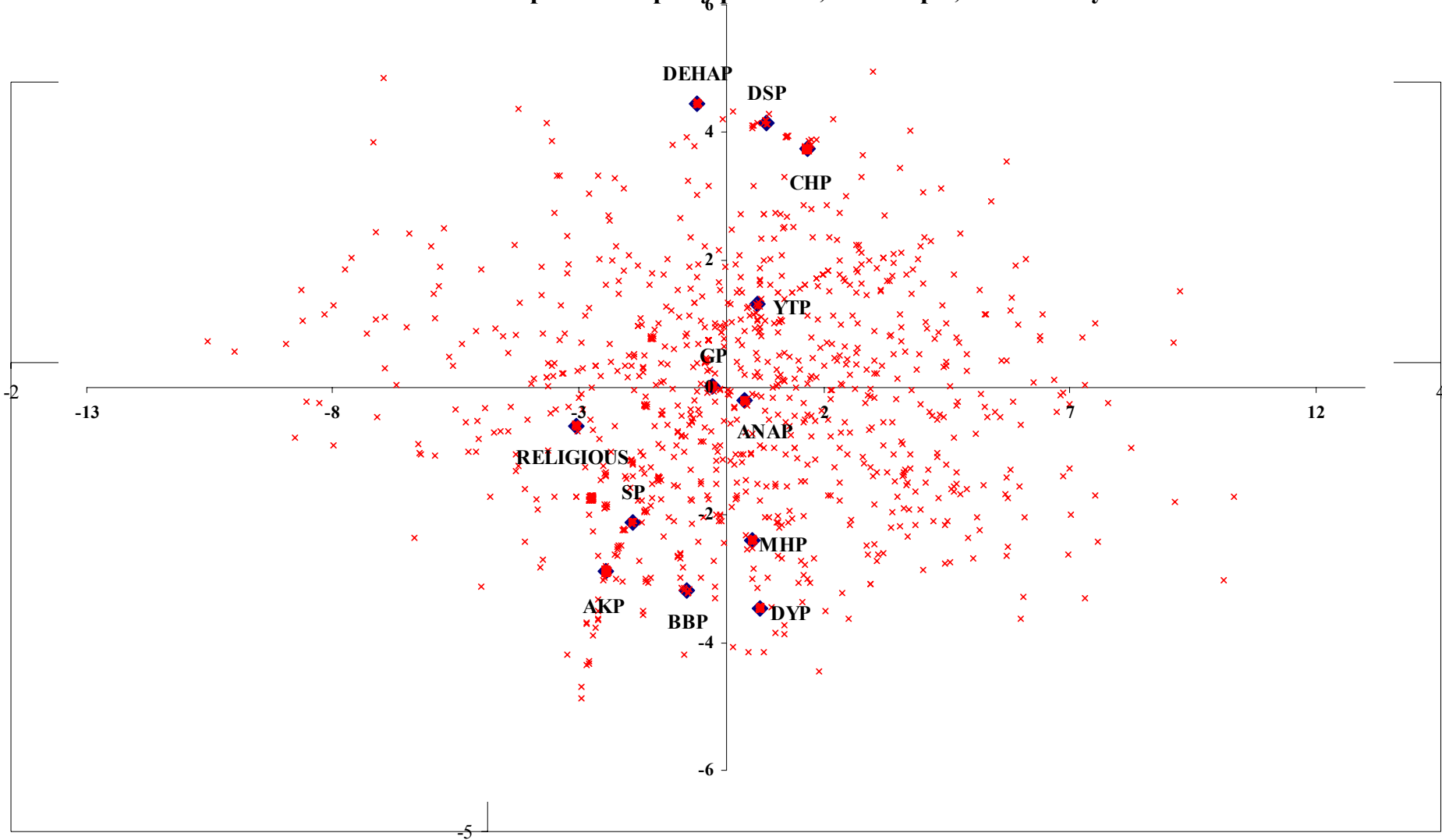
12 Enforcing the moral values in
Turkish society

Respondents are asked to pick one party
as most credible.

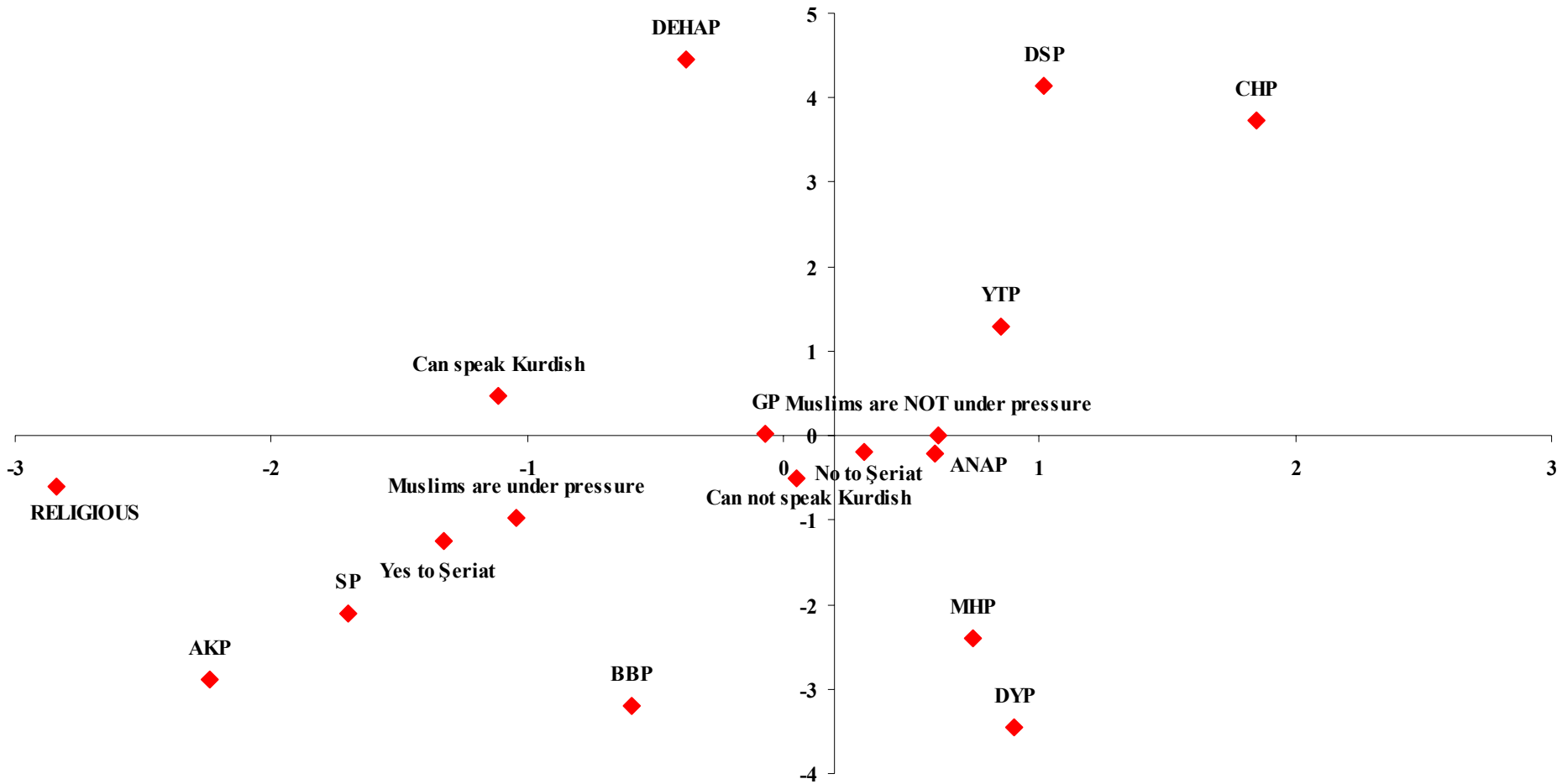
Valence Question - Revitalizing the Economy

AKP	532	26.23
ANAP	39	1.92
BBP	8	0.39
CHP	227	11.19
DEHAP /HADEP	25	1.23
DSP	7	0.35
DYP	82	4.04
Genç P	157	7.74
MHP	38	1.87
SP	22	1.08
YTP	11	0.54
BTP	1	0.05
İP	2	0.10
LDP	2	0.10
ÖDP	2	0.10
TKP	1	0.05
None of them	654	32.25
No answer	218	10.75

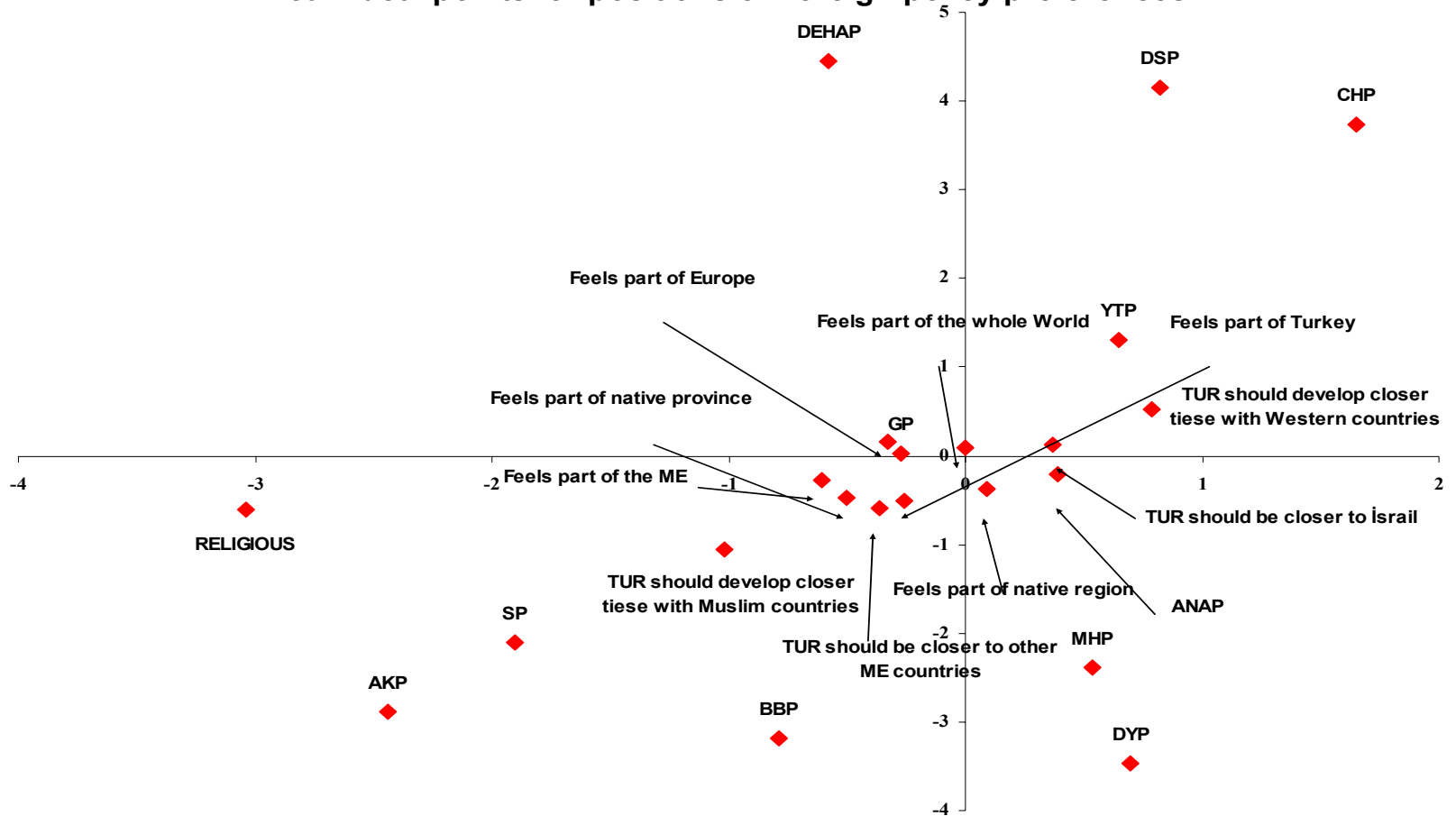
Estimated ideal points and party positions, full sample, 2002 survey



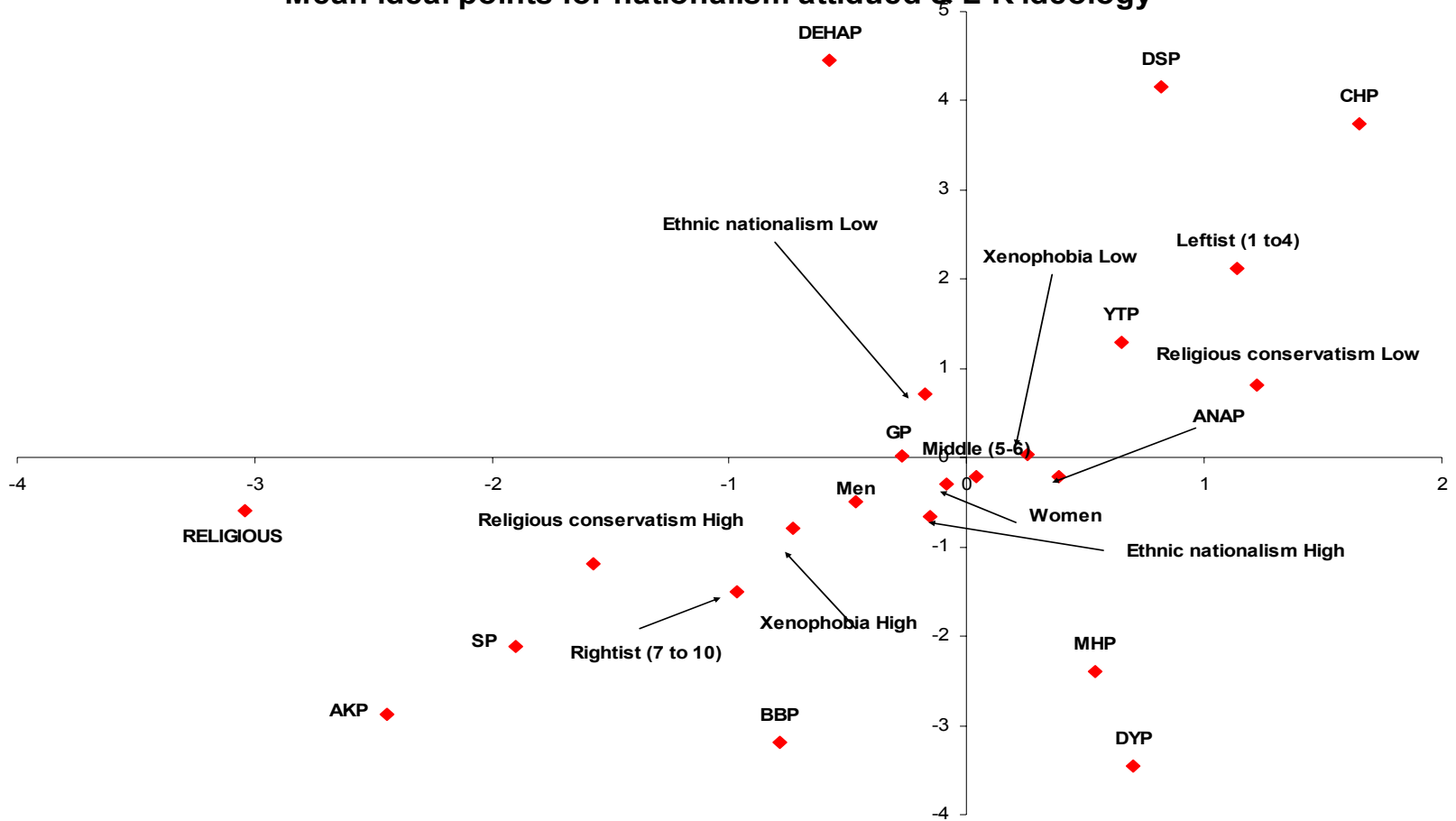
Mean ideal points for ethnic identity & attitudes toward religious issues



Mean ideal points for positions on foreign policy preferences



Mean ideal points for nationalism attitude & L-R ideology



Determinants of the positions on the two dimensions

		Dimension 1		Dimension 2	
		Pro-Islamism vs Secularism		Pro vs anti Reform	
		Unstandardized Coefficients		Unstandardized Coefficients	
		B	Sig.	B	Sig.
	(Constant)	-0.11	0.82	1.85	0.00
Age		0.00	0.85	0.00	0.14
	Sex (Male=1)	-0.40	0.01	-0.05	0.70
	Can speak European languages (English/Germa/French)	0.46	0.03	-0.12	0.47
Can speak Arabic		-0.24	0.42	-0.32	0.16
	Can speak Kurdish	-0.55	0.04	0.41	0.04
Unemployed		-0.06	0.82	-0.67	0.00
Student		0.15	0.67	-0.10	0.71
Worker (public+private)		-0.33	0.14	-0.04	0.81
	Public Employee (public+private)	-0.62	0.04	-0.22	0.35
Ownership status index		-0.07	0.42	0.02	0.76
Dummy for no schooling		-0.07	0.86	-0.03	0.92
Dummy for primary school		0.27	0.41	0.05	0.85
Dummy for junior high		0.29	0.41	-0.18	0.52
Dummy for High school		0.25	0.39	-0.29	0.20
Shanty town (Gecekonu) dummy		-0.36	0.06	-0.18	0.21
	Religious conservatism REGR factor score 1	-0.71	0.00	-0.50	0.00
	Ethnic nationalism REGR factor score 2	0.10	0.20	-0.20	0.00
	Xenophobia REGR factor score 3	-0.23	0.00	-0.16	0.01
Political efficacy REGR factor score 4		-0.03	0.70	-0.03	0.54
To what degree is it important that one party wins the elections in order to have your family inc		-0.01	0.61	-0.01	0.71
To what degree you vote will influence the outcome of the elections.		-0.01	0.69	0.00	0.86
	Self placement on L-R index	-0.12	0.00	-0.39	0.00
	Dummy for those who do not believe that there exists a party that can resolve TUR problems	0.51	0.00	0.12	0.35
	Dummy for those who support EU membership	0.37	0.02	0.30	0.02
	Dummy for those who had taken the local initiative to resolve some of their local problems	0.53	0.00	0.04	0.77
Dummy for those who always cast a vote in general electionsHer seçimde oy kullanmış dummy		0.38	0.02	-0.17	0.17
Income gap between the real and desired income		0.00	0.56	0.00	0.46
Dummy for those who had been angry in the recent past		-0.20	0.21	-0.02	0.86
Positive evaluation of the past on family		0.58	0.33	0.62	0.17
Positive evaluation of the past on Turkey		0.84	0.06	0.47	0.18
	Dummy for positive evaluations of the present day	0.72	0.01	-0.04	0.85
Positive for family's future		-0.11	0.63	0.09	0.60
Positive for Turkey's future		0.10	0.65	0.09	0.58
Yes to Şeriat		-0.38	0.07	0.07	0.68
Degree of belief in destiny		0.04	0.07	0.01	0.51
	R Square	0.278		0.430	
	Adjusted R Square	0.253		0.410	
	Std. Error of the Estimate	2.283		1.760	