

The Political Economy of Xenophobia and Distribution: The Case of Denmark*

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Abstract

For the first time in some years, a conservative government came to power in Denmark in 2001, due primarily to the citizenry's disaffection with social-democratic policies on immigration. We represent political competition in Denmark as taking place over two issues—the size of the public sector and immigration—and model political equilibrium using the party unanimity Nash equilibrium (PUNE) concept, which generates equilibria on multi-dimensional policy spaces where parties form endogenously. By fitting the model to Danish data, we argue that citizen xenophobia may be expected to decrease the size of the Danish public sector by an amount between 12% and 36% of one standard deviation of the probability distribution of citizens' ideal points of the size of the public sector.

Keywords: Political equilibrium; PUNE; xenophobia; distribution

JEL classification: D3; D7

I. Politics and Anti-immigrant Sentiment in Denmark

With the 2001 election, the Social Democratic Party (SDP), primary architects of the Danish welfare state, lost its 80-year status as the largest party. The Liberal Party won a larger vote share (see Table 1), and formed a coalition government with the Conservatives. For a parliamentary majority, this coalition has, in the intervening period, relied upon the support of the right-wing populist, anti-immigrant Danish People's Party.

Many observers believe that the fall of the social-democratic government in Denmark is due to its failure to respond adequately to the anti-immigrant

* We are grateful to the Russell Sage Foundation for having financed this project. We thank Woojin Lee for his advice on econometric issues. We are also grateful to the Danish Statistical Archive for providing us with the Danish election studies. The project originated while Van der Straeten was visiting Yale University; financial support for her stay from the Department of Economics and the Cowles Foundation is gratefully acknowledged.

Table 1. Danish political parties—vote shares and perceived platforms

	1998				2001			
	Vote share	Public-sector standpoint	Immigration standpoint	Left-Right (11-point scale)	Vote share	Public-sector standpoint	Immigration standpoint	Left-Right (11-point scale)
United Left-wing Party	2.7	1.40	-1.24	1.21	2.4	1.08	-1.05	1.47
Socialist People's Party	7.5	1.13	-0.96	2.52	6.4	0.89	-0.78	2.78
Social Democratic Party	36.1	0.53	-0.12	4.35	29.1	0.46	-0.08	4.38
Liberal Democrats	3.9	0.20	-0.32	4.67	5.2	0.22	-0.35	4.61
Center Democratic Party	4.3	-0.07	-0.20	5.54	1.2	Not asked	Not asked	Not asked
Christian People's Party	2.5	0.00	-0.12	5.93	2.3	0.07	-0.17	5.48
Conservative People's Party	8.9	-0.93	0.88	7.23	9.1	-0.88	1.04	6.98
Liberal Party	24.0	-1.00	0.88	7.55	31.3	-1.01	1.07	7.32
Danish People's Party	7.4	-1.40	1.96	8.64	12.0	-1.02	1.90	8.13
Progress Party	2.4	-1.53	1.88	8.64	0.6	Not asked	Not asked	Not asked

sentiment among the native citizenry. Although immigrants and their descendants account for only about 7% of the population, their presence has provoked a remarkable reaction among natives. Upon gaining power, the Liberal–Conservative coalition passed a law, in May 2002, restricting the rights of immigrants in a number of ways: (1) refugee status will henceforth be granted only under stricter conditions (not to include those fleeing from war or famine); (2) permanent-resident permits will be granted after seven years of residence, instead of three; (3) residents are no longer permitted to bring in a foreign spouse under the age of 24; (4) spouses will not be allowed to join their partners in Denmark unless the couple have a sufficiently large income; (5) applicants for Danish nationality must demonstrate linguistic ability of a 14-year-old native; and (6) reunification with parents over 60 years of age is abolished.

For the purposes of this article, we will often describe anti-immigrant feeling as xenophobia. Ours is not a sociological or psychological investigation; we observe the distribution of xenophobic views based on voter survey data, and do not inquire into their causes or possible justifications.

Our concern in this article is with the effect that increasing Danish xenophobic sentiment among voters will have on the size of the welfare state, as the latter is determined through political competition. We will argue that the size of the welfare state and the government's position on immigration are the two most important issues in contemporary Danish politics. Political parties—of which there are 10 in Denmark—put forward positions on both these issues, and voters choose among the parties based on their preferences on the two issues. We will model the political game among these parties, and then ask: “How would the equilibrium values of the parties' positions on the size of the public-sector change, were voters less xenophobic?”¹

It is conceptually useful to distinguish between two ways in which anti-immigrant voter sentiment can alter the equilibrium party platforms on the issue of public-sector size. First, there is a direct effect which we call the *anti-solidarity effect* (ASE): to the extent that voters dislike immigrants, and believe that immigrants exploit the welfare state, they may desire to decrease the generosity of state benefits. It is often said that the generous welfare states of the Nordic countries are the historical consequence of population homogeneity, engendering solidarity among citizens. The anti-solidarity effect is the other side of this coin. A similar argument is put forward by Alesina *et al.* (2001) to explain large differences in welfare programs between the US and Europe: in the US, racism and prejudice against

¹ This should be related to the emerging literature linking distribution to racial or immigration issues; see also, for example, Alesina, Glaeser and Sacerdote (2001), Austen-Smith and Wallerstein (2003), Luttmer (2001) and Ortega (2004, 2005).

the black minority may reduce the demand for redistribution expressed by white citizens.

The second effect is indirect. Suppose that a voter is very xenophobic, although quite moderate on the issue of public-sector size: she may vote for a xenophobic party if the immigration issue is sufficiently important for her, even if that party is more right-wing on the size of the public sector than she is. If there are many voters of this kind, then parties that want large cuts in the size of the public sector may gain larger support than they would, were immigration not a political issue. We call this the *policy-bundle effect* (PBE). It is a political portfolio effect, a consequence of the bundling of issues.

In our analysis, we decompose the total effect of xenophobia on equilibrium values of party policy on public-sector size into these two effects.

Our data consist of micro-data from the Danish Election Survey, Year 1998 (2,001 respondents, 327 variables) and Year 2001 (2,026 respondents, 316 variables).² Table 1 presents the average perception among voters of the parties' positions on the economic issue (size of the public sector) and the immigration issue (see the exact definition in Section IV below). Parties are ranked on a Left–Right scale, as perceived by the voters.³ Note that on both issues, the ranking of parties is very similar to their ranking on the Left–Right scale. In particular, the two most anti-immigrant parties, the Danish People's Party and the Progress Party, are also the most conservative on the economic issue.

Throughout this article, we model the electoral competition as taking place on two issues: the size of the public sector and the immigration policy. In order to motivate this assumption, we want to assess the main political issues in Denmark, using a question about the problems that respondents perceive as being the most important in Denmark. Table 2 reports, for a selection of issues, the number of individuals (in 1998, out of a total of 2,001 respondents) who listed the issue in question as among the four most important problems facing the country. Problems are ranked according to the number of respondents who reported this specific problem as the single most important in the country (down to a total of 14 respondents). Clearly, the health issue is the single most important problem: over 900 respondents, almost one-half of the sample, name either "Health sector and

² Our sources are the "Danish Election Survey 1998" and the "Danish Election Survey 2001". The results and interpretation in the current article are the sole responsibility of the authors.

³ This scale derives from the answers to the following questions: "In politics one often talks about left and right. Where would you place yourself on this scale? Where would you place the various parties on this scale?" (Show a card with 11 possible values, from 0 indicating left to 10 indicating right.) For each party we compute the average answer.

Table 2. The most important problems in Denmark: 1998 election survey

	No. 1	No. 2	No. 3	No. 4	Total
Immigration of refugees and immigrants including the fight against racism	305	195	123	47	670
Health sector and the hospital sector	305	256	107	38	706
Environment/environmental issues	168	102	80	27	377
Conditions for the aged	153	161	60	19	393
Employment, unemployment including labor market policy	147	86	45	25	303
The economy	130	50	26	10	216
Families with children/daycare centers	119	144	62	16	341
Social problems including social policy	80	58	25	8	171
EU-related to, in general, general handling of the Amsterdam Treaty	78	52	31	14	175
Nursing homes/domiciliary care	59	88	48	7	202
Balance of payments/foreign debt	34	24	11	6	75
Violence, crime, law and order/justice policy	30	52	45	23	150
Tax reform/tax burden, including deterioration of private pensions	21	20	16	4	61
Unclear answer: everything	20	3	0	0	23
State schools/schools policy	19	42	36	11	108
Distribution of public expenditure	19	13	10	1	43
The pollution problem	16	8	4	4	32
Education/education standards	14	35	27	17	93
Social benefits including maternity and other such leave	14	9	5	0	28
Welfare state without further details	14	5	2	0	21
Do not know	28	1	0	0	29
Do not answer	19	362	1,053	1,645	

Note: There are 2,001 respondents in the sample.

Question: We have, as you know, just had parliamentary elections, and therefore I would like to ask you what problems you think are the most important ones that politicians should be doing something about today? (Most important problem no. 1, no. 2, no. 3, no. 4.)

the hospital sector” or “Nursing homes/domiciliary care” as one of the four most important problems. Immigrant and refugee-related issues appear second (670 respondents), followed by a number of social or economic issues: conditions for the aged (393), families with children/daycare centers (341), employment, unemployment including labor market policy (303), and social problems including social policy (171).

Assuming that the issues hospital/health services, education in state schools, unemployment/welfare system are mainly questions about the size of the public sector, modeling political competition as focusing on the two issues of public-sector size and immigration appears to be an acceptable abstraction.

The structure of the article is as follows. In Section II, we describe the electoral competition model; in Section III, we present the theory of the PBE and ASE. We then turn to estimation and computation. In Section IV, we estimate the parameters that will be used to calibrate the electoral competition model and define counterfactual preferences. In Section V we give the numerical prediction of the two-dimensional model. In Section VI we compute the ASE and PBE. Section VII concludes.

II. Political Equilibrium: Theory

We propose that the spectrum of political parties can be captured, for our purposes, with a model that postulates two parties, which we call Left and Right. The Left party of the model will correspond to the union of the parties United Left, Socialist People’s, Social Democratic and Liberal Democrat; the Right will correspond to the Center Democrats, Christian People’s, Conservative, Liberal, Danish People’s and Progress parties. We choose to capture Danish political competition with a two-party model, because the correlation between parties’ positions on the two issues is strong: it is not clear that any analytical payoff would accrue to positing, let us say, three parties. In this section we propose a model of political equilibrium in which two parties compete on a two-dimensional policy space, which, in our application, will be the *size of the public sector* and the *policy towards immigrants*.

The model is that of *party unanimity Nash equilibrium with endogenous parties* (PUNEEP) as defined in Roemer (2001, Ch. 13). The data of the model consist of the information (H, F, T, v) where H is a space of *voter types* equipped with a probability distribution F , and $v(\cdot, h)$ is the utility function of a voter type defined on the policy space T . The equilibrium will consist in a tuple (L, R, τ^L, τ^R) where (L, R) is a partition of the set of voter types into *party memberships* or *constituencies*, and $\tau^J \in T$ is the equilibrium platform of party J , for $J = L, R$. (There will be no confusion

if we refer to a *party* and its *constituency* by the same variable: e.g. R for Right.)

For our application, a voter's type will be an ordered pair (π, ρ) where π is the voter's ideal public-sector size (which we sometimes call, for short, her "tax rate") and ρ is her position on the immigration issue. The policy space T is a set of ordered pairs (t, r) , which we may take to be the real plane, where t is a party's policy on the size of the public sector and r is its policy on immigration. The utility function of the polity is a function $v: T \times H \rightarrow \mathbf{R}$ given by:

$$v(t, r; \pi, \rho) = -(t - \pi)^2 - \gamma(r - \rho)^2. \quad (1)$$

We refer to γ as the *relative salience of the immigration issue*, and assume it is the same for all voters.

We briefly review the concept of party unanimity Nash equilibrium (PUNE). A party possesses *entrepreneurs* or *organizers*, and *members* or *constituents*. The members of a party are citizens who, in equilibrium, prefer that party's policy to the policy of the other party. The entrepreneurs are professional politicians who make policy in the party. Think of them as a very small group of individuals, who are not identified with citizens characterized by a type. (Their type is irrelevant.) We will assume that the organizers of the Left and Right parties are each divided into two factions—an Opportunist faction and a Militant faction. The Opportunist faction wishes, in the party competition game, to propose a policy that will maximize the party's vote share, or probability of winning. The Militant faction wishes to propose a policy that will maximize the average welfare of the party's constituency. The idea that parties consist of bargaining factions captures the view that parties have conflicting goals: to represent constituencies, and to win office, or, more generally, to maximize vote share. Mathematically, the virtue of the factional model of parties is that it engenders the existence of political equilibria when policy spaces are multi-dimensional. Unlike the model of Downs, in our model, parties will generically propose distinct policies in equilibrium. The idea of PUNE is that parties compete against each other *strategically*, as in Nash equilibrium, and factions *bargain* with each other, inside parties. At an equilibrium, each party's platform is a best response to the other parties' platforms in the sense that it is a *bargaining solution* between the party's factions, given the platform proposed by the other party.

Suppose the members of a party consist of all citizens whose types lie in the set $J \subset H$. We define the *average welfare function* for this party as a function mapping from T to the real numbers defined by:

$$V^J(\tau) = \int_{h \in J} v(\tau; h) dF(h). \quad (2)$$

That is, $V^J(\tau)$ is just (a constant times) the average utility of the coalition J at the policy τ . For (2) to make sense, we must assume that the utility functions v are unit-comparable.

Suppose the two parties propose policies τ^L and τ^R . Define:

$$\Omega(\tau^L, \tau^R) = \{h \mid v(\tau^L, h) > v(\tau^R, h)\}.$$

We define $\varphi(\tau^L, \tau^R)$ as the fraction of the polity who prefer the policy τ^L to the policy τ^R . In our model, if the policies are distinct, then the set of voters indifferent between two policies will always have F -measure zero. Then the share of the polity who (should) vote for the L policy is: $\varphi(\tau^L, \tau^R) = F(\Omega(\tau^L, \tau^R))$.

Definition. *A party unanimity Nash equilibrium (PUNE) for the model (H, F, T, v) is:*

- (a) *a partition of the set of types $H = L \cup R$, possibly ignoring a set of measure zero;*
- (b) *a pair of policies (τ^L, τ^R) , such that:*
 - (C1a) *given τ^L there is no policy $\tau \in T$, s.t. $V^R(\tau) \geq V^R(\tau^R)$ and $\varphi(\tau^L, \tau) \leq \varphi(\tau^L, \tau^R)$ with at least one of these inequalities strict;*
 - (C1b) *given τ^R there is no policy $\tau \in T$, s.t. $V^L(\tau) \geq V^L(\tau^L)$ and $\varphi(\tau, \tau^R) \geq \varphi(\tau^L, \tau^R)$ with at least one of these inequalities strict;*
 - (C2) *for $J = L, R$, every member of coalition J prefers policy τ^J to the other policy, i.e., $h \in J \Rightarrow v(\tau^J, h) > v(\tau^{J'}, h)$ for $J' \neq J$.*

Condition (C1a) states that, when facing the policy τ^L , there is no feasible policy that would increase both the average welfare of party R 's constituents and the vote fraction of party R . Thus, we may view policy τ^R as being a *bargaining solution* between party R 's two factions when facing the opposition's policy, as the Militants' desire to maximize the average welfare of constituents, and the Opportunists desire to maximize vote share. All we employ here is the assumption that a bargain must be Pareto-efficient for the two players in the bargaining game. Condition (C1b) similarly states that policy τ^L is a bargaining solution for party L 's factions when facing the policy τ^R . Condition (C2) states that the endogenous party memberships are stable: each party member prefers her party's policy to the other parties' policies.

There are two "free" parameters in this equilibrium concept: one might think that the relative strength of the Militants with respect to the Opportunists in a party is an important variable, in determining where on the mini-Pareto frontier of the factions the bargaining solution lies. There is

one such parameter for each party L and R . Thus, we can expect that, if there is an equilibrium, there will be a two-parameter manifold of equilibria, where the elements in this manifold are associated with different pairs of relative bargaining strengths of the pairs of factions in L and R . This indeed turns out to be the case, as we will see below.

With differentiability, we can characterize a PUNE as the solution of a system of simultaneous equations. Denote by $\nabla_J \varphi(\tau^L, \tau^R)$ the gradient of the function φ with respect to the policy τ^J . Denote by ∇V^J the gradient of V^J . Then, we can write the necessary conditions for a PUNE where τ^L and τ^R are interior points in T as:

$$(1a) \text{ there is a non-negative number } x \text{ such that } -\nabla_L \varphi(\tau^L, \tau^R) = x \nabla V^L(\tau^L) \tag{3a}$$

$$(1b) \text{ there is a non-negative number } y \text{ such that } \nabla_R \varphi(\tau^L, \tau^R) = y \nabla V^R(\tau^R). \tag{3b}$$

Our next task is to explicitly express V^L , V^R and φ , which requires us to formulate precisely the party constituencies. We compute that

$$\Omega(\tau^a, \tau^b) = \begin{cases} \{(\pi, \rho) \mid \rho < \psi(\tau^a, \tau^b, \pi) & \text{if } r^a < r^b \\ \{(\pi, \rho) \mid \rho > \psi(\tau^a, \tau^b, \pi) & \text{if } r^a > r^b, \end{cases} \tag{4}$$

where

$$\psi(\tau^a, \tau^b, \pi) = \frac{t^{b^2} - t^{a^2} + 2\pi(t^a - t^b) + \gamma(r^{b^2} - r^{a^2})}{2(r^b - r^a)}. \tag{5}$$

We will specify the value of the policy r so that larger r means more xenophobic (anti-immigrant). Thus, at equilibrium, we will expect that $r^L < r^R$. For an equilibrium with this characteristic, it follows from (4) that the constituency L will be precisely $L = \{(\pi, \rho) \in H \mid \rho < \psi(\tau^L, \tau^R, \pi)\}$, for these are the types who will prefer policy τ^L to policy τ^R . R , of course, comprises the remaining. Assuming the support of the distribution F is the real plane, we can therefore write:

$$\varphi(\tau) = \int_{-\infty}^{\infty} \int_{-\infty}^{\psi(\tau, \pi)} dF(\pi, \rho), \tag{6}$$

where the inside integral is over ρ and the outside integral is over π and

where $\tau \equiv (\tau^L, \tau^R)$. Similarly,

$$\begin{aligned} V^L(\tau^L) &= \int_{-\infty}^{\infty} \int_{-\infty}^{\psi(\tau^L, \tau^R, \pi)} v(\tau^L; \pi, \rho) dF(\pi, \rho) \\ V^R(\tau^R) &= \int_{-\infty}^{\infty} \int_{\psi(\tau^L, \tau^R, \pi)}^{\infty} v(\tau^R; \pi, \rho) dF(\pi, \rho). \end{aligned} \quad (7)$$

Now we substitute expressions (6) and (7) into the first-order conditions (3), and we have fully modeled PUNE—that is, condition (C2) of the definition of PUNE holds by construction.

The first-order conditions now comprise four equations in six unknowns—the four policy unknowns of the Left and Right parties, and the two Lagrangian multipliers x and y . If there is a solution, there will (generically) be, therefore, a two-parameter family of solutions. As we described above, the points in this family or manifold can be viewed as corresponding to equilibria associated with different relative bargaining strengths of the pairs of factions in the parties L and R . We remark that, at any PUNE, we can compute the associated relative bargaining powers of the Opportunists and Militants in each party. (We model the bargaining game within the parties as a Nash-bargaining game with threat points. The details of the game and the computation of bargaining powers are presented in Roemer, 2001, Ch. 8.)

III. The Policy Bundle and Anti-solidarity Effects: Theory

Our strategy to compute the two effects of voter xenophobia on the size of the public sector will be to estimate the above PUNE model, and then to run two counterfactual experiments, which we now describe. Our concern is with the effect of xenophobia on the size of public sector (tax policy).

We first summarize the value of the “tax policy” t that parties propose in equilibrium in the two-dimensional PUNE model described above, by one *average expected policy*, that we will define later, which we will denote t^{exp} .

In the first counterfactual experiment, we assume that *immigration policy* (r) is not an issue in the election. Parties compete, that is, over the single issue of public-sector size, t . We still use the PUNE model, which is now one-dimensional. Voters, however, continue to possess exactly the distribution of preferences on public-sector size as described by the marginal distribution of F on its first component. Since those preferences are influenced by their views on immigration, it continues to be the case, in this counterfactual contest, that voters’ views on immigration will *indirectly* affect the political equilibrium, via their effect on preferences over size of the public sector. We summarize the tax-policy equilibria of the set of

PUNEs for this counterfactual election by one policy, t_I^{exp} . The difference $t_I^{exp} - t^{exp}$ is a measure of the policy-bundle effect.⁴

Next, we estimate (in a manner to be described below in Section IV) a distribution of *racism-free demands for the public sector*. That is, we estimate what the distribution of preferences over public-sector size would be, were all voters non-xenophobic, or not anti-immigrant. Call this distribution G . We next run a second unidimensional election, on public-sector size, where we assume that the distribution of voter preferences on the tax issue is given by G . The results of this election will be sterilized of *both* the policy-bundle and the anti-solidarity effects. If we summarize the policy of the PUNEs here calculated by t_{II}^{exp} then we say that the *total effect* of xenophobia is $t_{II}^{exp} - t^{exp}$, and the anti-solidarity effect is $t_{II}^{exp} - t_I^{exp}$.

IV. Estimation of Model Parameters

Distribution of Voter Traits

We now discuss our use of the Danish voter surveys to calibrate the distribution of voter preferences on the size of the public sector and immigration policy. We select questions that enable us to calibrate both voters' preferences and their views about where the parties stand on the issues in question. We use the two following questions.

(i) **The economic issue**

Question: Among other things, the parties disagree about how big the public sector should be. Some parties say we should cut down on public revenue and expenditure, others say we should expect increasing expenditure and revenue in the future. Here is a scale from 1 to 5, where 1 means the revenue and expenditure should be cut substantially, 2 means that they should be cut a little, 3 means that the public revenue and expenditure are appropriate as they are now, 4 means that they should increase a little and 5 means that they should increase a lot. Where

⁴Note that the size of the policy-bundle effect depends on the model and the equilibrium concept we use to describe parties' behavior in an election. Consider, for example, some probabilistic models of political equilibrium with multi-dimensional policy spaces—e.g. the models of Coughlin (1992) and Lindbeck and Weibull (1987)—which predict that parties propose the same policy in equilibrium. In the simplest version of the probabilistic setting, both parties simply maximize the average welfare of the voters. In that case, it is straightforward to check that there is no policy-bundle effect. Indeed, with our specification of the utility function (1), both parties propose the average voters' ideal position on each issue in the two-dimensional model; thus proposals on the economic issue are the same, whether parties compete on this single dimension or on a larger number of issues, even if voters' bliss points on the various issues are correlated.

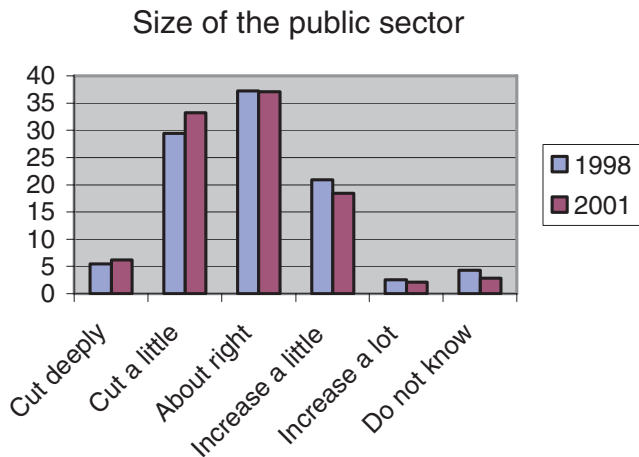


Fig. 1. Distribution of opinions on the size of the public sector

would you place the party (name all the parties)? Where would you place yourself?

The distribution of answers to the question “Where would you place yourself?” is presented in Figure 1. A very large proportion of respondents are either satisfied with the current size of the public sector, or support only a small change in its size. About 37% of the respondents think that the current size of the public sector is appropriate, and fewer than 8% are in favor of a large change (in either direction). Among the respondents who support a change, a decrease in the size of the public sector receives more support than an increase. Between 1998 and 2001 preferences are quite stable; only a small increase in the number of people who support a smaller public sector is observed.

(ii) The immigration issue

Question: Among other things, the parties disagree about how many refugees we can take. Some say we take too many. Others say we could easily take more. Here is a scale from 1 to 5, where 1 means that we should take far fewer refugees, 2 means we should take somewhat fewer, 3 means that we should continue to take the same number as now, 4 means that we should take somewhat more and 5 means that we should take a lot more refugees than we do now. Where would you place party X/yourself on this scale?

The distribution of answers to the question “Where would you place yourself?” is depicted in Figure 2. We observe, first, that respondents favor

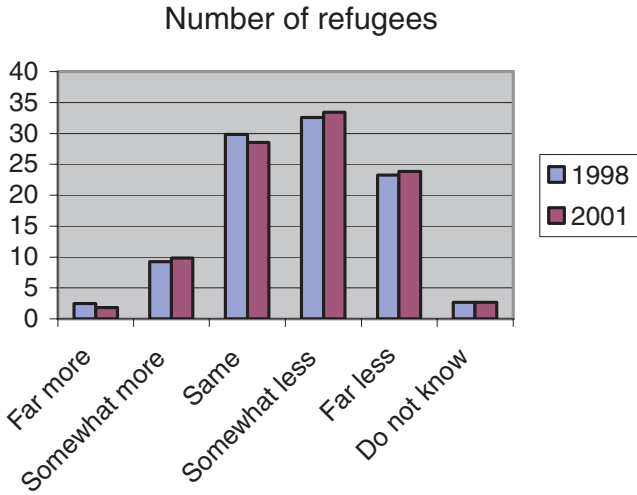


Fig. 2. Distribution of opinions on the immigration issue

a decrease in the number of refugees accepted. Over 50% of the respondents think that the country takes too many refugees while fewer than 15% think that the country should take more. Second, we observe stability of answers in this time period; there is only a slight increase in the number of people wanting fewer refugees.

The correlation between views on the size of the public sector and the immigrant/refugee issue will play an important part in our analysis of the anti-solidarity effect. Figures 3a and 3b present—respectively for years 1998 and 2001—the distribution of views on the economic issue, by answers to the refugee question. Globally, there is a strong negative relationship between pro-public sector and pro-refugee views. In 1998, among people who want far fewer refugees, 18% want more public expenditure, and over 50% want less public expenditure, versus respectively 1% and 20% among those who think that the number of refugees is about right. Among people who want far more refugees, over 70% want more public expenditure, while only 20% of those who think that the number of refugees is about right want a larger public sector. Figures are similar in 2001.

We now proceed to construct a joint distribution of voters' traits. The questions on the size of the public sector and on the immigration issue call for qualitative answers. Because we wish to construct quantitative variables, we need to assign numerical values to the different possible answers. We chose to do the following: for both questions the value 0 is assigned to the status quo (same size of the public sector or same number of refugees). The value +1 (resp. -1) is assigned to the answers "somewhat more

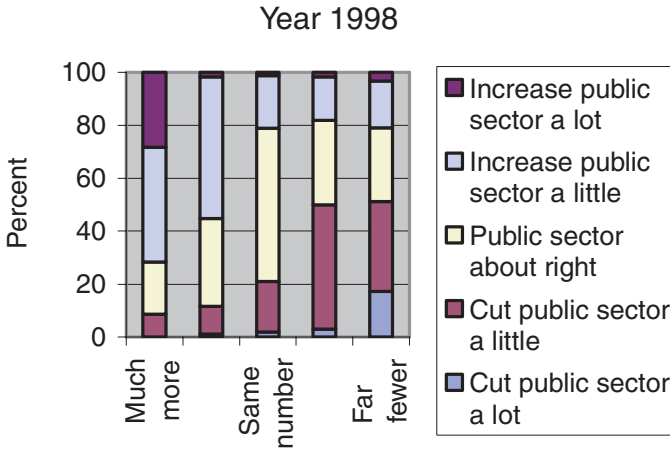


Fig. 3a. The distribution of economic views by xenophobic type, year 1998

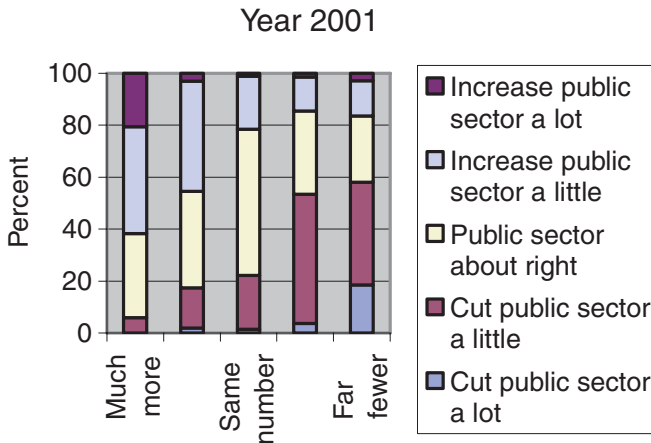


Fig. 3b. The distribution of economic views by xenophobic type, year 2001

public sector” and “somewhat fewer refugees” (resp. to the answers “some-
 what smaller public sector” and “somewhat more refugees”); the value +2
 (resp. -2) is assigned to the answers “much larger public sector” and “far
 fewer refugees” (resp. to the answers “much smaller public sector” and
 “many more refugees”). The quantitative variables thus defined are labeled
 π for the economic issue and ρ for the immigration issue. Some descriptive
 statistics for these two variables are provided in Table 3.

As noted, individuals are, on average, favorable to a small decrease in
 the size of the public sector and to a large decrease in the number of

Table 3. *Some descriptive statistics on the pro-public sector and the anti-immigrants variables*

Variable	1998			2001		
	Mean	Std. dev.	Obs.	Mean	Std. dev.	Obs.
π	-0.15	0.92	1,914	-0.24	0.91	1,967
ρ	0.67	1.02	1,948	0.70	1.01	1,972
Correlation		-0.33	1,886		-0.34	1,933

refugees. The correlation coefficient between the two variables is -0.33 in 1998, and -0.34 in 2001. We approximate the joint distribution by a bivariate normal density with mean and standard deviation of the marginal distributions given in Table 3 and correlation coefficient equal -0.33 in 1998 and -0.34 in 2001.⁵

Parties' Vote Shares and Platforms

Vote shares obtained by the various parties, in the 1998 and 2001 elections, as well as the parties' proposals on the issues we are concerned about, were presented in Table 1. As explained in Section II, we model Danish politics in terms of broader coalitions of parties: Left and Right. We compute the broader parties' vote shares by summing the vote shares of the parties forming the coalition. These are reported in Table 4. We also compute coalitions' positions, defined as the average of the parties' positions on the various issues, weighted by their vote share within the coalition. Note that, as far as the immigration issue is concerned, the Right party is closer to the voters' average point of view than the Left. As to the size of the public sector, the average point of view of voters is equidistant from the Left and Right positions. If we compare the voters' perceived positions of the parties across time, we see that the Left coalition is viewed as almost stable, with only a very small anti-public sector, anti-immigrants shift over the three-year period, whereas the Right party is viewed as having made more spectacular changes, becoming much more anti-immigrant on the period.

Another useful indicator of the division of the electorate on these two issues is the average ideal tax policy (and the average ideal immigration policy) of respondents who declared voting for a party in the Left coalition,

⁵ Some discussion on the interpretation of these variables and on the choice of coding is provided in the working-paper version of this article; see Roemer and Van der Straeten (2004).

Table 4. *Coalitions' vote shares and political platforms*

	1998			2001		
	Public sector	Immigration	Vote share	Public sector	Immigration	Vote share
Left	0.67	-0.37	50.3	0.53	-0.28	43.1
Right	-0.94	0.94	49.7	-0.95 ^a	1.18 ^a	56.9
Voters	-0.15	0.67		-0.24	0.70	

^a In the 2001 survey there is no question about the perceived position of the Center Democratic Party and of the Progress Party (see Table 1). Since these parties receive only a small share of the votes, we simply ignore them when computing the average observed policies of the Right coalition.

Table 5. *Average ideal tax policy and average ideal immigration policy of respondents who declared voting for a party in the Left coalition/for a party in the Right coalition*

Average ideal policy for	1998		2001	
	Public sector	Immigration	Public sector	Immigration
Voters who vote for <i>L</i>	0.28	0.29	0.21	0.23
Voters who vote for <i>R</i>	-0.54	0.97	-0.59	1.02
All voters	-0.15	0.67	-0.24	0.70

and those of respondents who declared voting for a party in the Right coalition. Results are reported in Table 5.

Estimation of Counterfactual Preferences

To compute the anti-solidarity effect, as we have described above, we need to construct counterfactual “racism-free” demands for the public sector, that is, voter preferences on the size of the public sector that would be observed were hostility towards immigrants and refugees not to reduce the feeling of solidarity. There is no unique way to do this; our results will depend on exactly how we interpret the significant correlation between opinions on the size of the public sector and the immigration issue. We cannot expect, given the available data, to provide definitive evidence that xenophobia indeed *causes* a decrease in the support for the public sector, or to give a definitive answer as to the exact size of this effect. Our goal is less ambitious: it is to provide some weak evidence that this correlation remains even when we control for demographic factors, and to provide a range of values for the effect. In the working-paper version of this article, we discuss several methods to explore this relationship. Here, we choose to report only on the use of regression analysis to explore the empirical

relationship between the size of the public sector and views on immigration. We estimate the following model:

$$\pi_i = -\delta\rho_i + X_i'\beta + \varepsilon_i,$$

where X_i is a set of individual characteristics, including social and demographic variables, as well as responses to questions about how the respondents feel on a number of justice issues, or about the behavior of people living on welfare. The disturbance term ε_i represents the unobserved characteristics of individual i ; it is a zero mean disturbance with standard normal distribution. We estimate the model with OLS. Results are presented in Table 6. (The definition of the added independent variables is provided in the Appendix.)

The *anti-immigration* variable is highly significant and attracts the expected negative sign. Unsurprisingly, people who think that the unemployed are lazy, that too many people take advantage of the system, or who think that a higher level of justice is not desirable, tend to favor lower tax rates. The young, female respondents tend to support a larger public sector.⁶

The figures in Table 6 suggest that an increase of 1 point (on the $(-2, 2)$ scale) in the level of xenophobia reduces the *ProPublicSector* by $\hat{\delta} = 0.18$ in 1998 and by $\hat{\delta} = 0.23$ in 2001. We use this estimator to construct what we will define as racism-free demands for the public sector. We proceed as follows. First, we select a critical level of *AntiImmigration* ρ_{ref} that we take to be the non-xenophobic threshold. Then, we define all individuals with $\rho \leq \rho_{ref}$ to be free of racism, and take their observed preferences for the public sector to be their racism-free economic preferences; whereas, for all individuals with $\rho > \rho_{ref}$, we assume that there is some racism at play, and define their racism-free economic preferences to be those they would have if $\rho = \rho_{ref}$. More specifically, consider an individual with observed traits (π, ρ) . We define her racism-free demand for public sector to be π if $\rho \leq \rho_{ref}$, and to be $\pi + \delta(\rho - \rho_{ref})$ if $\rho \geq \rho_{ref}$. We will consider three different values for ρ_{ref} : $\rho_{ref} = -2$ (option 1), $\rho_{ref} = -1$ (option 2), $\rho_{ref} = 0$ (option 3). Table 7 presents the mean and standard deviation of the

⁶ Note that there is no canonical way to decide upon the exact list of the variables that should be included on the RHS of the regression in Table 3. For example, if we regress π on ρ alone with 1998 data, the coefficient on ρ is -0.30 (column 2). Now consider adding the variable *TakeAdvantage* to this regression, which measures whether the respondent thinks that too many people take advantage of the public system (see the Appendix for the exact definition). The correlation between *AntiImmigration* and *TakeAdvantage* is very large: 0.40. If we add the variable *TakeAdvantage* to the regression, the coefficient on *AntiImmigration* drops to -0.17 (see column 3). Whether we should add this variable to the RHS of the regression depends on how we interpret the correlation between *AntiImmigration* and *TakeAdvantage*. We chose here to add all possible variables to the RHS of the regression.

Table 6. *Dependent variable: ProPublicSector (estimation with OLS)*

	1998	2001	
Anti-immigrants	-0.295*** (0.020)	-0.308*** (0.019)	-0.226*** (0.023)
Constant	0.043* (0.024)	-0.028 (0.023)	0.051 (0.191)
Unemployed lazy			-0.044*** (0.017)
Take advantage			-0.125*** (0.018)
Same economic conditions for all			0.104*** (0.015)
Household income			-0.021*** (0.006)
Female			0.203*** (0.041)
Age			0.013* (0.007)
Age squared			-0.0002** (7.10 - 5)
City			0.015 (0.015)
Education			-0.061*** (0.023)
No. of observations	1,886	1,933	1,645
R-squared	0.1066	0.1166	0.2156

Notes: *** Significant at the 1% level; ** at the 5% level; * at the 10% level. Standard errors are in parentheses beneath the value of the coefficients.

Table 7. Mean and standard deviation of the racism-free economic preferences and of the observed preferences

	1998		2001	
	Mean	Std. dev.	Mean	Std. dev.
Racism-free, option 1	0.33	0.87	0.37	0.86
Racism-free, option 2	0.15	0.87	0.15	0.86
Racism-free, option 3	-0.01	0.88	-0.05	0.87
Observed preferences	-0.15	0.91	-0.24	0.91

racism-free economic preferences for the three options, and the two years under study. The last line also presents the figures for observed preferences.

Note that the obtained values are almost identical in 1998 and 2001. In 2001, there is a slight decrease in the observed demand for public sector compared to 1998, but an increase in the coefficient δ balances this effect, so that racism-free demands are practically the same. We conclude that a reasonable set of racism-free distributions of public-sector preferences for both years are normal distributions with mean = 0, mean = 0.15, mean = 0.3, and standard deviation 0.85.

V. Political Equilibrium: Observation and Prediction

We describe the computation of equilibrium PUNEs. We perform these computations for various values of γ ; our choice of the ones to report here will be motivated below. For each value of γ , we computed many (approximately 100) PUNEs. (Recall that there is a two-manifold of PUNEs.) We then selected those for which the Left vote share is within 5% of the observed vote share for Left in that election. Recall that to compute a PUNE, we solve four simultaneous equations in six unknowns, such that two of the unknowns, the Lagrangian multipliers, are non-negative.

In Figure 4a we graph the selected PUNEs for 1998 for the value of salience $\gamma = 0.5$. The space of the figure is (t, r) . The three large dots in the figure are, reading from left to right, the average policy position (i.e., ideal point) of those who, in the voter survey, identified themselves with one of the Right parties, the average ideal point of all respondents, and the average ideal point of those identified with Left parties. The next pair of smaller dots are the average values of the PUNEs;⁷ the pair of smallest points are the average ideal points of the Militants in the PUNEs

⁷ That is, the average value of the share-weighted average of the parties' policies, over selected PUNEs. A sophisticated form of averaging was used. We computed kernel densities of the bargaining powers in the PUNEs, and then weighted each PUNE with its predicted "frequency", so computed. This procedure reflects our view that the "missing data" in the analysis are the bargaining powers of the factions.

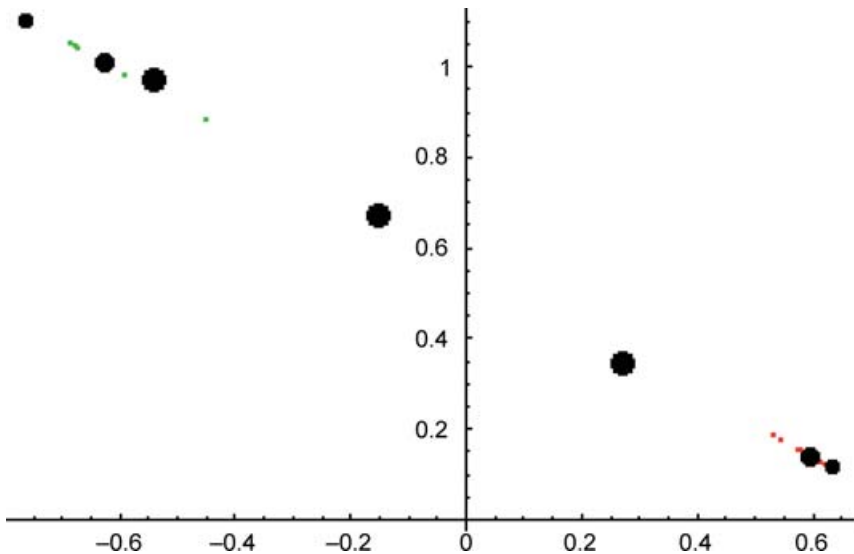


Fig. 4a. PUNEs, 1998, $\gamma = 0.5$

Legend: Abscissa is t , ordinate is r . The three largest black dots are the average ideal point of all voters (middle), of Right voters (upper left), and of Left voters (lower right). The two black dots of next lower size are the average PUNE policies of R and L . The pair of black dots of next lower size are the average policy views of the Militants in R and L at the PUNEs. The cluster of light gray small dots (upper left) are PUNE policies of Left; the cluster of deeper gray small dots (lower right) are PUNE policies of Right.

calculated. (Of course, it is to be expected that the average PUNE values are more moderate than the average values of the Militants in the two parties.) The very small dots are the PUNE policies of the two parties. Note that the Right party average PUNE is quite close to the average policy ideal of voters who identify with Right. In contrast, the Left party average PUNE is considerably more extreme than the average policy value of Left voters—it is more left on the size of the public sector, and less xenophobic than are Left voters.

We can now describe why we choose to report the results for $\gamma = 0.5$: note that the three large dots, which report *observed values*, are collinear with the PUNE values. This characterizes the value $\gamma = 0.5$. For larger and smaller values of γ , that collinearity fails to hold. In this sense, the value $\gamma = 0.5$ gives the best fit of the model to the data.⁸

⁸ In the working-paper version of this article, we describe how we also directly estimated γ from the Danish electoral survey, using for each respondent her opinions of the immigration issue, on the economic issue, and her reported vote in the election. It is worth noting that the best-fitting value of γ (0.5 in 1998 and 0.6 in 2001) lies in the interval, for each year, that was estimated from the survey data.

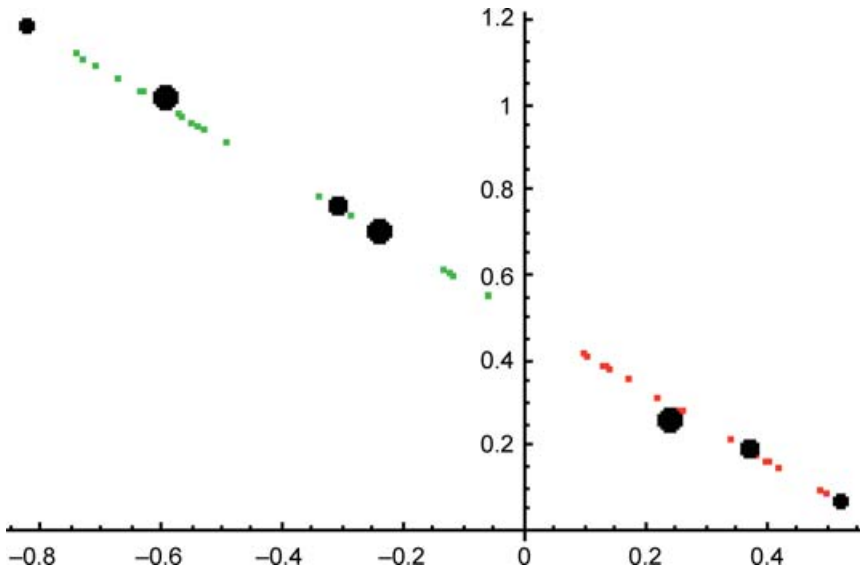


Fig. 4b. PUNEs, 2001, $\gamma = 0.6$. See legend for Figure 4a.

If the model were perfect, then we would expect that the average ideal point of the Militants in Left and Right would coincide with the average observed policy preferences of voters who identify with Left and Right. We do not achieve this coincidence of model and data: the Militants in the model's equilibria are considerably more extreme than the citizens who actually identify with the parties, in Figure 4a. The PUNE analysis predicts that the Left and Right parties are more extreme than are the voters who identify with them.

In Figure 4b we graph the PUNEs for 2001: this time, the choice of γ to achieve the desired collinearity of observation with data is 0.6. Note that the average Right policy in PUNEs is very close to the average policy view of voters in 2001: this means that Opportunists in Right were relatively much more powerful (with respect to Right Militants) in 2001 than in 1998. Left, on the other hand, has not compromised as much as Right. In both elections, it appears, then, that the Left party is considerably more radical on both issues than its observed constituency.

Indeed, the contrast between the Right policies in PUNEs in 1998 and 2001 leads us to conjecture that the major explanation for the growth in Right's vote share between 1998 and 2001 was not the change in the distribution of voter preferences, but rather a strengthening of the Opportunist faction in Right over this period, where a comparable strengthening did not occur for Left's Opportunists.

Table 8a. *PUNEs, 1998, with Left vote share at least 40%*

γ	<i>BPR</i>	<i>BPL</i>	t_L	t_R	r_L	r_R	<i>L</i> vote share
0.5	0.628697	0.829203	0.576437	-0.549139	0.154231	0.953317	0.425725
0.5	0.698542	0.92285	0.622139	-0.589915	0.121768	0.982299	0.424622
0.5	0.79183	0.933811	0.58198	-0.683665	0.150244	1.04895	0.454831
0.5	0.762134	0.876167	0.544513	-0.677612	0.176775	1.04472	0.461961
0.5	0.5057	0.703209	0.532761	-0.448701	0.185197	0.882103	0.413039
0.5	0.733015	0.925206	0.604972	-0.626399	0.133949	1.00827	0.436685
0.5	0.798179	0.974892	0.614719	-0.67374	0.127003	1.0419	0.44517
0.5	0.745414	0.969462	0.637299	-0.622016	0.111006	1.00509	0.428423
0.5	0.63046	0.849025	0.594551	-0.542426	0.141326	0.948653	0.420169

Table 8b. *PUNEs, 2001, Left vote share within 5% of observed share*

γ	<i>BPR</i>	<i>BPL</i>	t_L	t_R	r_L	r_R	<i>L</i> vote share
0.6	0.707899	0.824854	0.402725	-0.709326	0.161638	1.09316	0.458537
0.6	0.10902	0.172715	0.137341	-0.132147	0.383917	0.609667	0.385387
0.6	0.603916	0.742785	0.383003	-0.630981	0.178149	1.02753	0.444595
0.6	0.527798	0.835404	0.525453	-0.493153	0.058798	0.912085	0.379178
0.6	0.548844	0.724427	0.400995	-0.571501	0.163077	0.977703	0.426281
0.6	0.389954	0.437284	0.171502	-0.526511	0.355341	0.940018	0.470088
0.6	0.608437	0.745537	0.382953	-0.635012	0.178186	1.03092	0.445565
0.6	0.0616152	0.101041	0.0992047	-0.0610826	0.415864	0.550136	0.377848
0.6	0.709374	0.789291	0.367985	-0.72704	0.190741	1.10799	0.471053
0.6	0.803782	0.988439	0.496988	-0.739256	0.0826683	1.11823	0.443242
0.6	0.62673	0.866212	0.487299	-0.602427	0.0907843	1.00361	0.413284
0.6	0.0983831	0.157582	0.131187	-0.115182	0.389072	0.595455	0.382906
0.6	0.0889009	0.138909	0.105288	-0.115836	0.410767	0.596003	0.389006
0.6	0.453796	0.540747	0.26021	-0.547335	0.280998	0.957474	0.453898
0.6	0.275986	0.453519	0.339955	-0.284499	0.214176	0.737297	0.373897
0.6	0.279262	0.405217	0.257957	-0.336495	0.282893	0.780844	0.404747
0.6	0.661735	0.798265	0.403085	-0.671376	0.161323	1.06137	0.449419
0.6	0.107554	0.172471	0.142826	-0.125007	0.379322	0.603686	0.382491
0.6	0.424257	0.492003	0.219858	-0.537488	0.3148	0.949223	0.461164
0.6	0.553328	0.748387	0.422536	-0.565467	0.145033	0.972649	0.419798

It must be emphasized that our utility function has only one degree of freedom, γ ; had we a more complex utility function, we would be able to calibrate the model to better fit the data. In particular, it might be desirable to characterize each voter with her own value of salience. That, however, would require a three-dimensional-type space, leading to considerably complex numerical computation of the equilibria. It is also far from clear that the survey observations on individual voters' saliences are reliable.

Finally, Tables 8a and 8b present the numerical values of the PUNEs we have graphed in Figures 4a and 4b. The columns labeled "*BPR*" and "*BPL*" report the relative bargaining power of the Militants in the *R* and

L parties, respectively, in the PUNE. A relative bargaining power of 0.5 means the Militants and Opportunists are equally powerful. It is clear that the bargaining powers of the selected PUNEs are not uniformly distributed on the interval $[0, 1]$, an observation that is important in what follows below.

VI. The Policy Bundle and Anti-solidarity Effects: Computation

The first counterfactual experiment contemplates an election in which only the policy t is an issue. The relevant distribution of voter types is simply the marginal distribution on the first component π of types. We now compute 250 PUNEs for this unidimensional election: call these P-PUNEs. We denote the average expected tax rates in this selection of P-PUNEs by t_I^{exp} .⁹ We take this to be the tax rate equilibrium, purged of the policy-bundle effect.

For the *second counterfactual*, which computes the anti-solidarity effect, we change the distribution of voter types to the estimated racism-free distribution, G , described in Section IV. We take the racism-free distribution to be a normal distribution on π with standard deviation 0.85 and mean in the set $\mu^* \in \{0, 0.15, 0.3\}$. Thus, for our chosen value of γ , we compute three versions of the second counterfactual, according to the hypothesized value of μ^* . For the second counterfactual, we again compute 250 PUNEs—call them Q-PUNEs. Denote the average value of the expected tax rate in these Q-PUNEs by $t_{II}^{exp}(\gamma, \mu^*)$.¹⁰

The PBE and the ASE, which are functions of (γ, μ^*) are then given by:

$$PBE(\gamma) = t_I^{exp}(\gamma) - t^{exp}(\gamma)$$

$$ASE(\gamma, \mu^*) = t_{II}^{exp}(\gamma, \mu^*) - t_I^{exp}(\gamma).$$

Clearly the total effect of xenophobia on the size of the public sector is:

$$TOT(\gamma, \mu^*) = PBE(\gamma) + ASE(\gamma, \mu^*) = t_{II}^{exp}(\gamma, \mu^*) - t^{exp}(\gamma).$$

Tables 9a and 9b report the results.

The appropriate way to think of the size of these effects is in comparison to the standard deviation of the distribution of ideal public-sector values (π), which is 0.92 in 1998 and 0.91 in 2001. By definition, the PBE is invariant with respect to changes in μ^* . As we would predict, the ASE increases as

⁹ In fact, we only took the average on a small selection of those P-PUNEs, for which the pair of Militant bargaining strengths in the two parties were close to those observed in the full model (see footnote 7).

¹⁰ Here again we take a selection of those whose bargaining powers are close to those that obtain in the full model.

Table 9a. *The anti-solidarity (AS) and policy-bundle (PB) effects, 1998 PUNEs:*
 $\gamma = 0.5$

μ^*	ASE	PBE	Total effect	Total/std. dev.
0	0.150	0.071	0.146	15.9%
0.15	0.300		0.229	24.9%
0.30	0.450		0.331	36.0%

Table 9b. *The anti-solidarity (AS) and policy bundle (PB) effects, 2001 PUNEs:*
 $\gamma = 0.6$

μ^*	ASE	PBE	Total effect	Total/std. dev.
0	0.240	0.0096	0.112	12.3%
0.15	0.390		0.162	17.8%
0.30	0.540		0.189	20.8%

we increase the value of μ^* . The PBE is positive in both years, but it appears to be insignificant in 2001.

On the other hand, the anti-solidarity effect is quite significant in size: we calculate that the total effect is between 16% and 36% of one standard deviation of the distribution of voter ideal points on public-sector size in 1998, and between 12% and 21% of one standard deviation in 2001.

Our model thus suggests that the size of the public sector, to the extent that that size is determined by party positions in general elections, is reduced by a non-trivial amount due to voter xenophobia. We will, however, offer a caveat to this conclusion below.

VII. Conclusion

Our model of party unanimity Nash equilibrium conceptualizes party competition in a way that provides existence of political equilibrium when the policy space is multi-dimensional, and, moreover, predicts that parties propose different policies in equilibrium. By virtue of these features, it is superior to the Downsian model of purely opportunist politics, in which equilibria rarely exist if the policy space is multi-dimensional, and to other models of political equilibrium with multi-dimensional policy spaces—e.g. the model of Coughlin (1992)—which predict that parties propose the same policy in equilibrium. The PUNE model conceptualizes the decision-makers in parties as having varied interests, regarding winning versus representation, and that the factions organizing these disparate interests bargain with each other when facing the opposition party's platform.

Like all equilibrium models, ours is best viewed as one that describes a political system in which preferences of voters are stable. In periods when voter preferences are in flux, we cannot expect the PUNE model to give perfect predictions. With stable constituencies, party entrepreneurs will come to know their constituencies' interests well, and we can expect that those entrepreneurs who wish to represent constituents will do so with more precision than when voter preferences are unstable and constituencies are shifting. The mechanism by which this occurs may well be that those Militants who rise within the party structure *are* ones who best represent the constituents' interests. Once ensconced, however, a particular Militant will have a career within the party that may last for years or decades. Thus, in periods of voter-preference flux, the established Militants in a party may cease to represent its evolving constituency.

Our policy space is only two-dimensional. In reality, the policy space has many more dimensions. In particular, it is possible, in fact, to differentiate public-sector policy towards immigrants from policy towards natives: for example, immigrants may receive less favorable treatment with regard to transfer payments than natives, as is currently the case in Denmark. To represent this possibility in our model would require a third policy dimension. With such a third dimension, both the anti-solidarity effect and the policy bundle effect should decrease, because presumably parties could then propose to retain high public-sector benefits for natives, while reducing them for immigrants. We cannot, therefore, predict that the *total* size of the welfare state will radically fall in Denmark.¹¹

Indeed, this point illustrates the necessity for political economists to model political competition as occurring over multi-dimensional policy spaces. Our work begins this task, although, as we have just noted, it still falls short of what is ultimately desirable. The binding constraints, at this point, are two: first, the availability of reliable data on voter preferences over multi-dimensional policy spaces, and second, the difficulty of computing equilibria (PUNEs) in real time, when the dimension of the type space and/or policy space is larger than two.

With respect to substantive conclusions, we will not review the estimates of Section VI. We do, however, repeat in conclusion our conjecture from the examination of PUNEs in 1998 and 2001: that the increased vote share of Right may be due not to the change in the distribution of voter types, but rather to increasing opportunism in Right parties.

¹¹ We contrast this with the United States, where voter racism is directed primarily towards African-Americans, who, as citizens, cannot be legally discriminated against, as can aliens. Thus, we would expect the size of the welfare state to be more affected by voter racism in the US than by voter xenophobia in Denmark. See Lee and Roemer (2006) for further analysis.

Appendix. Definition, Mean and Standard Deviation of Variables in Table 6

Same Economic Conditions for All

Question: I am now going to mention some viewpoints from the political debate, which one can agree with or disagree with. In politics one should aim to provide the same economics conditions for everyone, regardless of education or occupation.

Answers: Strongly disagree (−2), Slightly disagree (−1), Neither agree nor disagree (0), Agree (+1), Strongly agree (+2).

Unemployed Lazy

Question: I am now going to mention some viewpoints from the political debate, which one can agree with or disagree with. In reality, many of the unemployed don't want to take a job.

Answers: Strongly disagree (−2), Slightly disagree (−1), Neither agree nor disagree (0), Agree (+1), Strongly agree (+2).

Take Advantage

Question: I am now going to mention some viewpoints from the political debate, which one can agree with or disagree with. There are too many getting social security benefits, who don't need it.

Answers: Strongly disagree (−2), Slightly disagree (−1), Neither agree nor disagree (0), Agree (+1), Strongly agree (+2).

Household Income

Question: What is your household's total annual gross income—i.e., before tax?

Answers: Under 75,000 kr (1), Between 75,000 and 99,999 kr (2), Between 100,000 and 124,999 kr (3), Between 125,000 and 149,999 kr (4), Between 150,000 and 174,999 kr (5), Between 175,000 and 199,999 kr (6), Between 200,000 and 249,999 kr (7), Between 250,000 and 299,999 kr (8), Between 300,000 and 349,999 kr (9), Between 350,000 and 399,999 kr (10), Between 400,000 and 449,999 kr (11), Between 450,000 and 499,999 kr (12), Between 500,000 and 599,999 kr (13), Between 600,000 and 699,999 kr (14), Between 700,000 and 799,999 kr (15), 800,000 kr and over (16).

City

Question: What type of town do you live in?

Answers: Rural district (1), Town with less than 10,000 inhabitants (2), Town with 10,001–50,000 inhabitants (3), Town with 50,001–500,000 inhabitants (4), Capital city area (5).

Education

Question: What level of schooling did you complete?

Answers: Primary schools, 7 years or less (1), Primary and lower secondary school, 8/9 years (2), 10 years schooling/School-leaving exam (3), Matriculation/Senior high-school exam (4).

Means and Standard Deviations

	1997			2001		
	Mean	Std. dev.	Obs.	Mean	Std. dev.	Obs.
Unemployed lazy	0.09	1.40	1,935	0.02	1.39	1,977
Take advantage	0.64	1.23	1,844	0.54	1.27	1,886
Same econ. cond.	-0.42	1.39	1,933	-0.29	1.41	1,968
Household income	8.59	3.91	1,746	9.58	4.15	1,857
Female	0.46	0.50	2,001	0.48	0.50	2,026
Age	46.00	16.63	2,000	47.41	19.95	2,026
City	2.89	1.44	1,998	2.73	1.34	2,023
Education	2.72	1.09	1,992	2.76	1.08	2,025

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First version submitted November 2004;
 final version received September 2005.