Racism and redistribution in the United States: A solution to the problem of American exceptionalism

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Abstract

The two main political parties in the United States in the period 1976–1992 put forth policies on redistribution and on issues pertaining directly to race. We argue that redistributive politics in the US can be fully understood only by taking account of the interconnection between these issues in political competition. We identify two mechanisms through which racism among American voters decreases the degree of redistribution that would otherwise obtain. In common with others, we suggest that voter racism decreases the degree of redistribution due to an *anti-solidarity effect*: that (some) voters oppose government transfer payments to minorities whom they view as undeserving. We suggest a second effect as well: that some voters who desire redistribution nevertheless vote for the anti-redistributive (Republican) party because its position on the race issue is more consonant with their own, and this, too, decreases the degree of redistribution in political equilibrium. This we name the *policy bundle effect*. We propose a formal model of multi-dimensional political competition that enables us to estimate the magnitude of these two effects, and estimate the model for the period in question. We compute that voter racism reduced the income tax rate by 11–18% points; the total effect decomposes about equally into the two sub-effects. We also find that the Democratic vote share is 5–38% points lower than it would have been, absent racism. The magnitude of this effect would seem to explain the difference between the sizes of the public sector in the US and northern European countries.
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1. Introduction

It is an old theme of the Left that racism divides the American working class, thus blocking its attempt to redistribute national income away from capital towards labor. (See McWilliams (1939) for a classical study of how growers used racism to prevent farm labor from organizing.) Traditionally, the mechanism indicated has been that racism among workers weakens unions, which shifts revenues of firms towards profits and away from wages. A second mechanism, of more social democratic origins, operates through electoral politics. Racism reduces 'compassion' among citizens—particularly, in the United States, among whites towards blacks; some whites consequently vote against the redistributive party (the Democrats in the US), as blacks are prominent beneficiaries of redistributive taxation.

A renewed interest in the significance of voter racism is emerging among scholars. Alesina et al. (2001) regress, for a panel of countries, the degree of redistribution on the size of the country's poor ethnic minority, and find a strong negative relationship. The US has the most significant, poor minority of any country in the panel, and the least redistribution. Luttmer (2001) concludes similarly: individuals decrease their support for redistribution as the share of local recipients from their own racial group falls. He finds that this effect is stronger if those on welfare are predominantly not working, or unmarried mothers.

Purely econometric exercises do not identify mechanisms; there could be many causes for the observed phenomenon. These authors conjecture they are capturing an effect in which citizens vote against redistribution because they place a low value on equality, due to their wish not to redistribute to minorities. There is, however, a second effect, quite different from this one, which may also be at play. Political parties put forth policies on many issues—in particular, on redistribution and on racial issues (The latter include policies on affirmative action, government aid to blacks, 'law and order', prison funding, and so on). Racially conservative citizens who *desire* redistribution, because they themselves are poor, may vote for the Republican Party, because it has the policy they prefer on the race issue, even though it also advocates less redistribution than these voters would like.

Here, we will attempt to measure these two effects of voter racism on redistribution, which we call the *anti-solidarity* and *policy bundle effects*. Due to the anti-solidarity effect, racist voters oppose redistribution to the poor, who (they believe) are substantially minority. By reducing voter compassion towards the poor, the anti-solidarity effect will cause both American political parties to be less redistributive than otherwise. Due to the policy bundle effect, some poor citizens may vote for the party that is anti-redistributive, even if they themselves desire some redistribution, because that party advocates a position on the racial issue consonant with their own. The policy bundle effect may further reduce redistribution.[1]

We denote by *voter racism* an affirmation of what are conventionally viewed as conservative policies on the race issue, induced by *anti-black affect* and *the belief that blacks are pushing too fast* (See Section 2). This is not the old-fashioned, blatant Jim Crow racism. We leave open the question of *why* the voter in question has the affect and the belief he/she does.[2]

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[1] We point out, however, that the policy bundle effect of racism on redistribution need not, logically, reduce the degree of redistribution. Conceivably, if there were a large group of rich, anti-racist voters, it could increase redistribution. As we will see, this is not the case in the United States. The concept of the policy bundle effect, at the purely theoretical level, was introduced in Roemer (1998), where 'religion' was taken as the secondary issue.

[2] We take voter racism as given, but this does not mean that we deny the possibility that racism may be endogenously determined. Glaeser (2004) cites evidence that racial hatred has been often fomented by political entrepreneurs. We simply do not model this possibility.

The policy bundle effect to which we refer may be large because there is no third party in the United States that offers voters a platform of significant redistribution and racially conservative policy: if there were, then poor racist voters desiring redistribution could vote for it, instead of voting Republican. The policy bundle effect is a *political portfolio effect*: it exists because of the limited choice of policy combinations available to the voter in a system with only two parties. The disappeared southern Democrats represented the platform just described; when these racist politicians were Democrats, Southern whites could vote Democratic (pro-redistribution) and be racially conservative at once. The policy bundle effect, we conjecture, was either nil or small during this period. One may conjecture that the demise of the Southern racist Democrat has reduced redistribution in the US—a conjecture we might be interested in testing at another time.

Some methodological comments are in order. The current paper combines theory with econometrics. Unlike Alesina et al. (2001) and Luttmer (2001), we will propose a formal model of political competition between parties. We will assume that the competition between the Democratic and Republican parties in the US is described by that model. The model's parameters and their confidence intervals will, however, be estimated from data. With the benchmark model and the estimated model parameters in hand, we will then perform some counterfactual experiments enabling us to compute the magnitude of the two effects of voter racism on redistribution. Sensitivity analyses and model confirmation procedures with actual data will be also employed.

In the jargon of econometrics, our approach is *semi-parametric*, which means two things: first, that we estimate those parameters that appear in the functions explicitly specified in the model using parametric estimation methods; second, that other functional forms, for which economic and political theory provide little guidance, are estimated non-parametrically (An example of the latter would be the distribution of voter types). Our use of non-parametrically estimated density functions in the computation of the model is computationally expensive, but greatly improves the model's fit.

Section 2 presents our operational definition of voter racism. Section 3 describes our micro-political model, one of political competition on a two-dimensional policy space where the constituencies of parties are endogenously determined. In Section 4, we estimate the values of the underlying parameters as well as the distribution of voter types. In Section 5, we calculate the equilibrium platforms of the two parties using the model described in Section 3, with parameter values and functions estimated in Section 4, and decompose the total effect of voter racism on redistribution into its two separate effects. Section 6 concludes. Survey question variables from the National Election Studies are defined in Appendix A.

2. Recovering voter racism from survey data

From the time of chattel slavery, through the Civil War and the Civil Rights Movement of the 1960s, racial issues have been on the political agenda. Racially tinged issues, such as welfare, crime, 'permissive' judges, and government regulation, have been the subject of strenuous political debate and strong legislation for the last three decades. Debates are fierce when 'race-conscious' remedies such as affirmative action are on the table, as seen in the *Bakke v. Regents of the University of California* case in 1978 and the *Hopwood v. Texas* case in 1996.

Many commentators argue that race as a political issue has led to significant party and voter realignment in American politics over the last half century (see Carmines and Stimson (1989), Edsall and Edsall (1991), and Teixera and Rogers (2000) among others).

According to the National Election Studies (NES), about 83% of Southern whites described themselves as Democrats in 1952; as of 1996, only 48% did. Northern whites have also

gradually defected from the Democratic Party since 1964. In only one election since 1960 has the Democratic candidate received a majority of the total white vote (See Table A-2-1 and Fig. A-2-1 in Lee and Roemer, 2004). This phenomenon is sharply in contrast with the percentage of blacks voting Democratic, which has always been greater than 90%. Indeed the black vote has been a pivotal factor for the Democratic Party in presidential elections.

Explaining whites' opposition to liberal racial policies has been the subject of extensive research by American social scientists over the past quarter century. Although details of this research are quite nuanced, the debates have mainly centered around the relative importance of two factors underlying American racial attitudes: (1) psychological antipathy/resentment, prejudice, and negative beliefs (including stereotyping) against minorities; and (2) political ideology and values such as individualism and libertarianism. Scholars have disputed which of these factors is the principal source of the public's opposition to race-related policies, such as affirmative action programs (See Kinder and Sanders (1996) and Sniderman and Piazza, 1993).

How do we understand white racism in politics? Providing a thorough operational definition of voter racism would be beyond the scope of this paper. We limit ourselves to several remarks.

First, 'the end of racism' in American politics is often asserted from what surveys say about whites' attitudes towards blacks on a few old-fashioned racial issues. It is, however, well documented that there is a large gulf between whites and blacks in the perception of racial inequality and its causes. No matter what national surveys say about whites' attitudes towards blacks, most blacks still see racism persisting among whites. Sigelman and Welch (1991) document striking facts. As of 1989, when only 4% of whites characterized most whites as sharing the Ku Klux Klan's extreme racial views, almost one black in four claimed that more than half of all white Americans accepted the Klan's racial views. Approximately 50% of blacks perceive discrimination in the market for unskilled and skilled labor while only about 10–15% of whites perceive it.

Second, racism is indeed a *latent* variable. It is useful to distinguish between attitude and behavior. Racial prejudice is *attitudinal and covert* while racial discrimination is *behavioral and overt*. One can easily imagine a person who holds prejudices about blacks but does not act on the basis of these attitudes. This prejudice might be revealed through his or her voting pattern at election time when he or she holds the view that a specific party or a candidate over-represents blacks.

Third, voters' responses on specific racial issues might be a reflection of various ideological components, not just racism. This is because political ideology is not *unidimensional*. One can for example be liberal in one dimension (e.g., pro-choice on abortion issues) but conservative in another dimension (e.g., opposition to redistribution). Consider, for instance, the variable '7 point aid-to-blacks score,' which ranges between 1 ("governments should help blacks to improve their socio-economic position") and 7 ("blacks should help themselves"). One might legitimately argue that the voter position on this variable could be shaped not only by racism but also by libertarianism. (Others might even argue that this is a variable capturing only libertarianism, not racism.) As we will see below, both racism and libertarianism play a role in explaining this variable, although a much larger effect is due to the former.

To address these issues, we first decompose 'political ideology' (liberal-conservative) of whites into four *orthogonal* latent factors—racism, libertarianism, feminism, and compassion for the poor—by carrying out factor analyses on ten variables in the NES for each presidential election year. These four factors, we believe, constitute core components of American political ideology.

The ten variables are: (1) *antiblack affect*, measured by the difference between a white respondent's thermometer rating of blacks and his rating of his own ethnic group; (2) the belief that *blacks are pushing too hard*, measured by the responses on the question of whether civil rights movement is pushing too fast; (3) thermometer rating towards *the poor*; (4) thermometer

rating towards *people on welfare;* (5) thermometer rating towards *trade unions*; (6) the belief that *government is too strong* to be able to respect individual responsibility and liberty; (7) the *lack of trust* in government; (8) thermometer rating towards the *women's liberation movement*; (9) perception about *equal role for women*; and (10) the scale of *political ideology* (a conservative–libertarian scale). (See Appendix A for precise wordings for these variables.)

Racism is defined as a factor loading highly on (1) and (2), compassion towards the poor loads highly on (3)–(5), libertarianism loads highly on (6)–(7), and feminism loads highly on (8)–(9). All factors load on political ideology.

Note that our definition of racism is conservative and much narrower than the definition given by proponents of so-called 'symbolic racism', which attributes responses to 'blacks lack work ethic' to racism (Kinder and Sanders, 1996). Instead of 'including' this attitude as a component of racism, we 'explain' it in terms of the definition more narrowly defined.

Four primary orthogonal factors emerge from our factor analysis across all years—with eigenvalues ranging from 1.00 to 2.5—and these explain about 60% of the total variation of the 10 variables in each year. By construction, these factors are uncorrelated with each other and each has mean zero and standard deviation one (for factor loadings, see Table A-2-2 in Lee and Roemer, 2004). We also decompose the political ideology of blacks into three factors (libertarianism, compassion, and feminism) using only (3)–(10) (we define blacks to be racism-free), but the discussion in this section will mainly focus on white voters.

To illustrate how reasonable these four components are for our purposes, we ran various multivariate regressions with various social attitudes of white voters being dependent variables. Table 1 reports some of the results from these regressions (for other results, see Lee and Roemer, 2004).

Columns (1)–(3) report the regression results when the dependent variable is a measure of racial attitude. In all three cases, racism is the single most important factor in explaining various racial attitudes in terms of the size of the coefficient and statistical significance. We learn that, in contrast to the popular political rhetoric, libertarianism plays very little role in explaining racial attitudes, except for aid-to-blacks. Consider, for example, column (2), which takes as the dependent variable the question asking whether 'blacks can get better off if they try harder'. A majority of white voters provide positive answers to this question, and based upon this observation, it is often argued that whites oppose racially liberal policies because they believe that blacks lack an individualistic work ethic, a belief that is considered *race-neutral*. If this contention were true, we would expect that libertarianism, which is racism-free by construction, would have a highly significant coefficient; but it does not. This point is clearer in column (3). Racially conservative voters are more likely to believe that the position of blacks has changed a lot, while racism-free libertarians, like feminists, say that it has not changed much. Thus our results appear to show that it is not *racism-free libertarianism* but *racism camouflaged behind libertarian rhetoric* that explains much of the white opposition to various racial policies in the United States.[3]

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[3] Our result is consistent with findings of other scholars. In measuring individualism or libertarianism, many scholars warn against treating positive answers to *race-referring* questions—such as "blacks can get better off if they try harder"— as a direct expression of individualism or libertarianism. Kinder and Sanders (1996) approach the issue by making use of a set of six questions in the NES that attempt to tap individualism in a race-neutral way (e.g., "any *person* who is willing to work hard has a good chance at succeeding"); it could be expected that those high on individualism measured in this way would be those most likely to oppose government action to help blacks. They find that controlling for social backgrounds, there is little evidence of a relationship between these two views. Kinder and Mendelberg (2000) thus call the view "blacks should try harder" *racialized individualism* in the sense that this kind of measure mixes convictions about individual responsibility with resentment directed towards blacks.

Table 1
Determinants of whites' racial and political attitudes (Source: NES)

	(1) OLS	(2) OLS	(3) OPROB	(4) PROB
	7 pt aid-to-blacks scale 1=pro... 7=con	Blacks must try harder 1=agree... 5=disagree	How much has position of Negro changed 1=not much...3=a lot	Pres vote R
Racism	0.539**	−0.436**	0.293**	0.311**
	(15.93)	(12.88)	(9.17)	(6.90)
Libertarianism	0.192**	0.027	−0.051[+]	0.023
	(5.71)	(0.74)	(1.74)	(0.56)
Compassion	−0.344**	0.137**	−0.012	−0.240**
	(9.39)	(3.74)	(0.40)	(5.52)
Feminism	−0.343**	0.240**	−0.066*	−0.415**
	(9.80)	(6.37)	(2.16)	(9.17)
Income value 10k	0.001*	−0.000	−0.001	0.002**
	(2.20)	(0.68)	(1.19)	(3.05)
Education=1	0.380[+]	−0.971**	0.253	−0.258
	(1.81)	(4.66)	(1.61)	(1.05)
Education=2	0.375**	−0.648**	0.283**	−0.045
	(4.47)	(7.30)	(3.75)	(0.42)
Education=3	0.289**	−0.322**	0.121	0.133
	(3.54)	(3.42)	(1.57)	(1.26)
Upmobile	0.039	0.003	0.035	0.189[+]
	(0.46)	(0.03)	(0.48)	(1.75)
Downmobile	0.192	0.207	−0.004	0.294
	(1.27)	(1.14)	(0.03)	(1.56)
Past economy*incumbentis D				
Past economy*incumbentis R				−0.244**
				(6.79)
Respondent age	0.000	0.004	0.004	0.115
	(0.07)	(0.69)	(0.95)	(1.38)
Pre-crm-cohort	−0.195	−0.151	0.069	0.109
	(1.47)	(1.02)	(0.57)	(1.23)
Post-crm-cohort	−0.083	0.027	−0.080	−0.285
	(0.76)	(0.22)	(0.81)	(1.29)
Female dummy	−0.064	−0.019	−0.101[+]	−0.276**
	(0.96)	(0.27)	(1.72)	(2.67)
Married dummy	−0.059	−0.043	0.016	0.203**
	(0.81)	(0.59)	(0.25)	(3.78)
Unemployed dummy	0.011	−0.185	−0.169	−0.005
	(0.07)	(1.23)	(1.36)	(0.76)
Union mem dummy	0.058	−0.155[+]	−0.040	0.053
	(0.71)	(1.77)	(0.55)	(0.32)
Protestantism	−0.004	0.045	−0.019	−0.168
	(0.10)	(1.00)	(0.48)	(1.19)
Region=2 (Midwest)	0.118	0.112	0.060	0.074
	(1.29)	(1.18)	(0.73)	(0.62)
Region=3 (South)	0.206*	0.006	0.288**	0.127
	(2.09)	(0.06)	(3.23)	(1.01)
Region=4 (West)	0.018	0.293**	0.097	−0.031
	(0.18)	(2.80)	(1.10)	(0.25)
Observations	1905	986	1697	1234
Covered years	All	1988, 1992	1976, 1984, 1988, 1992	1980, 1984, 1988, 1992
R^2	0.25	0.28		

Why libertarianism plays very little role in explaining various racial attitudes is an interesting question. Pettigrew (2000) shows that *traditionalism (*what he calls *authoritarianism)*, not libertarianism, underlies racism (and anti-feminism) in Europe. Traditionalism is associated with restoring traditional values, strengthening patriotic and family feelings, pursuing a strong nationalist, racist or anti-Communist policy, and reinforcing respect for authority, all of which may involve limiting 'disapproved lifestyles.' Libertarians may see the racist and chauvinistic attitude of traditionalists as opposing their commitment to personal freedom. Indeed there is no reason to believe that true libertarians should oppose the liberalization of laws concerning homosexuality, divorce, abortion, anti-racism etc.

We found a similar pattern from the US data (see Lee and Roemer, 2004 for detailed evidence). It appears that racism is positively correlated with traditionalist values. For instance, racism is positively correlated with support for defense spending, while libertarianism is (insignificantly) negatively correlated with it. Racists strongly prefer to solve the urban unrest problem by force, while libertarians' support for force is much weaker. Libertarians are neutral about the authority of the bible, school prayer, and abortion, but racists are strongly in favor of school prayer, hold firm beliefs in the bible's authority, and take a strong anti-abortion position, even after controlling for a religion effect.[4]

Columns (1)–(3) of Table 1 also show that the income variable is very weakly associated with racial views. In most cases, the coefficients are not significant, and even in the significant cases the size of the coefficient is very small, which is inconsistent with a popular contention that whites oppose racially liberal policies because whites are richer than minorities on average and these policies benefit only poor minorities at the cost of whites.[5] This fact also illustrates that racial views are largely uncorrelated with incomes (but the voting pattern is correlated with incomes; see column (4)).

Table 1 also examines the importance of the ideological factors in shaping political preferences. Column (4) shows the result of our probit regression on voting pattern. Because there are only two parties, we report only the R vote share. Again racism, compassion, and feminism show up as important explanatory variables, but libertarianism does not. Fig. 1 shows the slope of the regression equation with respect to each component of political ideology, together with 95% asymptotic confidence intervals; the graph is almost flat with respect to libertarianism.

We have seen the importance of voter racism in various ways; what matters for our purposes is the voter's position on politically salient racial issues, such as affirmative action or the government's aid to minorities, not the racism per se. One variable that measures the voter position on racial issues is the '7 point aid-to-blacks score'. Complications of interpretation

Notes to Table 1:
Robust *T* statistics for OLS and *z* statistics for OPROB (Ordered Probit)and PROB in parentheses. [+]significant at 10%; *significant at 5%; **significant at 1%.
Year dummies and constant are controlled but not reported here.

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[4] Indeed, libertarians and racists differ in several ways. Libertarians are strongly against increasing public school spending but the effect of racism is much weaker. Although libertarians strongly believe that the government wastes tax money, this belief is not strongly correlated with the racism variable. Thus it appears that racism-free libertarians are consistent in opposing any kind of government spending (except environmental), although coefficients are insignificant in many cases. Racists, on the other hand, exhibit different attitudes to different spending programs.

[5] We checked a possible non-linear effect by adding a quadratic term of the income variable and by regressing against the log of income. There is no evidence that income exercises a non-linear effect.
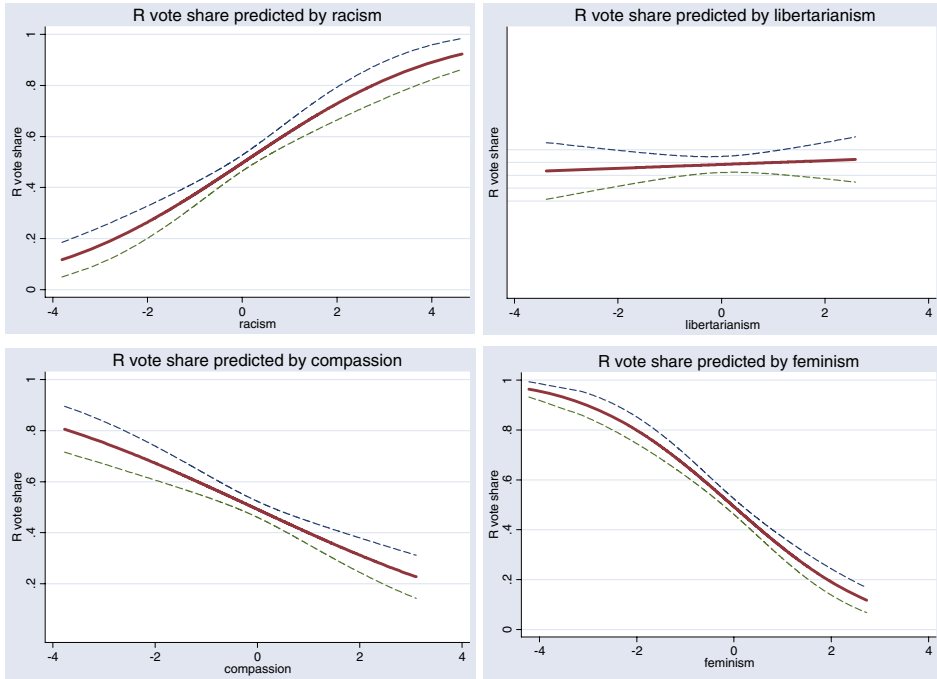
Fig. 1. Changes in the predicted R vote share with respect to changes in 4 core ideologies based on a probit regression (column (4)) of Table 1. Note: (1) Graphs are based on the estimated coefficients reported in column (4) of Table 1. We fixed all other variables at their mean values. (2) Thin dotted lines around the thick solid lines are upper and lower bounds of 95% asymptotic confidence intervals. The asymptotic standard errors of the predicted R vote shares are computed using a delta method (see Greene, 2000, p. 824).

arise, however, because the voter position on aid-to-blacks could be shaped by many factors, not just by racism. For instance, column (1) of Table 1 shows that libertarianism plays some role in explaining this variable, although a much larger effect is due to racism. Simply treating voters who are not in favor of aid-to-blacks as racist would overestimate the extent of racial conservatism in the US.

We therefore construct the *aid-to-blacks score induced only by voter racism* as follows. The aid-to-blacks variable runs from 1 to 7, but let us assume that voters' true attitudinal value on aid-to-blacks lies continuously in the interval [0.5,7.5]. For the samples consisting of white respondents, we ran the following regression in each year,

$$\text{Aid} - \text{to} - \text{blacks} = \frac{7 * \exp(\alpha_1 \text{Racism} + \alpha_2 \mathbf{Z} + v)}{1 + \exp(\alpha_1 \text{Racism} + \alpha_2 \mathbf{Z} + v)} + 0.5, \tag{1}$$

which is equivalent to $\log\left(\frac{\text{Aid}-\text{to}-\text{blacks}-0.5}{7.5-\text{Aid}-\text{to}-\text{blacks}}\right) = \alpha_1 \text{Racism} + \alpha_2 \mathbf{Z} + v$, where $\mathbf{Z}$ is the vector of all other variables in the regression (those appearing in Table 1) and v is the error term. Then 'racism-induced aid-to-blacks' is constructed from the above regression by the equation, $\rho = \frac{7*\exp(\hat{\alpha}_1 \text{Racism} + \hat{\alpha}_2 \bar{\mathbf{Z}})}{1+\exp(\hat{\alpha}_1 \text{Racism} + \hat{\alpha}_2 \bar{\mathbf{Z}})} + 0.5$, where $\bar{\mathbf{Z}}$ is the mean value of the vector $\mathbf{Z}$. This procedure generates a policy position variable whose variation is explained only by the variation of racism after controlling for other explanatory variables. It also guarantees that our racism-induced aid-to-blacks scores have the same support as the original aid-to-blacks scores. The racism-induced

aid-to-blacks is our measure of voters' racial policy position. For blacks we assign the score of 1.[6]

3. The equilibrium model

In this section we present a model of political competition between two parties where the policy space is *two-dimensional*; one dimension of competition concerns redistribution, and the other, racial policy. Parties will propose, in their platforms, both a fiscal policy and a policy on the race issue. The model of multi-dimensional political competition is that of Roemer (2001), called *party unanimity Nash equilibrium* (PUNE). Parties will have *differentiated platforms* at the equilibrium. Our exposition will be minimal; the reader is referred to Roemer (2001) for more detail.

3.1. A. Definition and equilibrium

The model takes as *data* the distribution of voter preferences over an issue space, and produces as *output*: (1) a partition of the polity into two parties, (2) two policy vectors (or platforms) that parties propose in competitive political equilibrium, and (3) the vote share that each party receives in the election. Formally, we take as data a set of voter types $H \subset R^n$, a probability measure P on H, a policy space $T \subset R^m$, and a profile of voter utility functions on T, where $v(.;\eta)$ is the utility function of a voter type $\eta \in H$ on T.

The theory produces, given $\{P, H, v, T\}$, a two-dimensional manifold of equilibria, which we will denote $\{H^D(i), H^R(i), \tau^D(i), \tau^R(i) | i \in I\}$, where I is a subset of R^2. Each i indexes one equilibrium; in the ith equilibrium, $H^D(i)$ is the set of voter types who belong to and vote for the Democratic party, $H^R(i)$ is the set of voter types who belong to and vote for the Republican party, $\tau^D(i) \in T$ is the platform of the Democratic party in this equilibrium, and $\tau^R(i) \in T$ is the platform of the Republican party in the equilibrium.

We proceed to define the equilibrium concept. We assume that parties are led by politicians who are of two types: some have chosen to make their career by attempting to maximize the party's vote share (Opportunists), and others by representing the interests of constituents, or party members (Guardians).

Suppose that the constituents of party D are denoted by the set of types $H^D \subset H$, and the constituents of party R are denoted by the set of types $H^R = H \backslash H^D$. Define

$$V^D(\tau) = \int_{H^D} q(\eta) v(\tau; \eta) dP(\eta), \tag{2}$$

and

$$V^R(\tau) = \int_{H^R} q(\eta) v(\tau; \eta) dP(\eta), \tag{3}$$

where $q(\cdot)$ is a weight function. Hence V^J is a weighted average utility function of party J's constituents. In the ideal case of perfectly representative democracy, the function q would be

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identically equal to one. In reality, however, party platforms are greatly influenced by, for example, campaign contributions.

Suppose that the voters face a pair of policies τ^D, $\tau^R \in T$. We denote the set of voters who prefer τ^D to τ^R by $\Omega(\tau^D, \tau^R) = \{\eta | v(\tau^D, \eta) > v(\tau^R, \eta)\}$. The share of the vote going to τ^D (assuming that only a set of P measure zero is indifferent) is $P(\Omega(\tau^D, \tau^R))$. Facing a policy τ^R from party R, the Opportunists in party D would like to choose τ to maximize $P(\Omega(\tau, \tau^R))$. Thus we write their payoff function as

$$\overset{D-Opp}{\Pi}(\tau^D, \tau^R) = P(\Omega(\tau^D, \tau^R)). \tag{4}$$

The payoff function of the Guardians in party D is

$$\overset{D-Guar}{\Pi}(\tau^D, \tau^R) = V^D(\tau^D). \tag{5}$$

Now suppose that the politicians in D observe party R's proposal of τ^R. We postulate that they solve the following program:

$$\max_{\tau} P(\Omega(\tau, \tau^R)) \,\mathrm{s.t.}\, V^D(\tau) \geq k^D \qquad \text{program D}$$

for some number k^D. We represent the bargaining game between D's two factions as one where the Opportunists maximize vote share subject to an insistence by the Guardians upon a lower bound to the average welfare of the party's constituents: nothing would change were we to write the program the other way around.

In like manner, the two factions of politicians in party R, when facing τ^D, solve the program

$$\max_{\tau} P(\Omega(\tau, \tau^D)) \,\mathrm{s.t.}\, V^R(\tau) \geq k^R \qquad \text{program R}$$

for some number k^R.

Definition. A party unanimity Nash equilibrium (PUNE) is

(1) a partition of the type space into two party memberships $H = H^D \cup H^R$, $H^D \cap H^R = \varnothing$, a pair of numbers (k^D, k^R), and a pair of policies (τ^D, τ^R), such that:
(2) τ^D solves program D and τ^R solves program R, and
(3) $\eta \in H^D \Rightarrow v(\tau^D, \eta) \geq v(\tau^R, \eta)$, $\eta \in H^R \Rightarrow v(\tau^R, \eta) \geq v(\tau^D, \eta)$.

Condition (3) determines the party memberships endogenously: it says that each voter is satisfied with the party to which he or she belongs.

Remark. A previous definition of PUNE (see Roemer (2001)) has employed three factions in each party—Opportunists, Militants, and Reformists. The present definition is simpler, and turns out to be mathematically equivalent to the earlier one.

We can expect there to exist a two-dimensional set or manifold of PUNEs, if there are any, in the space of $T \times T$; they correspond to different values of the vector (k^D, k^R). These two numbers reflect the relative power of the Guardians in the intra-party bargaining games. We do not specify these numbers a priori.

We employ this relatively complex equilibrium concept because it is a realistic way of modeling political competition on a multi-dimensional policy space. Recall that the Hotelling–

Downs model typically does not possess equilibria when the dimension of the policy space is greater than one. Not only will PUNEs exist in our model, but we will be able to track the observed political equilibria in the US quite closely. The realism of the model is evident in that party politics in democracies seem to consist in not only a contest between *parties,* but struggles (intra-party) between those political entrepreneurs who seek to maximize vote share, or the probability of victory, and those who represent constituents.

We proceed to a local characterization of PUNEs that are in the interior of $T \times T$. Denote $\pi(\tau^D, \tau^R) \equiv P(\Omega(\tau^D, \tau^R))$. Suppose $T \subset R^m$. Define $\nabla_J \pi(\tau^D, \tau^R) = \left(\frac{\partial \pi}{\partial \tau^J_1}, \ldots, \frac{\partial \pi}{\partial \tau^J_m} \right)$, $\nabla V^J(\tau) = \left(\frac{\partial V^J}{\partial \tau_1}, \ldots, \frac{\partial V^J}{\partial \tau_m} \right)$. Then at a PUNE $(\tau^D, \tau^R) \in T \times T$, for some $x^D, x^R \in R^1_+$ and some $k^D, k^R \in R$, we have:

$$- \nabla_D \pi(\tau^D, \tau^R) = x^D \nabla V^D(\tau), \tag{6}$$

$$\nabla_R \pi(\tau^D, \tau^R) = x^R \nabla V^R(\tau^R), \tag{7}$$

$$H^D = \Omega(\tau^D, \tau^R), \quad H^R = H \setminus H^D. \tag{8}$$

$$V^D(\tau^D) = k^D, \quad V^R(\tau^R) = k^R. \tag{9}$$

Eq. (6) says that, given τ^R, there is no direction in T at τ^D which will increase the payoffs of both Opportunists and Guardians of party D, and Eq. (7) implies the analogous statement for party R's Opportunists and Guardians. (These two equations are simply the Kuhn–Tucker conditions for program D and program R). Eq. (8) says that party D's constituents are exactly those voters who weakly prefer policy τ^D. Eqs. (6), (7), and (9) comprise $2m+2$ equations in $2m+4$ unknowns ($\tau^D, \tau^R, x^D, x^R, k^D, k^R$) and so if a solution exists, there will generically be a two-dimensional manifold of solutions. Condition (8) can be taken to define the functions V^D and V^R: $V^D(\tau) = \int_{\eta \in \Omega(\tau^D, \tau^R)} q(\eta) v(\tau, \eta) dP(\eta)$, etc.

3.2. Preferences, type space, and policy space

We present next the application of PUNE to a simplified version of our problem. We represent a voter type by an ordered pair (w, ρ) where w is his/her wage and ρ is his/her racial view. We estimate the distribution $P(w, \rho)$ in the US polity. The voter's direct utility function is defined on four arguments: consumption (x), labor (L), equality (E), and the race issue (r). It is:

$$U(x, L, E, r; \rho) = \log x + \beta \log(\lambda - L) - \frac{\gamma}{2}(r - \rho)^2 + (\delta_0 - \delta_2 \rho)E. \tag{10}$$

The parameters ($\beta, \lambda, \gamma, \delta_0, \delta_2$) are common to all voters. E is a measure of the degree of equality in the post-fisc distribution of income. Thus U consists of three parts: a conventional Cobb–Douglas utility in consumption and labor, a Euclidean term to represent preferences on the race issue, and a desire for equality. If the parameter δ_2 is positive, then more racist voters (larger ρ) will have less of a desire for equality: indeed, it is δ_2 which will capture the anti-solidarity effect.[7]

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[7] Our original specification of the coefficient on E was ($\delta_0 - \delta_1 w - \delta_2 \rho$), as we conjectured that higher wage types would be less interested in equality. Our estimates, however, could not distinguish δ_1 from zero, and so it does not appear here.

A political party proposes an affine income tax policy (t, b) and a race policy r; t is the marginal tax rate, and b is the balanced-budget lumpsum transfer to all voters. We next derive the voter's indirect utility function over policies. We choose the measure $E(t, b) = \log \frac{x_{0.25}(t,b)}{x_{0.75}(t,b)}$ where $x_q(t, b)$ is the post-fisc income of the voter whose wage is at the qth centile of the wage distribution.

To determine labor supply, a voter of wage w who faces the tax policy (t, b) solves:

$$\max_L \log((1 - t)wL + b) + \beta\log(\lambda - L); \tag{11}$$

denote the solution $L(t, b; w)$. Consequently, a balanced budget requires

$$b = t \int wL(t, b; w)dP_w(w), \tag{12}$$

where P_w is the marginal probability distribution on w. Thus, henceforth we denote $b \equiv b(t)$, and think of the policy space as pairs (t, r). Then the voter's utility function on the policy space is

$$v(t, r; w, \rho) = \phi(w, t, b(t)) - \frac{\gamma}{2}(r - \rho)^2 + (\delta_0 - \delta_2\rho)E(t, b(t)), \tag{13}$$

where $\phi(w, t, b(t)) \equiv \log((1 - t)wL(t, b(t); w) + b(t)) + \beta\log(\lambda - L(t, b(t); w))$.

Finally, we define the weight function $q(\cdot)$. We assume that richer constituents are better represented by the Guardians than poorer ones: according to Bartels (2002), those at the 75th centile of the income distribution have three times as much influence as those at the 25th centile. We take a convex weight function (up to a cap):

$$q(w) = \begin{cases} \hat{q}(w) = q_0 + q_1\exp(q_2w) & w \leq w_{\text{cap}} \\ 1 & w > w_{\text{cap}} \end{cases}, \tag{14}$$

where $\hat{q}(w)$ satisfies $\hat{q}(0)=0$ and $\hat{q}(w_{\text{cap}})=1$. We set w_{cap} as the 99th centile of the wage rate distribution (so all individuals whose incomes are greater than the 99th percentile have equal weights). The two conditions, $\hat{q}(0)=0$ and $\hat{q}(w_{\text{cap}})=1$, imply that $q_0=-q_1$ and $q_1 = \frac{1}{\exp(q_2 w_{\text{cap}} - 1)}$. The value of q_2 is estimated using Bartels' (2002) aforementioned result.

This completes the specification of the model's date (P, H, T, v).

We can in fact view the politicians within a party as solving a Nash bargaining game: for the details, consult Roemer (2001, chapter 8). The *bargaining powers* of the Opportunists (α^D) and the Guardians $(1 - \alpha^D)$ in party D are computable at a PUNE, and are given by the formula:

$$\frac{1 - \alpha^D}{\alpha^D} = x^D \frac{V^D(\tau^D) - V^D(\tau^R)}{\pi^D(\tau^D, \tau^R)}, \tag{15}$$

with an analogous formula for the bargaining powers of the two factions in party R.

As we said, this is a simplified version of the model whose PUNEs we in fact compute. In the actual model, we model households whose two adult members have wages w_M and w_F, and racial views ρ_M and ρ_F, who vote separately, but who maximize a joint utility function over household income and leisure. Also when we compute the government budget equation (Eq. (12)) we consider the possibility that some households optimally choose not to work and that not all government revenues are redistributed. These further articulations add realism to the model, and hopefully enable it to track US politics better. Readers can examine the full details in Lee and Roemer (2004).

3.3. The policy bundle effect and the anti-solidarity effect

We provide a preview of our strategy. In Section 4, we will estimate the distribution of types and all the parameters of the utility function. We then perform two counterfactual experiments.

First, we counterfactually run an election in which taxation is the only policy. Thus, we assume that the government's racial policy is exogenously fixed at some $r = \bar{r}$ (this is equivalent to assuming that $\gamma = 0$). In this experiment, the phenomenon of poor, racist voters voting Republican because the Republicans puts forth racist positions (i.e., the policy bundle effect) *will not exist*, because neither party offers a position on race. However, voters will still be equipped with their anti-solidaristic preferences, which are, in part, a consequence of racism, and those continue to influence the equilibrium tax rate. The difference between the tax rates in the equilibria of this counterfactual and the tax policy in the full model is the *policy bundle effect* of racism.

We next run a second experiment in which we continue to assume that the race issue is not a policy issue, but also now assume that all voters have non-racist preferences — that is, we assign the lowest possible value of ρ, i.e., $\rho_{\min}$, to all voters. We again compute PUNEs. The tax policies in these PUNEs are what we predict taxes would be absent both the policy bundle and anti-solidarity effects.

Schematically, our decomposition procedure is as follows. Let t^J be equilibrium tax policy for party J. Then for each party J the total effect of voter racism on the tax rate can be decomposed into:

$$t^J(\text{full model}) - t^J(r = \bar{r}, \rho = \rho_{\min}) \text{ total effect}$$
$$= t^J(\text{full model}) - t^J(r = \bar{r}) \text{ policy bundle effect}$$
$$+ t^J(r = \bar{r}) - t^J(r = \bar{r}, \rho = \rho_{\min}) \text{ anti} - \text{solidarity effect.} \quad (16)$$

One could say that the degree of redistribution *sans* the anti-solidarity effect and the policy bundle effect is what democratic politics would produce in the United States if the polity were as racially homogeneous as, let us say, Norway was before 1970.

We conclude this section with a methodological remark. Consider the utility function (13) and suppose that an individual derives from the policy of party J the random utility of

$$v^J = \tilde{\phi}(t^J, w) - \frac{\gamma}{2}(r^J - \rho)^2 + (\delta_0 - \delta_2 \rho)\tilde{E}(t^J) + \varepsilon^J, \quad (17)$$

where $J = D$, R is an index for a party, $\tilde{\phi}(t, w) \equiv \phi(w, t, b(t))$, $\tilde{E}(t) \equiv E(t, b(t))$, and ε^J is a random error term. Then at the observed vector of platforms $(t_{\text{obs}}^D, t_{\text{obs}}^R, r_{\text{obs}}^D, r_{\text{obs}}^R)$, the individual should vote party R if and only if

$$\varepsilon^D - \varepsilon^R < -\left[\tilde{\phi}(t_{\text{obs}}, w) - \tilde{\phi}(t_{\text{obs}}^R, w)\right] + \frac{\gamma}{2}\left[(r_{\text{obs}}^D - \rho)^2 - (r_{\text{obs}}^R - \rho)^2\right]$$
$$- \delta_0\left[\tilde{E}(t_{\text{obs}}^D) - \tilde{E}(t_{\text{obs}}^R)\right] + \delta_2\rho\left[\tilde{E}(t_{\text{obs}}^D) - \tilde{E}(t_{\text{obs}}^R)\right]. \quad (18)$$

Note that $(r_{\text{obs}}^D - \rho)^2 - (r_{\text{obs}}^R - \rho)^2$ can be expanded into $2(r_{\text{obs}}^D - r_{\text{obs}}^R)\left(\frac{r_{\text{obs}}^D + r_{\text{obs}}^R}{2} - \rho\right)$. Rearranging terms of (18) and using this expansion, we have

$$\varepsilon^D - \varepsilon^R < \left[\tilde{\phi}(t_{\text{obs}}^R, w) - \tilde{\phi}(t_{\text{obs}}^D, w)\right] + \left[\delta_2\left(\tilde{E}(t_{\text{obs}}^D) - \tilde{E}(t_{\text{obs}}^R)\right) - \gamma(r_{\text{obs}}^D - r_{\text{obs}}^R)\right]\rho + \text{constant}$$
$$(19)$$

The first term on the right-hand side of expression (19) is a function of w while the second term is a function of ρ. If one assumes that the term $[\tilde{\phi}(t_{obs}^R, w) - \tilde{\phi}(t_{obs}^D, w)]$ can be approximated by a linear (or log–linear) function of income and other demographic variables such as education, and $\varepsilon^D - \varepsilon^R$ is distributed by a distribution function Φ, one may be able to run a binary choice regression model with variables measuring income, racial position, and other controls.

But as is clear from Eq. (19), what can be estimated is the size of $\delta_2(E(t_{obs}^D) - E(t_{obs}^R)) - \gamma(r_{obs}^D - r_{obs}^R)$. This is an identification problem in econometrics, and points out an important issue in empirical studies on the politics of race. Empirical researchers often set similar specifications to (19) to determine the effect of 'racism' on voting behavior, and our regression in column (4) of Table 1 is also of this type. But as Eq. (19) shows, the coefficient of ρ combines two effects (the policy bundle effect and the anti-solidarity effect), because it involves both δ_2, associated with the anti-solidarity effect, and γ, associated with the policy bundle effect.

4. Estimation of the data in the model

We estimate the parameter values of the utility function, marginal tax rates and transfer payments, the joint distribution of voter traits, and the observed policies of the two parties, etc., using two sources of micro data: the Panel Study of Income Dynamics (PSID) and the National Election Studies (NES). Our discussion will be brief, highlighting only the important issues. Details of our estimation procedure are described in Lee and Roemer (2004).

Estimation of densities of voter types and thus our numerical computation is based upon four sets of data pooled over two adjacent election years; 1976–1980, 1980–1984, 1984–1988, and 1988–1992. The reason for pooling is twofold. First, having accurate density estimates for the distribution of voter types is very important for improving the fit of our model; a small number of samples will increase the bias of our non-parametric density estimates significantly. Second, by pooling samples in two adjacent election years, we have relatively *stable* results that will not be driven by year-specific political issues (e.g., candidate personality), which we did not model.

Other parameter values are estimated for each election year, but the average values of two years are applied to each of pooled data in numerical computation.

In our model, voters are characterized by a trait vector (w, ρ). We define ρ to be the racism-induced aid-to-blacks that we constructed in Section 2. Because racial attitudes are not significantly influenced by income (recall columns (1)–(3) of Table 1), we estimate the joint distribution of voter traits by estimating the wage density, $f(w)$, and the racial view density, $g(\rho)$, separately.[8] The real wage rate is the nominal representative household wage rate, estimated from the PSID using only SRC sample with positive taxable incomes, adjusted by the Consumer Price Index (1984=100).

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[8] We do not find a significant difference of the conditional densities $g(\rho|w)$ across income groups. We formally tested the independence assumption using two non-parametric test statistics. First, we compute the Kolmogorov–Smirnov similarity statistic for each pair of conditional densities to see whether they differ across income groups. Except in a few cases, we were unable to reject the hypothesis that a pair of two conditional densities is identical. Second, we calculate the T_1 statistic suggested by Ahmad and Li (see Pagan and Ullah (1999; p.71)); we were again unable to reject the null hypothesis of independence against the alternative of dependence. For details of our tests, see Lee and Roemer (2004). Indeed estimating a fully bivariate density when the correlation between the two variables is very weak does more harm than good, because kernel estimates of joint densities are in general inaccurate unless the sample size is large. Silverman (1986; pp. 92–93) describes the 'empty-space phenomenon' where very few points are around the origin when the dimension is greater than 1.

In the estimation of densities, we apply the Rosenblatt–Parzen kernel density estimation method. We actually computed the 95% asymptotic confidence intervals for their marginal densities; the marginal densities are quite tightly estimated (See Lee and Roemer (2004)). Fig. 2 shows the estimated densities of ρ.

We also computed the observed marginal tax rates and transfer payments (t_{obs} and b_{obs}) by regressing post-fisc family income on pre-fisc family income with a constant term (thus the slope coefficient is $(1 - t)$ and the constant corresponds to b). The regression results are reported in Table 2.

The linear fit is extremely good. The R^2 is higher than 0.90 in almost all years, and the regression with the quadratic or cubic terms does not add much explanatory power. We indeed compared our linear fit with non-parametric fits based on locally weighted smoothing (lowess) with two different bandwidths (0.2 and 0.8); one cannot tell the difference between them except in the range where very few high income samples exist as outliers (see Lee and Roemer (2004)).
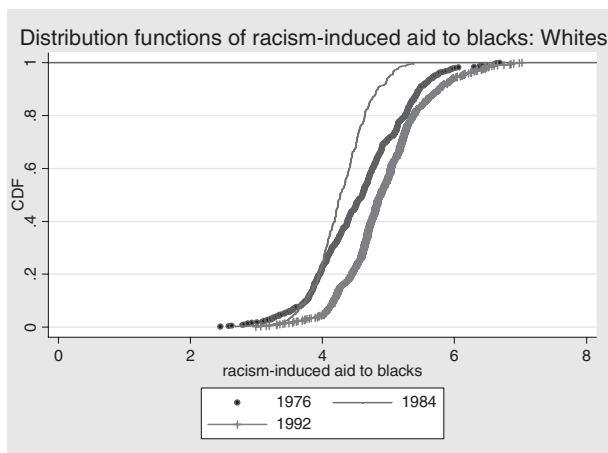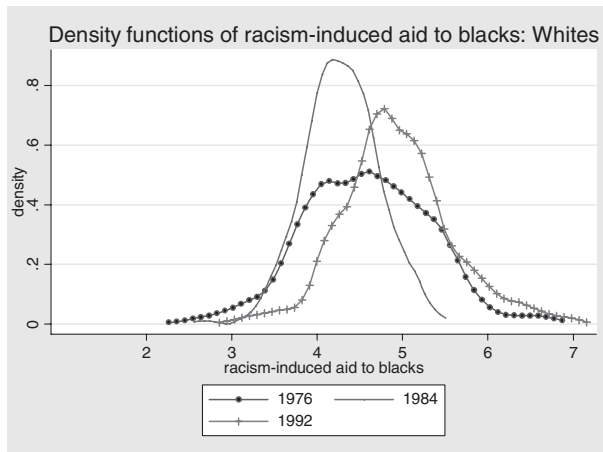

Fig. 2. Distribution of racial policy attitude: Whites only (Source: NES).

Table 2
Estimation of marginal tax rates and transfer payments (Source: PSID)

Year	Source	b	$(1-t)$	R^2	Obs	Marginal tax rate	CPI-adjusted transfers (1984=100)
1971	PSID 1972	2230.54 (42.41)	0.6927 (172.95)	0.9174	2695	0.3073	5953.1
1972	PSID 1973	2341.2 (44.94)	0.6926 (185.7)	0.9268	2725	0.3074	5819.3
1975	PSID 1976	3379.2 (51.63)	0.6481 (175.98)	0.9119	2995	0.3519	6525.9
1976	PSID 1977	3619.9 (52.33)	0.65049(183.22)	0.9161	3077	0.3496	6609.9
1979	PSID 1980	4938.8 (48.72)	0.6246 (157.33)	0.8828	3288	0.3754	7067.9
1980	PSID 1981	5198.7 (50.81)	0.6278 (167.26)	0.8955	3268	0.3722	6555.0
1983	PSID 1984	5643.9 (44.38)	0.6820 (197.5)	0.9202	3386	0.3180	5887.7
1984	PSID 1985	5807.7 (45.97)	0.6796 (219.06)	0.9338	3405	0.3204	5807.7
1987	PSID 1988	5920.1 (39.24)	0.7102 (229.18)	0.9378	3485	0.2898	5414.5
1988	PSID 1989	6273.3 (39.44)	0.7192 (233.07)	0.9398	3479	0.2808	5509.8
1990	PSID 1991	6661.1 (38.21)	0.7207 (234.08)	0.9397	3518	0.2793	5295.6

(1) The estimation is based on the following linear regression:

$$(\text{Post} - \text{fisc income}) = b + (1-t)(\text{Pre} - \text{fisc income}).$$

(2) Numbers in parentheses are t-values.

The marginal tax rates increase until 1980, and then decline gradually. As the marginal tax rates decline over time, the transfer payments also decline in real terms. As the last column of Table 2 indicates, the transfer payments calculated in real terms using the Consumer Price Index declined from $6609.9 in 1976 to $5295.6 in 1990.

The parameter vector that characterizes the labor supply functions was estimated using those estimates of uncompensated wage elasticities of labor supply estimated by Hausman (1981) and Triest (1990) (see Lee and Roemer (2004) for details).

Once the distribution of voter types and parameter values for the sub-utility function are estimated we can estimate the Laffer curve in the model. Fig. 3 shows the estimated Laffer curves together with the observed policy pair (t_{obs}, b_{obs}) (estimated by the average value of two years). We also computed, by a bootstrapping method, the asymptotic confidence interval of the Laffer curve by considering only the estimation errors inherited from the estimation of the wage distribution.[9]

The solid line represents the Laffer curve based on our non-parametric estimation of the wage distribution. The fit of our model is remarkably accurate; the observed fiscal policy (the large dot) lies very close to the estimated Laffer curve for all periods! For the sake of comparison, we also estimated the Laffer curve based on the lognormal wage distribution function, two parameters of which are estimated from the data (the dotted curve) by minimizing the L_2-norm of the difference between the lognormal density and the kernel density. Supremacy of the non-parametric estimation method is clear. The tax rate that maximizes the Laffer curve is about 0.71–0.74, which is very high.

Observed vote shares (φ_{obs}) are easy to obtain but observed racial policies (r^D_{obs} and r^R_{obs}) and fiscal policies (t^D_{obs} and t^R_{obs}) of the two parties are difficult to estimate. The NES provides information on the public perception about the presidential candidates' position on aid-to-blacks. Assuming that voters are perceptive, we simply took the mean values as the candidates'

[9] The bootstrap sample size is 1000. The actual confidence interval would be wider than shown here if we considered estimations errors inherited from parameter values.
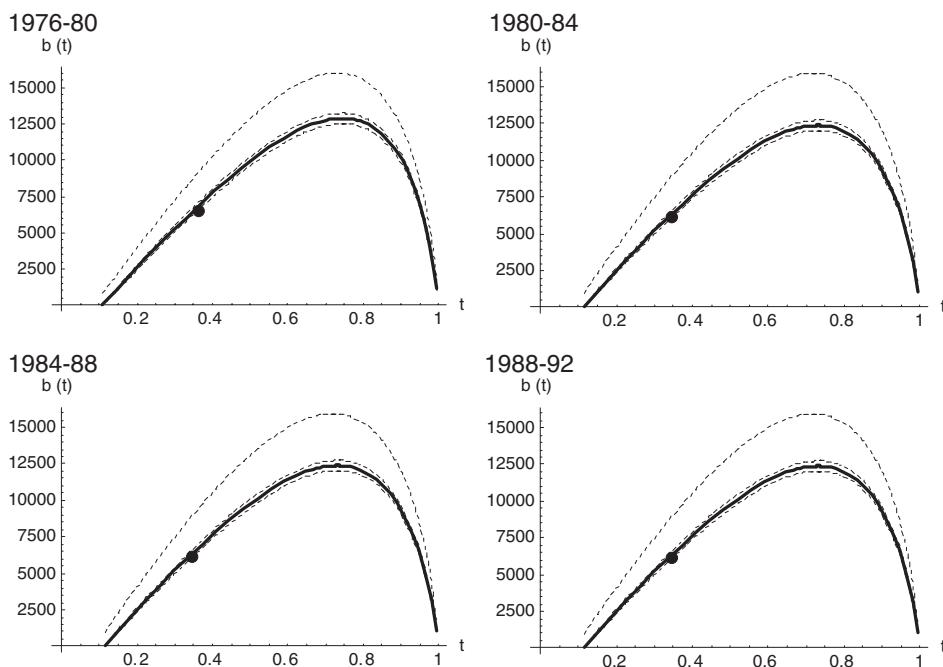
Fig. 3. The estimated transfer function (Laffer curve), the function $b(t)$. Note: (1) The solid line represents the estimated Laffer curve when the wage distribution is estimated non-parametrically. The dotted line represents the estimated Laffer curve when the wage distribution is assumed to be lognormal and its two parameters are estimated by minimizing the L_2-norm of the difference between the lognormal density and the kernel density. (2) The big black dot in the graph represents (t_{obs}, b_{obs}) estimated from the data in Section 4. (3) The precise values of b_{obs} and $b(t_{obs})$, and t_{max} for other years are as follows:

	1976–1980	1980–1984	1984–1988	1988–1992
b_{obs}	6582.45	6181.35	5685.75	5402.70
$b(t_{obs})$	6815.52	6353.38	5860.17	5459.48
t_{max}	0.745	0.732	0.714	0.711

positions on the racial issue (r_{obs}^D and r_{obs}^R). The tax rates 'announced' by parties are rarely observable. We simply assume that the observed fiscal policy before the enactments of the two major Reagan tax reforms is the announced policy of party D, whereas the policy after the reforms is the announced policy of party R. Indeed, the fiscal system in the US was basically unchanged between the New Deal and the early 1980s. Thus we set $t_{obs}^D = 0.372$ and $t_{obs}^R = 0.2793$.

We apply Eq. (19) to estimate (δ_0, δ_2, γ). But recall that we cannot estimate all these parameters with regression techniques because of an identification problem. First, we can only estimate the size of $\delta_2(E(t_{obs}^D) - E(t_{obs}^R)) - \gamma(r_{obs}^D - r_{obs}^R)$, which gives a linear relationship between δ_2 and γ. Second, we cannot estimate δ_0 because it is absorbed into the constant term.

To further reduce the dimension of the parameter space, we thus impose the following condition: $\pi(t_{obs}^D, t_{obs}^R, r_{obs}^D, r_{obs}^R; \delta_0, \delta_2, \gamma) = \varphi_{obs}$. (Thus we have one degree of freedom in the choice of parameters).[10] The justification for this constraint is that our full model must be

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[10] This constraint is not tautological, because we are imposing the condition that the vote share our model predicts at the *observed* platform be equal to the observed vote share.

correctly specified at least in one aspect, to make our counterfactual experiments meaningful. As we have seen earlier through the tight fit of the Laffer curve (Fig. 3), our model is very well specified on the economic side.

5. Numerical solution of the model

With those parameters and density functions estimated in Section 4, we carry out the computation separately for 4 periods: 1976–1980, 1980–1984, 1984–1988, and 1988–1992. Finding equilibrium values for all three models requires about 1000 iterations for each set of parameter values in each period. Details of the computation procedure are explained in Lee and Roemer (2004).

Table 3 shows the results obtained by this procedure when $\delta_0 = 1$ for all periods. The expected tax rate is the average of the tax rates of the two parties, weighted by the vote share that each party gets.

First, we remark that the equilibrium prediction in the full model is very close to the observed values; as well, the time series pattern is close to the historical trend reported in Table 2. For instance, the expected tax rate at the equilibrium changes from 29.3% in 1976–1980 to 34.65% in 1980–1984, and then declines afterwards up to 28.7% in 1988–1992. This is remarkable, because we only imposed the specification condition that the vote share predicted by our model at the observed platforms be equal to the observed vote share.

Because the expected tax rate is determined by three factors—the vote share, the tax rate proposed by party D, and the tax rate proposed by party R—looking only at the expected tax rate may not be enough. So we examined each of these factors separately.

The equilibrium tax rates are differentiated between the two parties. The tax rate proposed by the Democratic Party is usually 12–16% higher than that proposed by the Republican Party. In 1984–1988, for instance, the Democratic Party proposes a marginal tax rate of 37% while the Republican Party proposes a tax rate of 23.9%, which is close to the observed tax rates that we postulated in Section 4.

The equilibrium vote share of party D is also close to the historical vote share, although its prediction is poor in 1980–1984. Our equilibrium prediction is that the vote share for the Democratic Party in that period is greater than 50%, although the Republican Party won that election.

One reason for inaccuracy in some years is because the true value of δ_0, which we are unable to identify, may not be equal to 1 for these years. Nevertheless, we believe that the level of prediction accuracy achieved by a model that controls only two dimensions of American political life is high.

The effect of racism on redistribution in the United States is large. We predict that the Republican Party would have proposed a marginal tax rate of 40% in 1984–1988, absent racism. Due to the existence of racism, however, the Republican Party was able to propose a tax rate of 23.9% in this period; thus the effect of racism on the tax rate is about 16.5% in 1984–1988 for the Republican Party. The effect of racism on the tax rate of the Democratic Party is also large. Absent racism, we predict party D would have proposed a marginal tax rate of 49.9%; due to the existence of racism, it proposed 37%.

The fact that the total effect of racism appears to be large for both parties implies that voter racism pushes both parties in the United States *significantly to the right* on the economic issue. Absent race as an issue in American politics, the fiscal policy in the USA would look quite similar to fiscal policies in Northern Europe.

Table 3
PUNEs and the decomposition of racism effect ($\delta_0 = 1$)

	$r = \bar{r}$	$r = \bar{r}$, $\rho = \rho_{min}$	$r = r$ (bar), $\rho = \rho r$ (min)	Total effect	PB	AS	PB (%)	AS (%)
1976–1980								
t^D	0.3473	0.3791	0.4824	0.1351	0.0318	0.1033	23.54%	76.46%
t^R	0.2212	0.3432	0.4450	0.2238	0.1220	0.1018	54.51%	45.49%
r^D	2.7663							
r^R	4.1144							
Exp tax rate	0.2927	0.3696	0.4742	0.1815	0.0769	0.1046	42.36%	57.64%
Vote share	0.5166	0.7351	0.7814	0.2648	0.2185	0.0463	82.52%	17.48%
# of PUNE	9	45	26					
1980–1984								
t^D	0.4025	0.4137	0.4666	0.0641	0.0112	0.0529	17.47%	82.53%
t^R	0.2129	0.3638	0.4391	0.2262	0.1509	0.0753	66.71%	33.29%
r^D	3.4307							
r^R	3.7914							
Exp tax rate	0.3465	0.4011	0.4567	0.1102	0.0546	0.0557	49.48%	50.52%
Vote share	0.5609	0.7466	0.6417	0.0808	0.1857	−0.1049	229.83%	−129.83%
# of PUNE	11	42	19					
1984–1988								
t^D	0.3709	0.3859	0.4993	0.1284	0.0150	0.1134	11.68%	88.32%
t^R	0.2392	0.3234	0.4042	0.1650	0.0842	0.0808	51.03%	48.97%
r^D	2.7771							
r^R	3.6483							
Exp tax rate	0.3109	0.3659	0.4699	0.1590	0.0550	0.1040	34.61%	65.39%
Vote share	0.4049	0.6804	0.7906	0.3857	0.2755	0.1102	71.43%	28.57%
# of PUNE	23	52	15					
1988–1992								
t^D	0.3154	0.3320	0.4409	0.1255	0.0166	0.1089	13.23%	86.77%
t^R	0.1504	0.3004	0.4030	0.2526	0.1500	0.1026	59.38%	40.62%
r^D	2.8738							
r^R	4.1953							
Exp tax rate	0.2870	0.3241	0.4270	0.1400	0.0371	0.1028	26.53%	73.47%
Vote share	0.5797	0.7508	0.6320	0.0523	0.1711	−0.1188	327.15%	−227.15%
# of PUNE	15	36	11					

Although the total effect is large for both parties, the composition of the total effect differs between the two parties; see Table 3. In terms of the tax policy, the policy bundle effect is bigger than the anti-solidarity effect for the Republican Party whereas the anti-solidarity effect is bigger for the Democratic Party. In 1980–1984, for example, for party D, 82% of the total effect of racism on the tax rate is attributed to the anti-solidarity effect.
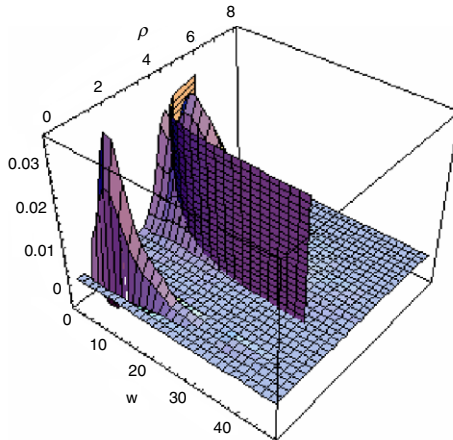
The effect of racism on redistribution varies across time, reflecting changes in the distribution of voter traits. In terms of the expected tax rate, the smallest effect is in 1980–1984, where the distribution of racial views among citizens is least skewed and has the lowest mean.

The effect of voter racism on the *vote share* for party D is also very large. The biggest effect occurred in 1984–1988 when the Democrats lost about 38% of vote share due to racism. We note
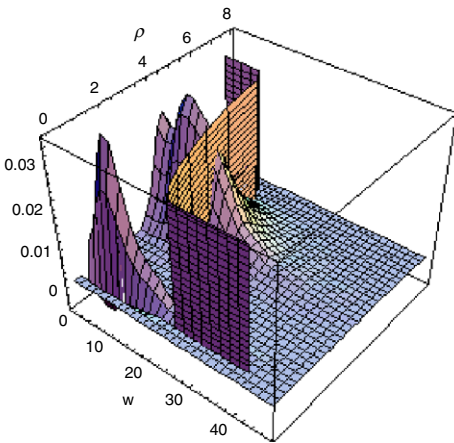
that for some years (1980–1984 and 1988–1992) the anti-solidarity effect of voter racism *on vote share* is *positive* rather than negative. Recall that the vote shares are affected through two channels: the direct channel mediated through changes in parameter values and the indirect channel through changes in equilibrium platforms. Indeed when we compute the vote share while fixing the platform at the value obtained from the full model, the two effects of voter racism on D vote share is always negative; the indirect effect induced by the platform change has a large influence on the vote share.

Another way of looking at the significance of the policy bundle effect is to examine the equilibrium party membership (recall that our model determines party memberships endogenously, together with the equilibrium policy vectors). In Fig. 4, we have drawn the party membership separation hyper-space, together with the observed membership distribution of voter types, for three models: the full model and the two counterfactual models.
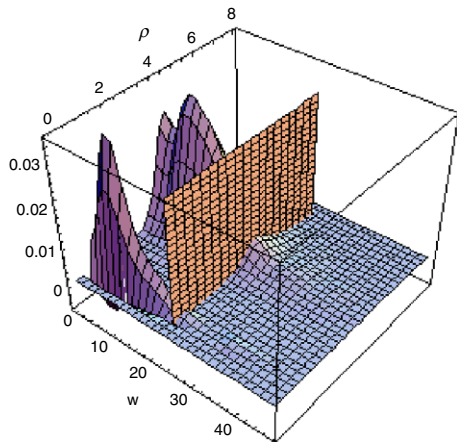

Fig. 4. Equilibrium Party membership at PUNEs: 1984–1988. Note: (1) Voter separation hyperplanes are drawn at the mean value of equilibrium policy vectors. (2) Parameter values for these graphs are: $\delta_0=1$, $\delta_2=0.1508$, $\gamma=0.3559$.

Fig. 4(a) shows that party membership is more sensitive to voters' racial positions than to their economic positions. The hyper-space that separates the type space into the two parties is negatively sloped in the full model but the slope is small. Fig. 4(b) and (c) indicate that, where the race issue not a dimension of political competition, citizens would be partitioned into parties more according to their economic position rather than their racial position.
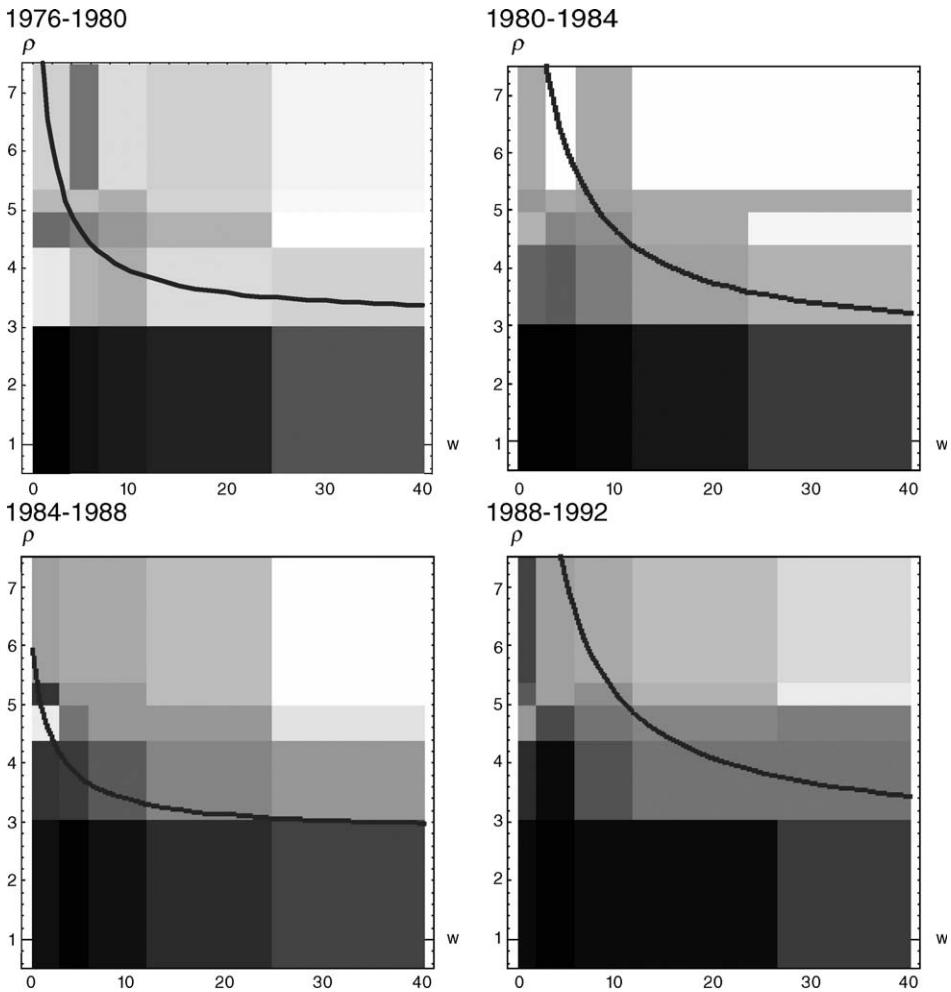

Fig. 5. Equilibrium and observed party membership. Note: (1) Parameter values for these graphs are:

	1976–1980	1980–1984	1984–1988	1988–1992
δ_0	1	1	1	1
δ_2	0.0640	0.0955	0.1508	0.0787
γ	0.1584	0.2999	0.3559	0.1632

(2) Shades of gray represent the density plot of observed D party membership computed from actual data; the darker the cell is, the higher the observed membership. (3) The downward sloping curves represent the equilibrium party separation graph in the model.

Alternatively phrased, our model predicts an alignment of political parties in the US primarily along the racial issue, in the sense that party membership is best characterized by a partition of the space of voter types which differentiates citizens according to their racial views, not their incomes. If, somehow, the race issue were to disappear from politics, there would be realignment so that membership would be defined primarily by differentiation of voters along the economic dimension. We take this difference between party identification in the multi- and unidimensional policy problems to be quite significant.

We next compare the equilibrium separation of citizens into the two parties, determined by the model, with the real party identification estimated from the actual data; Fig. 5 shows the graph.

Each cell in Fig. 5 represents the type space, with the wage on the abscissa and racial view on the ordinate. In the graph we represent different densities of *observed* D party membership (i.e., the fraction voting D) across 25 discrete cells with different shades of gray; the darker the cell is, the higher the observed Democratic membership. Shown together with the density plots is the party separation graph $\rho = \Psi(w, \tau^D, \tau^D)$, the cutoff hyper-space for party membership in the model. Since there are many PUNEs, there are as many Ψ graphs as there are PUNEs. The graph of Ψ drawn in Fig. 5 is based on the (weighted) mean value of the platform vector (τ^D, τ^R). If reality conformed perfectly to the model, then each of these graphs would be all black below the curve and all white above the curve. Albeit imperfect, the separation of party membership by the hyper-space is quite close to the actual separation of party membership.

Fig. 5 shows the historical voter realignment more clearly than Fig. 4. In 1976–1980 and 1980–1984, the model predicts that many poor racist voters should have voted for the Democratic Party. But these voters are shown to defect from the Democrats to the Republicans gradually, and in 1984–1988, poor racist voters no longer vote Democratic. In 1988–1992, poor voters again should vote Democratic, but this is not because the slope of the voter separation curve has changed; the slope of the curve is quite similar. Rather it is mainly because the curve itself has shifted up.

6. Conclusion

We conclude that both the policy bundle and anti-solidarity effects on fiscal policy in the US are significant and positive in this period. Voter racism pushes both parties in the United States significantly to the right on economic issues.

Our analysis provides a very different perspective on the importance of the race issue in American politics than that of Poole and Rosenthal (1997) and McCarty et al. (2003), who argue that, although race has sometimes been a significant second issue, it is of only marginal significance. The Poole–Rosenthal–McCarty analysis, as it is not based on an equilibrium model, is unable to postulate counterfactual histories. Indeed Figs. 4 and 5 show how radically the partition of the set of types into two parties would change were race to cease to be an issue. With the race issue present, the D–R party partition is defined very sharply with respect to racial views, and much less sharply with respect to income class. Thus a unidimensional (economic) model of American politics gravely mischaracterizes the nature of political competition.

Indeed the historical observation that the United States has experienced increasing income inequality and significant tax cuts since the 1980s raises a puzzle for the prediction of unidimensional Downsian models, that the equilibrium tax rate is positively correlated with

inequality. If the dimension of income had become increasingly important in determining the voting pattern, how could one explain that the equilibrium tax rates have been declining in the period of rising inequality?[11] Our analysis offers an answer to this question: the existence of a non-economic dimension, such as race, changes the alignment of voters in a significantly different way from that predicted by unidimensional models.

Our analysis also provides a different perspective on the importance of the race issue in American politics than that of Alesina et al. (2001). These authors attribute the effect of racism largely to what we call the anti-solidarity effect—but we have shown that the policy bundle effect is non-negligible. As we indicated in Section 3.3, attributing the magnitude of the coefficient on the racism variable to the anti-solidarity effect significantly overestimates its importance.

The research strategy employed in the current paper might be fruitfully employed for other countries. In Europe, with the exception of the UK, the influx of people of color has, in large part, been a phenomenon of the last forty years, via immigration from Asia, Asia Minor, and Africa. There have recently emerged, in several countries, politically significant movements and parties, which are anti-immigrant and xenophobic: Le Pen in France is the best known, but one must also mention Austria, the Netherlands, Denmark, and Switzerland. Indeed, the phenomenon of ethnocentrism or xenophobia is realigning voters in these countries; many who formerly voted Left are now voting for the new Right. In particular, many unskilled white workers, who feel most threatened by immigration, globalization and skill biased technological change, have switched their political allegiance. In future work, we will examine how the anti-solidarity effect and the policy bundle effect differ across countries.

Finally, we must add that our analysis covers only a particular historical period, namely 1976–1992. At the beginning of the 21st century, it appears that 'moral values' is replacing race as the important secondary issue in American politics, although race and ethnic issues are of increasing importance in Europe. Lee and Roemer (2005) study the importance of moral values for the 2004 US election.[12]

Acknowledgments

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[11] This does not mean that there have been no attempts at explaining the disparity between the theoretical prediction of the Downsian models and the historical observation. Bénabou and Tirole (2002) show that beliefs in a just world may affect redistribution politics in a significant way. Piketty (1995) shows how the perception about social mobility can affect the equilibrium outcome.

[12] Glaeser et al. (2004) also study the interaction between redistribution and religious values with a different model in which political parties maximize the margin of victory (the difference between their votes and the votes of the opponent) and voters, having differing degrees of policy awareness, may abstain.

Appendix A. Variables from the National Election Studies

Variable name	Definition and coding
Aid-to-blacks	Some people feel that the government in Washington should make every possible effort to improve the social and economic position of blacks (1970: Negroes) and other minority groups. Others feel that the government should not make any special effort to help minorities because they should help themselves. 1. Government should help minority groups/blacks 2...6 7. Minority groups/blacks should help themselves
Black change	How much has position of Negro changed? 1. Not much at all; 2. Some; 3. A lot
Black effort	It's really a matter of some people not trying hard enough; if blacks would only try harder they could be just as well off as whites. 1. Agree strongly; 2. agree somewhat; 3. Neither agree nor disagree; 4. disagree somewhat; 5. disagree strongly
Civil rights too fast	Some say that the civil rights people have been trying to push too fast. Others feel they haven't pushed fast enough. 1. Too slowly; 2. About right; 3. Too fast
Feeling (affect) thermometer ratings	We would like to get your feelings towards some of these groups (Blacks, Whites, Poor People, Women's Liberation, Labor Union)... We call it a "feeling thermometer" because it measures your feelings towards groups. .... If you don't know too much about a group or don't feel particularly warm or cold toward them, then you should place them in the middle, at the 50° mark. If you have a warm feeling toward a group or feel favorably toward it, you would give it a score somewhere between 50° and 100°, depending on how warm your feeling is toward the group. On the other hand, if you don't feel very favorably toward some of these groups—if there are some you don't care for too much—then you would place them somewhere between 0° and 50°.
Party of Presidential vote	Who did you vote for President? 1. Democrat; 2. Republican; 3. Major third party candidate
Political ideology: Liberal–conservative scale	We hear a lot of talk these days about liberals and conservatives. Here is a 7-point scale on which the political views that people might hold are arranged from extremely liberal to extremely conservative. Where would you place yourself on this scale? 1. Extremely liberal; 2. Liberal; 3. Slightly liberal; 4. Moderate; 5. Slightly conservative; 6. Conservative; 7. Extremely conservative
Strong govt	Some people are afraid the government in Washington is getting too powerful for the good of the country and the individual person. Others feel that the government in Washington is not getting too strong. Do you have an opinion on this or not? 1. Opinion: the government has not gotten too strong 2. DK; depends; other; pro-con; no interest; no opinion 3. Opinion: the government is getting too powerful
Trust govt	People have different ideas about the government in Washington. These ideas don't refer to Democrats or Republicans in particular, but just to government in general. We want to see how you feel about these ideas. How much of the time do you think you can trust the government in Washington to do what is right—just about always, most of the time or only some of the time? 1. None of the time; 2. Some of the time; 3. Most of the time; 4. Just about always
Women equal role	Recently there has been a lot of talk about women's rights. Some people feel that women should have an equal role with men in running business, industry and government. Others feel that a woman's place is in the home. Where would you place yourself on this scale or haven't you thought much about this? 1. Women and men should have an equal role 2...6 7. Women's place is in the home

AGE: Age of respondents (VCF 0101)

COHORTS: To see the cohort effect, we construct cohort dummies from AGE. Our baseline cohort is the civil rights movement cohort, i.e., people born in 1935–1947.

PRE-CRM-COHORT: pre-civil rights movement cohort (1 for people born before 1935; 0 otherwise)

POST-CRM-COHORT: post-civil rights movement cohort (1 for people born after 1948; 0 otherwise)

EDUCATION: 1=Grade school or less (0–8 grades); 2=High school (12 grades or fewer, incl. non-college training if applicable); 3=Some College (13 grades or more but no degree); 4=College or advanced degree

FEMALE: 1=female; 0=male

INCOME: Only income brackets are provided in the NES. We chose a mid-point in each income bracket and converted it to the unit of $10,000.

MARRIED: Respondent's marital status: 1=married; 0=otherwise

MOBILITY: There are two questions asking about how people are getting along financially these days. One question asks whether the respondent is better off than (1), the same as (2), or the worse off than (3) he/she was a year ago (PERSONAL FINANCIAL SITUATION IN PAST YR). The other question asks PERSONAL FINANCIAL SITUATION IN NEXT YR. From these two questions, we constructed two dummy variables measuring upward mobility and downward mobility.

UPMOBILE=1: if the respondent is financially better off now than in last year and his/her personal financial situation is expected to be better next year; 0 otherwise

DOWNMOBILE=1: if the respondent is financially worse off now than in last year and his/her personal financial situation is expected to be worse next year; 0 otherwise

PROTESTANTISM: 2=Protestant and attend church more than twice in a month; 1=Protestant but attend church not regularly (less than twice in a month); 0=otherwise

PAST ECONOMY: Would you say that over the past year the nation's economy has gotten better, stayed about the same or gotten worse? 1. Better; 3. Stayed same; 5. Worse

REGION: 1. Northeast (CT, ME, MA, NH, NJ, NY, PA, RI, VT); 2. North Central (IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI); 3. South (AL, AR, DE, D.C., FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA, WV); 4. West (AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY)

UNEMPLOYED: Unemployment dummy constructed from VCF0116 (Respondent's WORK STATUS) 1=temporarily laid off or unemployed; 2=otherwise

UNION MEM: Union membership dummy constructed from VCF0127 (HOUSEHOLD UNION MEMBERSHIP) 1=someone in household belongs to a labor union; 2=no one in household belongs to a labor union

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