The relative importance of cultural and economic issues for the polarization of the U.S. electorate, 1972–2008

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Abstract

We develop a simple model in which voters care about both economic and “cultural” policy (non-economic issues such as abortion). Democrats and Republicans are ideologically differentiated and choose positions on economic policy to maximize their respective probability of winning. Voters who are culturally and economically conservative or liberal strongly prefer one of the parties, while the boundary between the set of Democratic and Republican supporters is along a economically-conservative-socially-liberal to economically-liberal-socially-conservative line. The change of the slope of this line over time tells us about changes in the relative importance of cultural and economic issues for vote choice.

We use data from the American National Election Survey to structurally estimate the model and the relative importance of cultural and economic factors. The results show that the distribution of voter preferences in the American electorate was relatively constant over the last 35 years. However, the importance of cultural factors relative to economic issues for the vote choice has increased significantly over the last generation. As a consequence, the fault line through the American electorate has turned and reflects much more the divisions on cultural issues than a generation ago. These results are consistent with a view that parties have become much more internally homogeneous on cultural issues over the last generation, and that this is the factor that is driving polarization. We also show that policy preference intensity has increased substantially over the same time frame.

Keywords: Polarization, differentiated candidates, policy divergence, ideology.

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1 Introduction

One of the most fundamental problems in American politics today is the perceived increase in “polarization”, both in Congress and among voters. Many political commentators diagnose a sharp and increasing partisan divide that splits the U.S. electorate. For example, the Economist writes that “the 50-50 nation appears to be made up of two big, separate voting blocks, with only a small number of swing voters in the middle”,\(^1\) and that “America is more bitterly divided than it has been for a generation”.\(^2\) Seemingly in contrast, several political scientists have provided strong evidence that “there is little evidence that Americans’ ideological or policy positions are more polarized today then they were two or three decades ago, although their choices often seem to be.”

Another question that has received much attention is which factors explain the party choice of voters, and whether these factors have changed over time. In particular, there is the issue of whether “ideology” is increasingly inducing voters to vote “against their economic interests”. In a popular bestseller, Thomas Frank asks “What’s the matter with Kansas?”: He argues that poor people in relatively poor states such as Kansas often vote for Republicans because of cultural issues such as abortion or gay marriage, while their economic interests would be more closely aligned with the Democratic party.

As an example that appears to support such an argument about the dominance of cultural factors, consider Table 1 which displays information from California voter exit polls in the 2008 elections.\(^3\) Lines correspond to information on how a voter voted on Proposition 8, a ballot measure whose objective it was to outlaw gay marriage (so yes-votes are by voters who are “social conservatives”). Columns correspond to a voter’s household income in the 2007. Entries in the cells are Obama’s share of the two party vote for President (i.e., \(\frac{\text{Votes for Obama}}{\text{Votes for Obama or McCain}} \times 100\%\)).

<table>
<thead>
<tr>
<th></th>
<th>income &lt; $50000</th>
<th>(\geq $ 50000)</th>
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<tbody>
<tr>
<td>YES on Prop. 8</td>
<td>41%</td>
<td>36%</td>
</tr>
<tr>
<td>NO on Prop. 8</td>
<td>90%</td>
<td>86%</td>
</tr>
</tbody>
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Table 1: Cultural and economic determinants of voting behavior

The attitude toward gay marriage is a useful proxy for preferences on social policy only, as the economic effect of Proposition 8 is very limited. Household income is a plausible proxy for

\(^{1}\)“On His High Horse,” Economist, November 9, 2002: 25.


\(^{3}\)Data from National Election Pool state exit poll for California, available from the Roper Center (http://www.ropercenter.uconn.edu/elections/common/state_exitpolls.html)
preferences on economic policy and the scope of government. Table 1 indicates very clearly that both economic and ideological factors influence a person’s vote for an office such as the presidency that combines a role in economic policy with a strong influence on social issues (for example, via judicial appointments). Of course, neither category can be expected to be a perfect measure of preferences in the respective policy area: There are several other social policy questions such as abortion or gun rights on which the two parties differ substantially and which may influence a voter’s ideological preference for one of the parties’ social policy positions. Similarly, a voter’s economic interests in an election are not only determined by household income in any given year in the past, but also by his expectations about future income, household size and composition (as this influences both how much taxes a voter has to pay and, presumably, his consumption of public goods) and age.

The size of the effect of the cultural issue is substantially larger here than the size of the economic effect, as social conservatives (i.e., yes-votes on Proposition 8) are about 50 percentage points less likely to vote for Obama than social liberals, while the effect of income holding cultural preferences constant accounts for about 5 percentage points. However, there is also apparently contradicting evidence in the existing literature that shows that higher income is associated with a larger propensity to vote for Republicans, and that this relationship may even grow stronger over time. Yet, none of the papers in the existing literature explicitly models voters with both economic and cultural issue preferences. Our main contribution is to provide such a model in which voters are influenced by both of these issues, and we analyze empirically how this trade-off changes over time.

2 An intuitive description of our model and procedure

We develop a simple model in which voters care about economic and “cultural” policy (non-economic issues such as abortion), as well as an idiosyncratic payoff from each candidate like in a probabilistic voting model. Democrats and Republicans are differentiated both ideologically and economically. Differentiation of economic platforms makes the Republican party (ceteris paribus, i.e., holding a voter’s ideological position constant) more attractive for richer voters. Voters who are culturally conservative and prefer a low level of spending prefer the Republican position on both issues, while voters who are culturally liberal and prefer a high level of spending prefer the Democratic position on both issues. In contrast to these core supporters of each party, economically-conservative, but socially-liberal voters and economically-liberal, but socially-conservative voters are less firm supporters of a party, and the boundary line between the set of (likely) Democratic and
Republican supporters goes through these regions of the type space. The slope of this separating line depends on the size of the difference between party platforms in the economic and cultural dimension.

To see this, consider Figure 1, where $\delta$ is a measure of the voter’s cultural preference (values to the right are more “socially conservative”) and $\theta$ is a measure of the voter’s preference for public goods (higher $\theta$-types want more public goods and are, therefore, “economically liberal”). The bold points denoted D and R indicate the two party platforms (i.e., the two voter types for whom the position of the parties corresponds to their ideal policy). If there are no idiosyncratic personality preferences for the candidates among voters, or if these are quantitatively small, then the separation line drawn perfectly separates the sets of Republican supporters (below the line) from the set of Democratic supporters (above the line).

\[ \begin{align*}
\theta & \quad \text{(a) Primarily economic voter separation} \\
\delta & \quad \text{(b) Primarily cultural voter separation}
\end{align*} \]

Figure 1: Voter separation lines

In the left panel of Figure 1, the platforms of the two candidates differ primarily along the economic dimension, while their cultural positions are fairly close. As a result, the separation line through the electorate in the $(\delta, \theta)$ space is fairly flat: Most Republicans have low values of $\theta$, while most Democrats have high values of $\theta$. In the intermediate range, cultural preferences do play a role, but the “marginal rate of substitution between economic and cultural issues” is low: Suppose we start from a voter who is just indifferent between the Democratic and Republican position. If

\[4\text{ Voters in our model also receive an additional candidate-specific payoff, which may capture both a systematic component (say, how competent a candidate is) and an idiosyncratic component (e.g., how likable the voter finds each candidate). Because of the idiosyncratic component, the separation line in the economic-cultural space cannot be expected to separate the two voter sets exactly, but will only separate those who are more likely to prefer the Democrat from those who are more likely to prefer the Republican for policy reasons.} \]
this voter becomes more socially conservative (i.e., if we move his $\delta$ to the right by one unit), how much does $\theta$ have to increase in order to keep this voter just stochastically indifferent between the candidates, i.e. to keep him on the separating line? We call this marginal rate of substitution the importance of cultural relative to economic issues.

Moving to the right panel, the importance of cultural relative to economic issues (in the way just defined) increases, that is, the dividing line becomes steeper. Note that the reason for the pivot of the separating line is the change of the Democratic and Republican position relative to the left panel – cultural differences between the candidates have become more pronounced, economic differences less so. It is reasonable to describe the polity in the right panel as more culturally polarized than the polity in the left panel.

Note that changes in the distribution of voter preferences have no effect whatsoever on the slope of the separating line — if the distribution of voter preferences changes, this is a completely separate and independent effect. An increased importance of cultural relative to economic issues is not driven by “voters becoming more concerned with cultural issues and less concerned with economic issues” in any absolute sense — say, all voters having a higher weight factor on cultural issues in their utility function, or shifting probability mass from the middle of the $\delta$ distribution to the left and right extremes. The slope of the dividing line depends solely on the difference between the candidates’ economic and social positions.

However, the change in the dividing line has consequences for the ideological composition of Democratic and Republican voters: In the left panel, high $\theta$ types are mostly supporters of the Democrat, while low $\theta$ types are mostly supporters of the Republican. Thus, if one measures the “economic polarization between Democrats and Republicans” by the difference between the ideal positions on economic issues of the average Democratic and the average Republican voter, this difference is relatively large. In contrast, the difference between the average preferred $\delta$-position of a Democratic supporter and that of a Republican supporter is rather small. Going to the right panel, all these relationships flip.

Another issue that is often discussed under the general notion of polarization is the question of preference intensity. Consider Figure 2, and remember that voters in our model also may care about other candidate features (such as likability) in an idiosyncratic way. The locus of the line that divides likely Democratic and likely Republican voters is the same in both the left and the right panel. However, in the left panel, candidate positions are pretty close, and a substantial number of voters are therefore also likely to be influenced by their idiosyncratic non-policy preferences: While voters above the dividing line are more likely to vote Democrat, and those below the line are more likely to vote Republican, the transition between the two camps is rather gradual. In contrast, in
the right panel, policy differences between candidates are quite pronounced. While the voters who are exactly located on the previous dividing line are still equally likely to prefer the Democrat and the Republican, those voters who are located slightly off that line now are much more likely to prefer the candidate on their side of the dividing line to his opponent, as policy differences have become more important relative to idiosyncratic non-policy preferences. We can thus interpret the extent to which the two voter blocs can be successfully divided by a line as a measure for how far apart the positions of the two candidates are.

The effect of idiosyncratic voter preferences for candidates is also important for the interpretation of which issues become “more important” or “more polarizing”. If voters care only about social and economic policy, then there are two possible developments over time that are mutually exclusive: Either, cultural divisions become more pronounced and economic ones less so, or the other way around. Moreover, if the cultural dimension becomes more important (i.e., an increase in the slope of the dividing line), then we expect to see more “sorting” according to $\delta$; that is, more voters with high $\delta$, and fewer with low $\delta$, will be Republicans. In contrast, sorting on $\theta$ will become less pronounced, in the sense that the difference between the average $\theta$ of Democratic voters and that of Republican voters is likely to shrink. In contrast, if party platforms diverge on both cultural and economic issues, then the importance of idiosyncratic preferences (relative to both types of policy) decreases, and it is possible that there is increased sorting along both policy dimensions.

In addition, we also can calculate how the implied “vote preference distribution” of the electorate changes. By the vote preference distribution, we mean the following: Using our estimation
results and the answers of a voter to the economic and cultural questions, we can calculate the probability that this voter votes for the Republican candidate, and we can interpret this number as the voter’s preference parameter. For each year, we can calculate the distribution of these preference parameters in the electorate. Changes of this distribution that shift population mass from the middle around 0.5 to the extremes of 0 or 1, respectively, can be interpreted as polarization in the sense that the number of “swing voters” shrinks while the number of “core supporters” increases. Note again that one of the main contributions of our theoretical model is to explain that this type of polarization can be completely “elite-driven”: It can arise if merely the parties’ platforms changed, even though the fundamental preference distribution over ideal economic and cultural policies is completely unchanged.

We use data from the American National Election Survey (NES) to structurally estimate the model for U.S. Presidential elections, and infer the relative importance of cultural and economic factors. Specifically, we take all NES questions concerning the voters’ preferences on either economic policy or cultural policy that have been asked without interruption during the 1972 to 2008 period. The results show that the fault line through the American electorate has turned and reflects the divisions on cultural issues to a much stronger degree than a generation ago.

In addition, our results confirm that the average of the cultural and economics preferences in the American electorate was relatively constant over the last 35 years (though the correlation between social and economic conservatism or liberalism of voters has increased somewhat). However, there is increasing polarization among the supporters of each party – Democrats and Republicans are, respectively, on average considerably more socially liberal and socially conservative today than 35 years ago. To a lesser degree, this is also true for economic preferences, but relatively, polarization has increased by more on cultural issues than on economic ones.

Our model provides a framework that yields a consistent interpretation for these results that does not presume that the distribution of voter preferences has changed. Parties have become much more internally homogeneous on cultural issues over the last generation, and this is what drives the increased importance of cultural issues relative to economic issues. Ceteris paribus, the increased relative importance of cultural issues would lead to more sorting along the cultural dimension and correspondingly less sorting along the economic dimension. However, we also find that the relative importance of idiosyncratic preferences has decreased over time (which would be the case if party platforms moved farther apart from each other, rather than just turn around some common center of gravity), and this leads to better sorting on both dimensions.

Our model also generates interesting effects with respect to the number of swing voters and the type of voters who, over time, switched their allegiance from one party to the other. In a
standard one-dimensional model, voter migration is limited to one direction: If, say, the Democratic candidate’s valence increases relative to the last election, or if he becomes more moderate, while keeping everything about the Republican candidate constant, then some voter types who previously preferred the Republican will now vote for the Democrat. However, there will be no voters who preferred the Democrat before and now prefer the Republican. In contrast, in our model, a pivot of the dividing line has the effect that socially-liberal and economically-conservative voters move to the Democratic party, while socially-conservative and economically-liberal voters move to the Republican party.

Our results demonstrate that the increasing importance of cultural issues has been electorally very beneficial for the Republican party. For example, we show that, in the 2004 election, there were about 13 percent of all voters who were more likely to vote Republican, but who would have been more likely to vote Democratic if the fault line through the electorate had been the same as in the 1976 election. The complementary set of voters who were likely to vote Republican in the 1970s, but now are more likely to vote Democratic is considerably smaller (around 1-2 percent for the 2004 voter distribution).

Finally, we can also estimate how the number of swing voters has changed over time. Our estimation generates a dividing line that separates voters who are more likely to vote for Democrats from those who are more likely to vote for Republicans. However, some voters with positions on the Democratic side of the line will in fact vote for the Republican candidate, for example because they find the Republican more likable, and vice versa for voters on the Republican side of the dividing line. In a highly polarized electorate, or in an election where there are stark policy contrasts between the candidates, we expect to see fewer such “cross-over voters” than in an electorate with very many moderates, or in an election in which the policy positions of the candidates are very similar.

We find that the policy preference intensity has increased considerably (over 50 percent) since 1976. While the dividing line in 2004 separates the two voting blocks in a pretty clean way, there were many more cross-over voter in the 1976 election. Specifically, in 1976, around 35 percent of voters vote for a different party than the one which they are most likely to vote for, given their policy positions. In 2004, this percentage drops to around 20 percent.

5To the extent that there are idiosyncratic preferences of voters for candidates, voters may migrate in both directions even in a model with a one-dimensional policy space. Such a voter migration against the trend is most likely to occur for voters who are moderates because their policy preferences are weak and can be more easily outweighed by idiosyncratic effects favoring one of the candidates. Note, however, that the reason why a voter has no strong policy preference – e.g., whether the voter is socially-liberal and economically-conservative, or socially-conservative and economically-liberal has no effect on the likelihood of a vote switch and its direction in a one-dimensional model.
Our theoretical model uses the differentiated candidates framework developed by Krasa and Polborn (2009, 2010a, 2010b). In this type of model, candidates for political office are characterized by some unchangeable characteristics such as their ability to transform tax revenue into public goods; given these characteristics, candidates choose a level of public good provision (and related taxes), and voters vote for their preferred candidate. The specific version closest to the present paper is Krasa and Polborn (2011), which introduces “ideology” as an unchangeable characteristic and analyzes how ideological differences between candidates affect their policy platforms.

Starting with the seminal papers of Poole and Rosenthal (1984) and Poole and Rosenthal (1985), there has been an extensive literature that studies the development of elite polarization, primarily by measuring the positions of members of Congress (see also ). This literature shows conclusively that the average Democrat and the average Republican in Congress have moved farther to the “left” and the “right”, respectively, and consequently, the political parties appear more polarized today than before.

Whether there is a corresponding polarization of the electorate is less clear. Many political pundits argue that cultural issues have become increasingly important since the 1990s to explain voters’ behavior. In the popular bestseller “What’s the matter with Kansas?”, Thomas Frank (2005) argues that many voters in the American heartland, in particular “angry white males” vote increasingly against their economic interest, i.e., for the Republican party. Consistent with this interpretation, a core strategy of the Republican party in the 2004 elections was to put referendums on gay marriage on the ballot in several states. Such a strategy makes sense from the party’s point of view if the referendum makes participation in the election more attractive for voters who care a lot about these issues, and if these additional voters are likely to vote for the Republican candidate.

On the other side of this argument are a number of political scientists who provide evidence for several claims that seemingly conflict with the value voters argument. First, there is convincing evidence that the political preferences of the American electorate on a number of policy issues are substantially the same that they were a generation ago (Fiorina, Abrams, and Pope (2006), Bartels (2006), Levendusky (2009); see Fiorina and Abrams (2008) for a review of the literature). There does not appear to be a radicalization in the sense that voters have moved from moderate positions to more extreme ones (DiMaggio, Evans, and Bryson (1996), Baker (2005)).

In particular, Fiorina and Abrams (2008) report the seven-point scale measure of ideology from the NES for 1972 and 2004 and argue that the number of voters who think of themselves as moderate is virtually unchanged (even though there are substantially more conservative and
extremely conservative voters). Yet, when comparing these social constructs over such a long time, it is unclear whether “liberal”, “moderate” and “conservative” really mean the same to voters in 2004 as they meant in 1972. For example, TV personality and former Republican Congressman Joe Scarborough said the following (on Hardball with Chris Matthews, February 15, 2011):

Well Chris it’s, it’s fascinating. You’ve known me since 1994. I went on Hardball all the time in ’95, ’96, ’97 and I was saying the same thing then that I’m saying now. I don’t think, if you just want to talk about where the Republican Party is economically, I don’t think they’re conservative enough. […] I mean, it used to be that, that position would make me more conservative than where establishment Republicans are in Washington, DC. But I guess since I don’t run around talking about where the President was born, and because I say that he’s a Christian, […] I guess by 2011 standards that makes me a liberal. I don’t get it.6

While we certainly do not want to argue that Joe Scarborough specifically has become a liberal or moderate (yet), the larger point is certainly valid: Attitudes to particular questions that made an individual reasonably classified as “liberal” or “conservative” some decades ago may today lead to a different classification, and a different voting behavior. The main objective of our paper is to analyze how this reclassification has played out over the last 35 years with respect to economic and cultural positions.

A second stylized fact that political scientists have found consistently over time is that a voter’s income matters for his vote choice (see Gelman, Shor, Bafumi, and Park (2008); chapter 3 of McCarty, Poole, and Rosenthal (2006)). Indeed, we find the same result in the sense that, throughout our observation period, a higher income ceteris paribus makes a voter more likely to vote Republican. Thus, income still influences voting behavior. Yet, we find that the extent of the trade-off between income (and, more generally, economic-policy preferences) on the one hand and cultural-ideological preferences on the other hand, has changed substantially from the 1970s to today.

4 Model

Two candidates, labeled $D$ and $R$, are endowed with a (cultural) ideological position $\delta_D, \delta_R \in [0,1]$. Candidates also differ in their ability to transform tax revenues into public goods. Candidates choose a policy $g$ that we interpret as the level of public goods supply that they promise to provide.

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6See http://newsbusters.org/blogs/geoffrey-dickens/2011/02/15/scarborough-just-because-i-dont-hate-obama-conservatives-think-im-
if elected. A candidate’s cost function is denoted by \( c_P(g) = B_P + C_P g \), where \( B_P \) is the fixed cost and \( C_P \) is the marginal cost of providing a level \( g \) of public goods. Specifically, we assume that candidate \( R \) has a cost advantage in providing lower levels of \( g \), whereas candidate \( D \) has an advantage in providing higher levels of \( g \). Formally, we have

**Assumption 1** Assume that \( B_D > B_R \) and \( C_D < C_R \).

Candidates are office motivated, that is, they choose policy \( g \) in order to maximize their probability of winning the election.

A voter is characterized by his cultural ideology \( \delta \in [0,1] \); a parameter \( \theta \in [0,1] \) that determines his preferences for public goods, and a parameter \( \xi_P \in \mathbb{R} \) that measures the impact of the personal charisma of the candidate \( P = D, R \) on the voter. Specifically, a voter’s utility from candidate \( P \) is given by

\[
u(P, g) = \theta v(g) - c_P(g) - (\delta - \delta_P)^2 + \xi_P.
\]

(1)

Note that \( v(\cdot) \) is an increasing and strictly concave function that is the same for all voters. Since a voter’s gross utility from public goods is \( \theta \cdot v(g) \), high \( \theta \)-types receive a higher payoff from public goods and therefore, their preferred level of public good provision, taking into account the cost of provision, is higher than for low \( \theta \) types. We assume that \( \theta \) is distributed according to a continuous cdf \( F_\theta(\cdot) \).

Let \( \xi = \xi_R - \xi_D \). We assume that \( \xi \) is independent of \( \theta \) and \( \delta \), and that both \( \xi \) and \( \delta \) have a discrete distribution (for simplicity of exposition). We denote by \( \pi_\Xi(\xi) \) and \( \pi_\Delta(\delta) \) the probabilities of realizations \( \delta \) and \( \xi \), respectively.

### 5 Equilibrium Policies

A voter with ideology \( \delta \) is indifferent between the two candidates if and only if

\[
\theta v(g_D) - c_D(g_D) - (\delta - \delta_D)^2 + \xi_D = \theta v(g_R) - c_R(g_R) - (\delta - \delta_R)^2 + \xi_R,
\]

which implies

\[
-2\delta(\delta_R - \delta_D) + (v(g_D) - v(g_R))\theta = c_D(g_D) - c_R(g_R) - (\delta_R^2 - \delta_D^2) + \xi.
\]

(2)

For any given value of \( \xi \), if \( v(g_D) = v(g_R) \), the line of these indifferent or cutoff voters in a \((\delta, \theta)\)-space is vertical. Intuitively, if Democrat and Republican provide the same amount of public goods, then
only the voters’ ideological preferences ($\delta$) matter for their voting choice, while the voters economic preference ($\theta$) is immaterial. If, instead, $v(g_D) \neq v(g_R)$, the cutoff value for $\theta$ is given by

$$\theta(\delta, \xi, g_D, g_R) = \frac{2\delta(\delta_R - \delta_D) + c_D(g_D) - c_R(g_R) - (\delta_R^2 - \delta_D^2) + \xi}{v(g_D) - v(g_R)}. \quad (3)$$

It follows immediately that (3) is a straight line in the $\delta$-$\theta$ space, and it has a positive slope if $v(g_D) > v(g_R)$. Intuitively, if the Democrat provides more public goods than the Republican, then a voter can be indifferent between the candidates either if he is socially relatively liberal, but prefers lower spending on public goods (i.e., low $\delta$ and low $\theta$), or if he is socially conservative, but prefers substantial government spending on public goods (i.e., high $\delta$ and high $\theta$). In this case, voter $(\delta, \theta, \xi)$ strictly prefers candidate $R$ if $\theta < \theta(\delta, \xi, g_D, g_R)$. Thus, the Republican vote share is given by

$$V_R = \sum_{\xi \in \Xi} \sum_{\delta \in \Delta} F_\theta(\theta(\delta, \xi, g_D, g_R)) \pi(\delta) \pi(\xi). \quad (4)$$

As a consequence, candidate $D$ minimizes (4) while candidate $R$ maximizes it.

The first order condition for candidate $D$ is given by

$$\sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f_\theta(\theta(\delta, \xi, g_D, g_R)) \left[ c_D - v'(g_D) \theta(\delta, \xi, g_D, g_R) \right] \pi(\delta) \pi(\xi) = 0. \quad (5)$$

The first order condition for candidate $R$ is given by

$$\sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f_\theta(\theta(\delta, \xi, g_D, g_R)) \left[ v'(g_R) \theta(\delta, \xi, g_D, g_R) - c_R \right] \pi(\delta) \pi(\xi) = 0. \quad (6)$$

The following Theorem 1 provides Inada-like conditions for a solution of (5) and (6) to exist, and conditions that guarantee that this solution is at least a local Nash equilibrium. Moreover, such an equilibrium is characterized by the Democrat offering more public goods than the Republican.

**Theorem 1**

1. Let $g_D, g_R$ be solutions to the vote share maximization problem. Then $v'(g_R)c_D = v'(g_D)c_R$, which implies that Candidate $D$’s spending level exceeds that of candidate $R$, i.e., $g_D > g_R$.

2. Suppose that $v'(0) = \infty$ and $v'(\infty) = 0$. Then there exist policies $g_D, g_R$ that satisfy the first order conditions (5) and (6).

3. If the derivatives of the density $f_\theta'$ are sufficiently close to 0 (e.g., if the distribution of $\theta$ is close to uniform) then any solution to the first order conditions is a local optimum for the vote share maximization problem.
Theorem 1 provides the theoretical basis for our empirical model. First, it provides a framework in which economic policy differentiation arises in equilibrium. Since parties are also differentiated with respect to their cultural ideology, this implies that both factors influence voter choice. For any given voter ideology, higher types of $\theta$ are more likely to vote for the Democrat (who provides more public goods, at a cost of a higher tax rate), and for any given economic preference type $\theta$, higher $\delta$-types are more likely to vote for the Republican.

6 Estimating the Model

Define

$$k = \frac{2(\delta_R - \delta_D)}{v(g_D) - v(g_R)}, \quad a = \frac{c_D(g_D) - c_R(g_R) - (\delta_R^2 - \delta_D^2)}{v(g_D) - v(g_R)} + \bar{\xi},$$

(7)

where $\bar{\xi} = E[\xi]$. Define

$$\varepsilon = \frac{\xi - \bar{\xi}}{v(g_D) - v(g_R)}$$

(8)

We assume that $\varepsilon$ is normally distributed with standard deviation $\sigma$ (given the normalization in (8), the mean of $\varepsilon$ is 0). Equations (3), (7) and (8) imply that a citizen votes Republican if and only if

$$\theta - k\delta - a - \varepsilon < 0.$$  

(9)

Let $X_i, i = 1, \ldots, n$ and $Y_i, i = 1, \ldots, m$ be random variables that describe the answers to survey questions on cultural and economic issues, respectively. From these data, we construct an index of cultural and economic preferences. Specifically, we assume that $\delta = \sum_{i=1}^{n} \lambda_i X_i$ and $\theta = \sum_{i=1}^{m} \mu_i Y_i$, where, of course, the $\lambda_i$ and $\mu_i$ are parameters to be estimated.

It is useful to normalize $X_i$ and $Y_i$ such that (i) the lowest and highest realizations are 0 and 1 for each question; (ii) high values on $X_i$ and $Y_i$ increase the estimated value of $\delta$ and $\theta$, respectively (i.e., we code answers to all questions in a way that all $\lambda_i$ and $\mu_i$ are non-negative). Note that we can do (ii) without loss of generality by redefining a new question $\hat{X}_i = 1 - X_i$ (or $\hat{Y}_i = 1 - Y_i$) if the corresponding coefficient $\lambda_i$ (or $\mu_i$) in a regression using the original answers $X_i$ or $Y_i$ is negative. Finally, we normalize $\sum_{i=1}^{n} \lambda_i = 1$ and $\sum_{i=1}^{m} \mu_i = 1$ so that $\theta, \delta \in [0,1]$, as required by the model. This normalization is useful in order to keep the distribution of $\theta$ and $\delta$ comparable over time, and it is without loss of generality because multiplying all variables in (9) by the same constant will not change whether (9) is satisfied.\footnote{In the estimation, multiplying all variables in (9) by the same constant leaves the parameter estimate for $k$ unchanged and multiplies the estimate of the standard deviation of $\varepsilon$ accordingly.}
Let $\Phi(\cdot)$ be the cdf of a normal distribution with mean 0 and standard deviation 1. Then (9) implies that the probability that a person votes Republican is

$$
\Phi \left( \frac{1}{\sigma} \left[ k \sum_{i=1}^{n} \lambda_i X_i - \sum_{i=1}^{m} \mu_i Y_i + a \right] \right),
$$

In order to determine $k, a, \sigma, \lambda_i, i = 1, \ldots, n$, and $\mu_i, i = 1, \ldots, m$, we first estimate the model in which the probability of voting Republican is given by

$$
\Phi \left( \left[ \sum_{i=1}^{n} \tilde{\lambda}_i \tilde{X}_i - \sum_{i=1}^{m} \tilde{\mu}_i \tilde{Y}_i + \tilde{a} \right] \right),
$$

where there are no restrictions on the $\tilde{\lambda}_i$, and $\tilde{\mu}_i$, i.e., they could be negative or greater than 1. $\tilde{X}_i$ and $\tilde{Y}_i$ are the responses to the survey questions, solely normalized to be between 0 and 1, but absent the additional requirement from above that higher realizations of the response to each question increase $\delta$ and $\theta$, respectively.

Note that (11) corresponds to a standard probit model, which can be estimated by maximizing the log-likelihood function. We now characterize the relationship between the parameters in the modified model in (11) with those in (10).

**Theorem 2** Let $\tilde{\lambda}_i, i = 1, \ldots, n$, $\tilde{\mu}_i, i = 1, \ldots, m$, and $\tilde{a}$ be parameters of the modified model in (11). Then the parameters of the original model (10) are determined as follows:

1. The weight of cultural issue $i$ in the cultural preference index is given by

$$
\lambda_i = \frac{|\tilde{\lambda}_i|}{\sum_{i=1}^{n} |\tilde{\lambda}_i|}
$$

2. The weight of economic issue $i$ in the economic preference index is given by

$$
\mu_i = \frac{|\tilde{\mu}_i|}{\sum_{i=1}^{m} |\tilde{\mu}_i|}
$$

3. The standard deviation of the individual preference shock $\varepsilon$ is given by

$$
\sigma = \frac{1}{\sum_{i=1}^{m} |\tilde{\mu}_i|}
$$

4. The slope of the separating line in the $(\delta, \theta)$ space is

$$
k = \frac{\sum_{i=1}^{n} |\tilde{\lambda}_i|}{\sum_{i=1}^{m} |\tilde{\mu}_i|}
$$
5. The vertical intercept of the separating line in the \((\delta, \theta)\) space is

\[
a = \bar{a} - \sum_{i=1}^{m} \min \{\tilde{\mu}_i, 0\} + \sum_{i=1}^{n} \min \{\tilde{\lambda}_i, 0\}. \tag{16}
\]

6. \(\delta\) and \(\theta\) are given by

\[
\delta = \frac{\sum_{i=1}^{m} [\tilde{\lambda}_i \tilde{X}_i - \min \{\tilde{\lambda}_i, 0\}]}{\sum_{i=1}^{m} |\tilde{\lambda}_i|}, \quad \theta = \frac{\sum_{i=1}^{n} [\tilde{\mu}_i \tilde{Y}_i - \min \{\tilde{\mu}_i, 0\}]}{\sum_{i=1}^{n} |\tilde{\mu}_i|}. \tag{17}
\]

When we compare different years, we allow for the possibility that the way how questions \(X_i\) and \(Y_i\) translate into types \((\delta, \theta)\) does not change. That is, we estimate the parameters \(\lambda\) and \(\mu\) for a “base period” (which is either a particular year, or several years pooled). We then apply these parameter values to different years; that is, we use the \(\lambda\) and \(\mu\) of the base year to calculate the preference type of each voter in the new year, and then only estimate the remaining parameters \(k\), \(a\), and \(\sigma\). In this reduced model, the probability of voting Republican is given by

\[
\Phi \left( \frac{1}{\sigma} [k \delta_i - \theta_i + a] \right). \tag{18}
\]

We can estimate this model by first estimating

\[
\Phi (\beta_\delta \delta_i - \beta_\theta \theta_i + \beta_a), \tag{19}
\]

and then using the identities

\[
\sigma = \frac{1}{\beta_\theta}, \quad k = \frac{\beta_\delta}{\beta_\theta}, \quad a = \frac{\beta_a}{\beta_\theta}. \tag{20}
\]

Intuitively speaking, different base years give slightly different results because what is considered “conservative” (i.e., leaning towards the Republican position) may change over time. Different approaches have both advantages and disadvantages. Pooling all years gives us the largest data set and compares all years against a common benchmark. In contrast, focusing on a rather late base year has the advantage of measuring people’s preferences in a way that is more consistent with what we consider as economically and culturally liberal or conservative today as opposed to an average over the last generation. Ultimately, we will show that our main results are not sensitive with respect to the choice of the base period.

Next, we want to draw conclusions about voters’ preference intensity for the two candidates. In order to represent candidates graphically, we display \(\delta\) on the horizontal, \(\theta\) on the vertical axis, and take account of \(\xi\) by graphing lines in the \(\delta-\theta\) space along which the probability of voting for a candidate is constant. For example, the solid line in Figure 3, represents voters who are evenly split in their support for the two candidates. That is, if \(\xi < \bar{\xi}\) (or equivalently if \(\varepsilon > 0\)) then person \((\delta, \theta, \xi)\) votes for the Democrat, while \(\xi > \bar{\xi}\) means that the person votes Republican.
Lines parallel to the 50 percent separating line are again isoprobability lines on which all types have the same probability of voting Republican. In Figure 3, we have drawn two such lines that correspond to probability levels $\Phi(-1) \approx 0.159$ and $\Phi(1) \approx 0.841$ (that is, they are one standard deviation away from zero for a standard normal distribution). We define the preference intensity $p$ to be the inverse of the distance between the solid 50% line, and the $\Phi(1)$-line.

Simple geometry shows that $p = (1/\sigma)\sqrt{1 + k^2}$. Next, note that (8) implies that the standard deviation of $\xi$ is given by $\sigma(\xi) = (v(g_D) - v(g_R))\sigma$. This, and (7) implies

$$p = \frac{\sqrt{(v(g_D) - v(g_R))^2 + 4(\delta_R - \delta_D)^2}}{\sigma(\xi)}.$$  

(21)

Thus, if the standard deviation of $\xi$ does not change between observations, then an increase in the preference intensity is caused by an increase in the difference between the candidates’ positions on cultural and economic positions.

If the preference intensity increases, there will be fewer swing voters, i.e., a person whose $(\theta, \delta)$ is above the 50% line is more likely to vote for the Democrat, while a voter below the line is more likely to vote Republican.

Substituting $v(g_D) - v(g_R)$ in (21) by using (7) we get

$$p = \frac{2(\delta_R - \delta_D)}{\sigma(\xi)}\sqrt{1 + \frac{1}{k^2}}.$$  

(22)
If we take the standard deviation on both sides of (8) we get

$$\sigma = \frac{\sigma(\xi)}{v(g_D) - v(g_R)}$$

(23)

Thus, if $k$ increases, it follows that the preference intensity $p$ can only increase if the difference between the candidates’ cultural positions increases. Similarly, if $k$ increases, (23) implies that the difference in the candidates’ economic position increases as well.

Last, consider Figure 4 where the dividing line rotates, i.e. cultural issues become more important for the vote choice, relative to economic issues. This implies that some culturally-conservative and economically-liberal voters, who in earlier years preferred the Democratic candidate, now prefer the Republican (i.e., these are the voters described in “What’s wrong with Kansas?”). Conversely, there are social liberals who are economically conservative and who switch from the Republican side to the Democratic side of the separation line (the “What’s wrong with Connecticut?”–crowd). Our framework helps us to identify these (likely) party switchers and their political preferences. People who switch from the Republican to the Democratic column are cultural liberals with a preference for low government spending. In contrast, people who used to vote for the Democrats and now switch to the Republican column do so because their economic preference for the Democrats becomes outweighed by their cultural preference for Republicans.

These observations are summarized in Theorem 3.

**Theorem 3**
1. If \( k \) and the preference intensity \( p \) increase when comparing one year to another, then the two candidates must be further apart both on economic policy as well as the cultural positions, i.e., \( v(a_D) - v(a_R) \) and \( \delta_R - \delta_D \) must have increased.

2. Suppose that \( k \) and \( a \) do not change between years \( t_1 \) and \( t_2 \), while the preference intensity \( p \) increases. Furthermore, suppose that the distribution of voter types remains unchanged. Let \( H_t(q) \) be the fraction of the population whose probability of voting Republican is less or equal to \( q \) at time \( t \). Then there are fewer swing voters (types with \( q \) close to 0.5) and more partisans (types with \( q \) close to 0 or 1). Formally, \( H_{t_1} \) second order stochastically dominates \( H_{t_2} \).

3. Suppose that \( k \) increases from year \( t_1 \) to \( t_2 \). Let \( \text{New}_D \) be the set of all voters whose probability of voting for the Democrat in \( t_2 \) is greater than 1/2, while their probability of voting for the Democrat in \( t_2 \) is smaller than 1/2. Similarly, let \( \text{New}_R \) be the set of all voters whose probability of voting Republican increases from below 1/2 in \( t_1 \) to above 1/2 in \( t_2 \). These two sets are disjoint. Moreover new Democratic voters are culturally more liberal and economically more conservative than new Republican voters, i.e., for all \( (\delta_R, \theta_R) \in \text{New}_R \) and all \( (\delta_D, \theta_D) \in \text{New}_D \) it follows that \( \delta_D < \delta_R \) and \( \theta_D < \theta_R \).

Finally, it is useful to discuss the impact of data limitations on our results. Suppose that the true model for year \( t \) has the same structure as the one that we estimate, but has \( \delta \) and \( \theta \) influenced by more issues than we can have data for: \( \delta = \sum_{i=1}^{N} \lambda_i X_i \) and \( \theta = \sum_{i=1}^{M} \mu_i Y_i \), where \( N > n \) and \( M > m \) (i.e., we have data only on the first \( n \) and \( m \) issues, respectively, but the true model is determined by all \( N \) and \( M \) issues). This problem may arise particularly acutely because we have to restrict ourselves to questions that were asked in the NES in every year from 1972 to 2008.

Clearly, missing some issues on the cultural dimension will lead to an underestimate of the relative importance of cultural issues relative to economic issues, and vice versa. Moreover, missing questions in general implies that we will ascribe more variation to the idiosyncratic shock \( \varepsilon \) than justified in the true model. Thus, the absolute values of \( k \) and \( p \) should not be over-interpreted. Specifically, one should not interpret a result that \( k < 1 \) (\( k > 1 \)) as implying that “cultural issues are less (more) important than economic issues” in an absolute sense. However, the interpretation of the development of \( k \) and \( p \) over time is not systematically affected by this problem as long as the true issue weights (of the included and omitted issues) do not change systematically over time.

Which type of systematic change of the issue weights of included and omitted variables over time can be expected? Presumably, the committee deciding on which questions to ask in the NES has some notion of the importance of different issues that guides their decision – when a new
issue becomes sufficiently important in political discourse, a new question will be included, and if the importance of an existing issue falls below some threshold, its usage will be discontinued. However, since continuity of questions is a very important feature for many studies (including ours), we suspect that the importance threshold for inclusion is likely higher than the threshold for exclusion. Thus, if a question remains in the NES for the whole period between 1972 and 2008, the NES committee must feel that its importance in 1972 warranted inclusion, and its importance remained sufficiently high over the entire period to prevent exclusion. Issues that became important within this time period, but were not yet sufficiently important to be included in 1972 are not in our data set so that we would expect that the sum of the true normalized weights of the questions included in our analysis may have been higher in 1972 than in 2008. If this is the case, then our estimate of the preference intensity $p$ is biased downward late in our sample period (relative to the estimate in early years), as too much variation is attributed to idiosyncratic shocks rather than unmeasured variations in a voter’s position. Fortunately, as we show that $p$ increases significantly even without taking into account this bias, this strengthens our results.

## Data

We use data from the post-election survey of the American National Election Survey for Presidential election years during the time period from 1972 to 2008. Throughout this time period, we use the following questions in order to determine the cultural ideology index $\delta$ of a voter:

1. Questions VCF0837 (1980 and before) and VCF0838 (1984 and after) about the legal status of abortion. Should abortion be always legal, mostly legal, mostly illegal or always illegal.

2. Question VCF0834 about the role of women, with answers ranging from “Women and men should have an equal role” to “Women’s place is in the home”.

3. Question VCF0830, about the government’s responsibility to help minorities, with answers ranging from “Government should help minority groups/blacks” to “Minority groups/blacks should help themselves”.

4. Question VCF0823 about isolationism (agree/disagree to the statement “This country would be better off if we just stayed home and did not concern ourselves with problems in other parts of the world”)

---

8For example, a respondent’s attitude towards gay people is now probably a good predictor of social conservatism, but in the 1970s, the NES did not contain any questions on this complex. Similarly, we would suspect that a question about the respondent’s confidence in scientific results would be more informative about a respondent’s social conservatism today than it was 40 years ago.
5. Question VCF0213 about the respondent’s attitude towards the U.S. military (“thermometer scale” from 0 to 100)

6. Question VCF0223 about the respondent’s attitude towards poor people (“thermometer scale” from 0 to 100)

In order to determine the economic preferences of a voter, we consider the following questions:

1. Question VCF0809 on the role of the government in the economy, with answers ranging from “Government should see to job and good standard of living” to “Government should let each person get ahead on his own”

2. Question VCF0210 about the respondent’s attitude towards unions (“thermometer scale” from 0 to 100)

3. Question VCF0209 about the respondent’s attitude towards “big business” (“thermometer scale” from 0 to 100)

4. Question VCF0114 about the respondent’s family income. Here, respondents are put into 5 groups according to how their income compares with the percentiles of the U.S. income distribution.

As mentioned above, we code responses such that the lowest possible answer is 0 and the highest one is 1. Furthermore, we code missing answers (don’t know and refused to answer) as equal to the average answer. This may not be completely ideal, but we think that the size of the mistake that arises when we code people who claim that they do not know their preferred position on abortion as moderates on this question (neither as “always legal” nor as “always illegal” types) is probably smaller than with any other imputation. The main advantage of our method is that it avoids a loss of data points that would be quite drastic if we were to only include respondents who have answered all questions.

Because we want to compare elections over time, we have chosen this set of questions that address the cultural and economic policy preferences of voters such that the questions we include must have been asked in all NES presidential election years since 1972. This is the reason for why we start our analysis in 1972, as moving to the 1960s would have meant losing a substantial number of questions.

The questions we include ask about the individual’s preferences on certain policy issues and their affinity to certain groups, which we interpret as proxies for policy issues. For example, we would think that the feeling about poor people is a useful proxy for the individual’s policy preferences.
on welfare, or the individual’s feeling about unions and big business should be a good proxy for right-to-work legislation or business regulation in general.

In contrast, we do not include any demographic measures (such as gender, race, age, geographic characteristics). The reason is that we think it is more useful to take the individual’s preferences on policy issues as a measure of their ideological position. It is certainly true that a voter’s demographic characteristics influence his preferred positions. For example, women have on average a more liberal position on abortion rights than men, so if one did not know a voter’s preferences on abortion, including information on the voter’s gender might well be a useful proxy for preferred positions. However, since the NES has information on policy preferences, we prefer to use this information directly. The idea is that, controlling for the respondent’s opinion about abortion and the role of women, the respondent’s gender does not provide any additional information about the voter’s preferences.\footnote{In fact, we have run our regression including a number of demographic controls, and with the exception of race, they have turned out to be small and often insignificant.}

Note that we do not include any measure of partisan affiliation or self-placement on a one-dimensional liberal-to-conservative scale. Including such a measure would defy the purpose of our analysis. As mentioned in the introduction, we want to know which policy-preferences (on both the economic and the cultural dimension) translate into a preference for the candidate of one of the parties. Regressing individuals’ vote choices for Democrats or Republicans on whether the individuals feel attached to either party is not very helpful. Similarly, the liberal-conservative scale is not helpful because it collapses the two dimensions of our interest into one: For example, if a voter claims to be moderate, is that because he is a social liberal but a fiscal conservative, or a social conservative but a fiscal liberal, or a moderate in both dimensions? Changes of party positions over time affect these groups very differently, and thus, we prefer to measure economic and cultural positions directly by taking as input the individuals’ positions on actual economic and cultural policy issues, rather than their own assessment on whether their positions make them “liberal” or “conservative” relative to their fellow countrymen.

Finally, we have some reservations about the data quality in 2008 because the NES sample appears non-representative to us (Obama voters outnumber McCain voters 2-to-1 in the post-election sample, while the actual election result was 52.9% for Obama versus 45.7% for McCain). This is by far the largest difference between the NES post-election sample and the actual election result during the time interval that we consider. While we nevertheless report the results for 2008, we urge the reader to be cautious in the interpretation of the results for this particular year.
8 Empirical Results

8.1 Probit regression for $\delta$ and $\theta$

The first two columns in Table 2 reports the values of $\hat{\lambda}$ and $\hat{\mu}$ for both all years pooled and the last three presidential elections (i.e., 2000-2008) pooled. Below the point estimates for each parameter, we report the corresponding 95 percent confidence interval.

<table>
<thead>
<tr>
<th></th>
<th>base: all years</th>
<th>base: 2000–2008</th>
<th>$(\lambda, \mu)_{all}$</th>
<th>$(\lambda, \mu)_{2000–2008}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>military (thermometer)</td>
<td>1.221</td>
<td>1.907</td>
<td>0.321</td>
<td>0.377</td>
</tr>
<tr>
<td></td>
<td>[1.097, 1.346]</td>
<td>[1.636, 2.178]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>isolationism (high answers = favor U.S. international involvement)</td>
<td>-0.281</td>
<td>-0.272</td>
<td>0.074</td>
<td>0.054</td>
</tr>
<tr>
<td></td>
<td>[-0.338, -0.223]</td>
<td>[-0.386, -0.159]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>poor people (thermometer)</td>
<td>-0.856</td>
<td>-0.655</td>
<td>0.225</td>
<td>0.130</td>
</tr>
<tr>
<td></td>
<td>[-0.989, -0.723]</td>
<td>[-0.913, -0.397]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>aid to minorities (high answers = against aid to minorities)</td>
<td>0.687</td>
<td>1.051</td>
<td>0.181</td>
<td>0.208</td>
</tr>
<tr>
<td></td>
<td>[0.598, 0.777]</td>
<td>[0.859, 1.244]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>role of women (high answers = women’s place is in the house)</td>
<td>0.201</td>
<td>0.353</td>
<td>0.053</td>
<td>0.070</td>
</tr>
<tr>
<td></td>
<td>[0.123, 0.279]</td>
<td>[0.164, 0.542]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>abortion (high answers = should be legal)</td>
<td>-0.558</td>
<td>-0.814</td>
<td>0.147</td>
<td>0.161</td>
</tr>
<tr>
<td></td>
<td>[-0.628, -0.488]</td>
<td>[-0.961, -0.667]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>income</td>
<td>-0.604</td>
<td>-0.620</td>
<td>0.141</td>
<td>0.146</td>
</tr>
<tr>
<td></td>
<td>[-0.688, -0.520]</td>
<td>[-0.784, -0.458]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>big business (thermometer)</td>
<td>-1.017</td>
<td>-0.650</td>
<td>0.238</td>
<td>0.153</td>
</tr>
<tr>
<td></td>
<td>[-1.133, -0.901]</td>
<td>[-0.879, -0.423]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>union (thermometer)</td>
<td>1.725</td>
<td>2.083</td>
<td>0.403</td>
<td>0.490</td>
</tr>
<tr>
<td></td>
<td>[1.618, 1.832]</td>
<td>[1.867, 2.299]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>government standard of living (high answer = no gov. welfare)</td>
<td>-0.931</td>
<td>-0.893</td>
<td>0.218</td>
<td>0.210</td>
</tr>
<tr>
<td></td>
<td>[-1.023, -0.840]</td>
<td>[-1.114, -0.672]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Probit regression results; 95 percent confidence interval

The first two columns of Table 2 show the expected effects of political positions on voting behavior. Remember that our model is normalized in a way that a high value of the cultural index $\delta$ and a low value of the preference for public goods, $\theta$, increases an individual’s likelihood of voting Republican. Consequently, Table 2 indicates that a person is more culturally conservative
(i.e., high $\delta$) if he likes the military; dislikes poor people; would like the U.S. to withdraw from international involvement; is against special government support for minorities; believes that caring for the family is better for women than working outside the home; and if he believes that abortion should be illegal. A person is more economically conservative (i.e., low $\theta$) if his income is high; if he likes big business; if he dislikes unions; and if he is against the idea that government should provide guaranteed jobs and a standard of living for everyone.

The third and fourth column report the implied values for the $\lambda_i$ and $\mu_i$. Remember that these are normalized so that they are positive and sum to 1, respectively, so that the values can be interpreted as the relative weight of different issues in determining whether a person is culturally or economically conservative, respectively. (Also, remember that answers are normalized such that they go from 0 to 1; thus, the value of $\lambda_i$ is the effect on the point value of $\delta$ that arises when a respondent changes from the most liberal answer in question $i$ to the most conservative one).

Overall, the importance of different issues for the determination of the cultural and economic scores are remarkably stable when comparing the whole period (1972-2008) to just the elections in the last decade. Within the economic factors, the biggest weight shift is from the big business thermometer to the union thermometer, but since these two measures are likely to be quite negatively correlated, the effect on the economic conservatism ranking of any individual is likely to be very limited. The weight on income and on the question whether the government should intervene in the economy to guarantee jobs and a standard of living are essentially unchanged between the whole period and the decade starting in 2000.

Within the cultural index, there are somewhat larger differences between weights based on the whole period and those based on this decade. The sum of the weight on the two military/foreign policy questions and the sum of the weight of the two gender-related questions have become somewhat more important in defining an individual’s position on the cultural scale, relative to the attitude to poor people and minorities. However, we would still argue that the change in these weights is rather small.

One way to make these statements about the constancy of the factors that determine economic and cultural conservatism more precise is to calculate the correlation of the $\delta$ and $\theta$ values generated by both rankings. Throughout all years, the correlation coefficient for $\delta$ varies between 0.973 and 0.98, and the correlation coefficient for $\theta$ varies between 0.981 and 0.988. As a consequence, it does not matter much for the results whether we take the weights based on all years or on the 2000-2008 time period.

Having now established that the factors that determine whether a person is considered economically and culturally conservative did not change much over time, the next question is whether
the distribution of voter ideal points on these two dimensions changed over time, and how much. Table 3 reports the average values of $\delta$ and $\theta$ with respect to $(\lambda, \mu)_{2000-2008}$ for all years between 1972 and 2008, as well as the standard deviation of $\delta$ and $\theta$.

<table>
<thead>
<tr>
<th>Year</th>
<th>Average $\delta$</th>
<th>Std. Dev. $\delta$</th>
<th>Average $\theta$</th>
<th>Std. Dev. $\theta$</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>0.552</td>
<td>0.136</td>
<td>0.518</td>
<td>0.138</td>
<td>-0.081</td>
</tr>
<tr>
<td>1976</td>
<td>0.541</td>
<td>0.127</td>
<td>0.485</td>
<td>0.142</td>
<td>-0.080</td>
</tr>
<tr>
<td>1980</td>
<td>0.535</td>
<td>0.122</td>
<td>0.518</td>
<td>0.146</td>
<td>-0.082</td>
</tr>
<tr>
<td>1984</td>
<td>0.521</td>
<td>0.126</td>
<td>0.521</td>
<td>0.150</td>
<td>-0.108</td>
</tr>
<tr>
<td>1988</td>
<td>0.537</td>
<td>0.125</td>
<td>0.515</td>
<td>0.153</td>
<td>-0.165</td>
</tr>
<tr>
<td>1992</td>
<td>0.538</td>
<td>0.127</td>
<td>0.508</td>
<td>0.152</td>
<td>-0.162</td>
</tr>
<tr>
<td>1996</td>
<td>0.544</td>
<td>0.119</td>
<td>0.508</td>
<td>0.146</td>
<td>-0.205</td>
</tr>
<tr>
<td>2000</td>
<td>0.541</td>
<td>0.115</td>
<td>0.517</td>
<td>0.137</td>
<td>-0.130</td>
</tr>
<tr>
<td>2004</td>
<td>0.568</td>
<td>0.136</td>
<td>0.526</td>
<td>0.153</td>
<td>-0.296</td>
</tr>
<tr>
<td>2008</td>
<td>0.582</td>
<td>0.123</td>
<td>0.547</td>
<td>0.142</td>
<td>-0.241</td>
</tr>
</tbody>
</table>

Table 3: Cultural and economic indices: Average and standard deviation

It is quite clear that the average $\delta$ and $\theta$ moves around in a relatively unsystematic way for most of the time, though there appears to be a slight uptick in social conservatism and economic liberalism in 2004 and 2008. (As we explained above, we are not particularly convinced about the 2008 data quality in general and therefore caution against overinterpreting this movement). Looking at the development of the standard deviations, it is quite apparent that there is no perceivable trend. It is certainly not the case that the distribution of economic or cultural issue preferences becomes a lot more polarized over time, as this would require a substantial increase in the standard deviations. This confirm the results of DiMaggio, Evans, and Bryson (1996), Fiorina, Abrams, and Pope (2006) and Fiorina and Abrams (2008) who all find that overall issue preferences of American voters have remained largely stable over time.

Note, however, that the correlation between the ideal positions has increased quite drastically. In the beginning of the time period, the correlation coefficient is about $-0.08$ so that cultural conservatism is essentially independent of economic conservatism. At the end of the sample period, however, the reader may wonder about the increase in voters’ index of social conservatism especially in the NES sample of 2008, where Obama’s vote share is a lot higher than in real life. The bulk of this effect is explained by the fact that the general appreciation of the U.S. military has increased (among all voters, Democrats and Republicans) since September 11, and since the thermometer score of the U.S. military is an important factor in our conservatism score, the electorate now looks “more conservative”.

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10 Nevertheless, the reader may wonder about the increase in voters’ index of social conservatism especially in the NES sample of 2008, where Obama’s vote share is a lot higher than in real life. The bulk of this effect is explained by the fact that the general appreciation of the U.S. military has increased (among all voters, Democrats and Republicans) since September 11, and since the thermometer score of the U.S. military is an important factor in our conservatism score, the electorate now looks “more conservative”.

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the correlation coefficient changes to between $-0.2$ and $-0.3$. Since high values of $\delta$ and low values of $\theta$ correspond to cultural and economic conservatism, this means that the two types of conservatism are today more closely related, although that correlation is far from perfect. While it is often claimed that voting behavior of members of Congress has become essentially one-dimensional in recent years, it will be quite clear from the figures in the next subsection that such a claim cannot be made for the American electorate at-large.

A final note: Table 3 reports values for all registered voters in the corresponding years, that is, independent of whether the voter chose to exercise his right to vote or abstained. Nonvoters tend to be a bit more liberal than voters, both socially and culturally. However, our main conclusions above (that is, there is no significant shift of the average $\delta$ and $\theta$, and there is a slightly stronger negative correlation between them) also hold when focusing on actual voters.

8.2 The development of the relative importance of cultural and economic issues, and preference intensity

We now turn to the central focus of our analysis. First, how did the relative importance of cultural and economic issues for the determination of individuals' voting behavior change from 1972 to 2008? And second, is there “polarization” with respect to policy? That is, have political positions become more important for the determination of voting behavior relative to idiosyncratic candidate-specific preferences?

Figure 5 displays the values of $\delta$ and $\theta$ for all voters, together with the voter’s choice (red for Republican, blue for Democrat). The left panel is for the 1976 election, the right one for the 2004 election. In both panels, we have drawn the 50 percent separating line, i.e., voters on this line have an implied probability of voting Republican or Democrat that is exactly $1/2$. Voters below and to the right of the separating line are more likely to vote Republican, while voters above and to the left of the line are more likely to vote Democrat.

Note that the separation of voter blocks is much cleaner in 2004 than in 1976. Moreover, the separation in 1976 is primarily along economic issues (with high $\theta$ types mostly voting for Carter, and low $\theta$ types mostly voting for Ford). In contrast, in 2004, the separating line is considerably steeper and thus, to a higher degree along cultural lines, with social liberals primarily voting for Kerry, social conservatives for Bush.

Figure 6 displays the development of $k$, defined in (7). We take as given the weight factors for both base years 2000-2008 and all years, which gives us the values of $\delta_i$ and $\theta_i$ for each voter in each year. Then, we estimate the model given in equation (19), and use (20) to determine $k$ and $\sigma$. 

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Both graphs show the same basic pattern. There is an initial decrease in $k$ from 1972 to 1976, followed by a continuous and substantial increase in $k$ until 1992. In 1996, $k$ decreases again to about the level of 1984, but then the increase resumes again, and the three Presidential elections in the first decade of this century have again a very high $k$ relative to the value in the 1970s and early 80s.

What do these values of $k$ mean? Consider an individual voter who is on the separating line and thus just stochastically indifferent between Democrats and Republicans in the 1976 elections (i.e., from our perspective as outside observers who only know his policy preferences, but not his idiosyncratic preference $\varepsilon$, he has a 50% probability of voting Republican). Suppose now that we consider a second voter who is one standard deviation more socially conservative (i.e., someone whose $\delta$ is 0.127 points higher than the first voter). How much more economically liberal than the first voter would this second voter have to be in order for his probability to vote Republican to remain at 50%? Given that $k$ in 1976 is about 0.543 (for the 2000-2008 base), the answer is that an increase of $\theta$ by $0.127 \times 0.543 \approx 0.069$ points (i.e., about 49% of one standard deviation of $\theta$) is sufficient to compensate for the higher social conservatism of the second voter.

Now consider the same exercise in 2004. An increase in $\delta$ by one standard deviation (0.136 points) now requires an increase of $\theta$ equal to $0.136 \times 1.191 \approx 0.162$ in $\theta$ to keep the probability of voting Republican unaffected, and such an increase equals about 106% of one standard deviation of $\theta$. Thus, the importance of cultural preference differences relative to economic preference differences
for the determination of voting behavior has approximately doubled between 1976 and 2004.

Remember that this is not a consequence of voters directly putting more weight on cultural issues in 2004 than in 1976; changes in the distribution of preferences are independent of these changes in $k$, and, as argued above, preferences do not actually change all that much. Instead, in our model, the much larger weight on social-cultural issues relative to economic issues is a consequence of elite polarization. In the context of our model framework, these results imply that the distance between the cultural positions of Democrats and Republicans has increased since the 1970s, relative to the distance between their economic positions.

Table 4 provides 95% confidence intervals for the estimated model parameters $k$, $a$, $\sigma$. Considering the development of $k$ shows that the general increase in $k$ is statistically significant. The value of $k$ in each of the last three elections (as well as in 1992) is significantly higher than the value of $k$ in each of the elections from 1972 to 1984. Thus, the long-term increase in $k$ is certainly not spurious. In contrast, changes from one election to the next are only in some cases significant; for example, $k_{1976}$ is significantly different from $k_{1972}$, but not from $k_{1980}$. More generally, while there is a continuous increase of the point estimate of $k$ between 1976 to 1988, these increases are significant only over two time periods, not from one election to the next (e.g., $k_{1976}$ is significantly different from $k_{1984}$ and $k_{1988}$, but not from $k_{1980}$). Similarly, the values of $k$ in the last three elections are not significantly different from each other, but they are significantly higher than the values in any previous year, with the exception of 1992. The variation in $\sigma$ is generally smaller, and there is less of a clear time trend. Still, the lowest values of $\sigma$ (1984, 1996, 2004 and 2008) are significantly lower than the highest values of $\sigma$ (in 1972, 1976, 1992 and 2000). The values of $a$
are not of direct interpretative value, because both \( a \) and \( k \) together determine the position of the separating line.\textsuperscript{11}

We return now to consider the temporal development of \( k \), and to argue that the development of the values over the different election is qualitatively plausible. Our first comparison is with some result of Roemer (1998). The NES asks each respondent to list his view of the three most important issues in this year’s election. Roemer coded these issues as economic issues, values issues, or other issues, and defined the salience of values as the number of values issues mentioned divided by the number of economic issues mentioned in the answer to this question. Since \( k \) increases over time, we would also expect that Roemer’s salience measure increases. This said, the two measures do not measure exactly the same concepts. For example, we suspect that a mention of ‘unemployment’ may well have been coded as an ‘economic issue’ by Roemer, but if the mention occurs during a recession, it may simply be a sign of the incumbent’s low economic competence in the voter’s view, rather than a sign that economic positions become more important for the voter’s choice.

Table 5 reports the results of Table 2 of Roemer (1998) for the presidential election years in his sample. For the years from 1976 to 1988, the correlation between Roemer’s salience measure and \( k \) is almost perfect (0.918), while it is approximately 0.4 if all years are included. We suspect that

\textsuperscript{11}For rough estimates, it is useful to consider the \( \theta \)-value on the separating line at the average value of \( \delta \). When this value is low in a given year, then it is a good year for the Democratic candidate, and vice versa (because the Democrat receives most votes from people located above the separating line). This indicates, for example, that 1976 was a much better year for Democrats than both 1972 and 1980.

<table>
<thead>
<tr>
<th>year</th>
<th>( k )</th>
<th>conf ( k )</th>
<th>( a )</th>
<th>conf ( a )</th>
<th>( \sigma )</th>
<th>conf ( \sigma )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1972</td>
<td>0.814</td>
<td>[0.630,1.028]</td>
<td>0.182</td>
<td>[0.081,0.271]</td>
<td>0.262</td>
<td>[0.227,0.306]</td>
</tr>
<tr>
<td>1976</td>
<td>0.561</td>
<td>[0.370,0.781]</td>
<td>0.166</td>
<td>[0.047,0.268]</td>
<td>0.260</td>
<td>[0.221,0.307]</td>
</tr>
<tr>
<td>1980</td>
<td>0.706</td>
<td>[0.478,0.981]</td>
<td>0.166</td>
<td>[0.025,0.286]</td>
<td>0.219</td>
<td>[0.183,0.261]</td>
</tr>
<tr>
<td>1984</td>
<td>0.799</td>
<td>[0.618,1.011]</td>
<td>0.154</td>
<td>[0.052,0.242]</td>
<td>0.211</td>
<td>[0.183,0.245]</td>
</tr>
<tr>
<td>1988</td>
<td>0.943</td>
<td>[0.705,1.228]</td>
<td>0.015</td>
<td>[-0.135,0.139]</td>
<td>0.252</td>
<td>[0.212,0.302]</td>
</tr>
<tr>
<td>1992</td>
<td>1.305</td>
<td>[1.043,1.652]</td>
<td>-0.267</td>
<td>[-0.462,-0.122]</td>
<td>0.264</td>
<td>[0.225,0.316]</td>
</tr>
<tr>
<td>1996</td>
<td>0.752</td>
<td>[0.537,1.008]</td>
<td>0.018</td>
<td>[-0.125,0.139]</td>
<td>0.190</td>
<td>[0.161,0.223]</td>
</tr>
<tr>
<td>2000</td>
<td>1.241</td>
<td>[0.922,1.702]</td>
<td>-0.189</td>
<td>[-0.435,-0.015]</td>
<td>0.263</td>
<td>[0.213,0.331]</td>
</tr>
<tr>
<td>2004</td>
<td>1.157</td>
<td>[0.869,1.561]</td>
<td>-0.133</td>
<td>[-0.361,0.029]</td>
<td>0.203</td>
<td>[0.163,0.254]</td>
</tr>
<tr>
<td>2008</td>
<td>1.156</td>
<td>[0.910,1.467]</td>
<td>-0.238</td>
<td>[-0.427,-0.086]</td>
<td>0.214</td>
<td>[0.184,0.252]</td>
</tr>
</tbody>
</table>

Table 4: Estimates of model parameters \( k, a, \sigma \) with 95% (bootstrap) confidence intervals (Base: 2000-2008)
Table 5: Salience of values issue, according to Roemer (1998), and $k$

<table>
<thead>
<tr>
<th>year</th>
<th>salience</th>
<th>$k$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>0.331</td>
<td>0.561</td>
</tr>
<tr>
<td>1980</td>
<td>0.397</td>
<td>0.706</td>
</tr>
<tr>
<td>1984</td>
<td>0.605</td>
<td>0.799</td>
</tr>
<tr>
<td>1988</td>
<td>1.236</td>
<td>0.943</td>
</tr>
<tr>
<td>1992</td>
<td>0.595</td>
<td>1.305</td>
</tr>
</tbody>
</table>

the difference for 1992 is due to the fact that the campaign was held during a recession so that unemployment is often mentioned as a problem by voters. It would also be interesting to extend Roemer’s method for post-1992 elections, but unfortunately, his coding of issues is lost.

We now turn to a qualitative–historical discussion of the development of $k$. The $k$ for 1972, the election, between Nixon and McGovern is relatively high. This election was primarily about the Vietnam war and related social issues (such as amnesty for draft dodgers or the policy toward illegal drugs), while economic differences played a smaller role. For example, the Wikipedia article on the 1972 presidential election states:\textsuperscript{12}

On April 25, 1972, George McGovern won the Massachusetts primary and journalist Bob Novak phoned Democratic politicians around the country, who agreed with his assessment that blue-collar workers voting for McGovern did not understand what he really stood for. On April 27, 1972 Novak reported in a column that an unnamed Democratic senator had said of McGovern: “The people don’t know McGovern is for amnesty, abortion and legalization of pot. Once middle America –Catholic middle America, in particular – finds this out, he’s dead.” The label stuck and McGovern became known as the candidate of “amnesty, abortion and acid.”

In contrast, the $k$ for 1976 is the lowest in the whole period under consideration. The Wikipedia article\textsuperscript{13} mentions the aftermath of Watergate as a fundamental theme (in our parlance, this topic is probably better classified as a idiosyncratic valence effect than as a cultural issue). The only economic campaign issue mentioned is that Ford unsuccessfully asked Congress to end the 1950s-era price controls on natural gas, and the only cultural issue mentioned is that Carter pledged to end desegregation busing (a fairly conservative position for a Democratic candidate). Other


issues mentioned are squarely in the idiosyncratic category. Carter, an evangelical Christian, did very well in states that have a high share of conservatives (winning almost all states of the former Confederacy). Clearly, this doesn’t imply that Carter was the more conservative candidate (the positive slope of the separating line in Figure 5 actually demonstrates that more conservative voters were more likely to vote Republican), but it means that Carter cannot have done too badly with conservative voters in the 1976 election.

From 1980 to 1992, $k$ increases continuously and substantially. Without going into details in every election, it is generally accepted that the election of 1980 was a key turning point in American politics. “Reagan’s success as a conservative would initiate a realigning of the parties, as liberal Republicans and conservative Democrats would either leave politics or change party affiliations through the 1980s and 1990s to leave the parties much more ideologically polarized.”

This, in fact, is our interpretation of ideological polarization in presidential elections: Suppose that, in cultural issues, the most important political power of the president is his ability to nominate justices for the Supreme Court (issues like abortion or gay marriage are primarily decided by judges rather than the legislative or executive branch of government in this country). Suppose furthermore that the President will generally pick a member of his own party, but without necessarily being able to fine-tune the ideological position of the nominee. Then, if the cultural positions represented are fairly heterogeneous within in each party, and the distribution of Democrats is fairly similar to the distribution of Republicans, then voters do not perceive a large cultural difference between parties, and they do not weigh this issue that much when deciding whom to vote for, even if they care substantially about cultural issues. In contrast, if Democrats are clearly pro-choice and Republicans are clearly pro-life, voters will take this into account much more when deciding whether to vote for the Democratic or the Republican candidate in the presidential election.

What about the substantial decrease of $k$ in 1996? The Wikipedia description of the main campaign issues in this race between Bill Clinton and Bob Dole states that

With respect to the issues, Dole promised a 15% across-the-board reduction in income

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14 Carter blundered by admitting that he “lusted in my heart for women” other than his wife; and Ford blundered by stating that “there is no Soviet domination of Eastern Europe and there never will be under a Ford administration”.


16 For example, Republican Gerald Ford nominated John Paul Stevens for the U.S. Supreme court, who was confirmed by the Senate with a 98-0 vote. Stevens eventually developed into the leader of the liberal wing on the Court. However, it probably was not Ford’s intention to choose a particularly liberal justice. His short-list apparently also included Robert Bork and Antonin Scalia, and thus the full ideological span of the Republican party in the 1970s. In contrast, nomination shortlists in the years after 2000 probably displayed a much larger degree of ideological homogeneity.
tax rates and made former Congressman and supply side advocate Jack Kemp his running mate. Bill Clinton framed the narrative against Dole early, painting him as a mere clone of unpopular House Speaker Newt Gingrich, warning America that Bob Dole would work in concert with the Republican Congress to slash popular social programs, like Medicare and Social Security, dubbed by Clinton as "Dole-Gingrich". Bob Dole’s tax-cut plan found itself under attack from the White House, who said it would "blow a hole in the deficit" which had been cut nearly in half during his opponent’s term.

In contrast, there is no mention of any campaign issue that we would classify as cultural. This does not necessarily mean that voters did not perceive cultural differences between the candidates (because, of course, the general differentiation of the parties along cultural lines proceeded throughout the nineties), but in general, Bob Dole did not qualify as a conservative culture warrior. Also, Dole’s running mate Jack Kemp is described in Wikipedia as having “sometimes sounded like a liberal Democrat: he supported affirmative action and rights for illegal immigrants” (though he opposed abortion).

In contrast, in the 2004 election, the Republican party painted John Kerry as a “Massachusetts liberal” who was out-of-touch with “real America”, and organized referendums against gay marriage in several states, further raising the profile of social and cultural issues. As a consequence, many voters cited “moral issues” as one of the main reason for their vote choice. Consistent with this view, in 2004, $k$ takes one of the highest values during the whole time period.

![Graph](image-url)

Figure 7: "Reagan Democrats" in the 2004 (right) U.S. Presidential elections
Our model can be used to conduct some counterfactual experiments, one of which is reported in Figure 7 which displays again the voter preference distributions for 1976 and 2004, but now with both separating lines in the same graph — the solid one corresponds to the year of the preference distribution, while the dashed line corresponds to the other year. Consider the right panel. If the separating line in the 2004 election had been the same as in 1976 (instead of the actual one), then the Democrats would win back those “Reagan Democrats” between the two lines in the right upper area. These are culturally conservative voters (with $\delta$ mostly between 0.6 and 0.8) who are also economically quite liberal. Of course, there is a countervailing gain of culturally-liberal and economically conservative voters in the lower left area between the two lines. However, from Figure 7, it is evident that the size of the “Reagan Democrats” is much larger. As a consequence, if the 2004 presidential election had played out along the fault lines of the 1976 election, Kerry would have won comfortably. About 13 percent of the voters are in the Reagan Democrat triangle, while only 1 percent are in the opposite triangle of voters who switched from “more likely to vote Republican” to “more likely to vote Democratic”. Similarly, from the left-hand panel, Ford might have won if the 1976 presidential election had played out along the fault lines of the 2004 election. In 1976, there were about 7 percent of voters in the “Reagan Democrat” triangle, while 3 percent of voters were in the opposite triangle.

We now turn to the issue of polarization between the two candidates’ platforms. (23) and (7) imply

$$\delta_D - \delta_R = \frac{\sigma(\xi)k}{2\sigma}, \quad v(g_D) - v(g_R) = \frac{\sigma(\xi)}{\sigma}$$  

If we assume that the standard deviation of $\xi$ did not change, we can identify both the cultural and economic difference in the candidates’ platforms, if we normalize the policy difference $v(a_D) - v(a_R)$ in a base year to, for example, 100 (we have chosen 1976 as the base year). Figure 8 displays the development of the difference between the candidates’ cultural and economic positions implied by the model.

The data show that the difference between the two parties’ cultural positions is more than twice as large after 1992 than it was in 1976. For economic positions, the change in the distance between positions is much smaller (the maximum change is to an index value of less than 150 in 1996, and most years are at 125 or below. Note that comparing the index values of the two series with each other is not meaningful – we cannot say that cultural platforms are “more than twice as polarized” in the current decade than economic policies, because these are just values relative to the respective distances in 1976, and there is no meaningful way in which economic and cultural positions can be compared.

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There is no assumption with respect to the mean of the $\xi_i$, so that a candidate can have a higher valence that all people appreciate, as long as the additional (mean-zero) idiosyncratic shock has a constant distribution.
differences between the parties in 1976 were exactly equal.

It is useful to contrast our model and its implications about the polarization of candidate platforms in presidential elections with Poole and Rosenthal’s DW-nominate score that measures polarization in Congress. The DW-nominate score is based on legislators’ actual votes in Congress. Party polarization is commonly operationalized by considering the difference between the average Democratic and the average Republican score. Poole and Rosenthal’s method cannot be applied to compare the positions of presidential candidates because very rarely, both candidates serve in Congress during the same time period and thus voting on the same laws (Obama vs. McCain was the only exception to this in the recent past, and clearly, a single data point does not tell us anything about the development of polarization over time).

In contrast, our method is based on comparing the behavior of voters (and thus on their understanding of what the differences between candidates are). The decisive feature of our method is that we have a measure of the preferred positions of the voters, as well as their vote choices. This allows us to reconstruct which positions are, on average, how important for vote choices and, assuming that the size of the effect of third dimension (i.e., the idiosyncratic preference for one of the candidates) is fixed, it allows us to reconstruct a measure of the distance between policy platforms on both the cultural and the economic dimension.

Another measure that our model provides is the development of the preference intensity $p$ over time. Remember that the preference intensity $p$ is defined as the inverse of the distance between
the 50 percent separation line, and the line that is one standard deviation away and thus contains all types whose probability of voting Republican is 84.1 percent (also, the distance to the 15.9 percent line). Effectively, $p$ measures the distance between different “isoprobability lines”, that is, lines that run parallel to the 50 percent separation line and have the property that all types on the line have the same probability of voting Republican (say, 30%, 40%, 60%, 70% etc.).\(^{18}\) If these lines are far apart from the 50 percent separation line, then most voters lie between, say, the 30 percent line and the 70 percent line and are “moderates” in the sense that their vote choice is not predetermined by their political preferences, but also depends on their idiosyncratic personal preference for the specific candidates. If, in contrast, the isoprobability lines are close together (i.e., the inverse of their distance from each other is high), then there are fewer moderates.

Figure 9: The development of $p$ from 1972 to 2008

Figure 9 shows the development of the policy preference intensity $p$ from 1972 to 2008. Overall, there is a clear increase in $p$, from a low between 4 and 4.5 (depending on which base year we use) to a value around 7. The general increasing trend reflects the general increase of $k$ and the decrease of $\sigma$ over the same time period.

It is interesting to see the reduction of $p$ in 2000 – the election that featured discussions among political pundits about which candidate voters would rather have a beer with, and would outfit Al Gore should wear to emphasize his alpha male credentials. In contrast, we see a sharp increase of $p$ in 2004, the election that generated the quotes already cited in the first paragraph of the

\(^{18}\)There is noting special about focusing on the one standard normal standard deviation line. If we were to take any other value, say the 70% line, the absolute values of $p$ would evidently be different, but the percentage change between different years would be exactly the same as for the values reported in Table 9.
introduction that “the 50-50 nation appears to be made up of two big, separate voting blocks, with only a small number of swing voters in the middle”, and that “America is more bitterly divided than it has been for a generation”.

Some external evidence for the comparison between the 2000 and 2004 elections is available in the Gallup polls taken before the election which ask respondents the degree to which they support a candidate (as cited by Bernhardt, Krasa, and Polborn (2008)). For the 2004 elections the polls reveal stronger preferences than in the previous three presidential elections: for the 2004 elections, 71% of voters indicated a strong preference for their candidate versus 64% for the 2000 elections.\(^{19}\) Given that partisans are likely to support their candidate strongly in any election, these numbers indicate that significantly more voters with policy preferences that would previously have been considered “moderate” had strong preferences in the 2004 elections. Also, stronger preference intensities by moderates correspond to a smaller percentage of undecided voters. The exit polls of the 2000 and 2004 elections support this claim. In 2004, only 11% of voters were undecided until the last week, while the corresponding number for 2000 was 18%. Similarly, the corresponding percentages for being undecided a month before the elections were 22% in 2004 and 31% in 2000.

![Figure 10: Difference in Candidate Positions on Different Issues](image)

ANES also contains a limited number of questions that ask respondents for the assessment of candidates’ positions. The only questions that have sufficient data for the time period that we are considering are the following. VCF9083 and VCF9091 ask about the the democratic and republican candidate’s position on ”role of women”. Similarly, VCF9084 and VCF9091 ask about the position on giving “aid to blacks”, and VCF9087 and VCF9095 ask about the governments role in guaranteeing jobs. These questions correspond to VCF0834, VCF0830, and VCF0809 which ask

\(^{19}\)This number is an average of the three polls that asked this question, weighted by number of respondents.
respondents for their own position on these issues, and which we use to determine $\delta$ and $\theta$.

In order to control for respondents’ characteristics we estimate linear regressions that contain $\delta$, $\theta$, $\delta^2$, $\theta^2$, and year dummies as explanatory variables, and the difference in the candidates’ positions (as reported by the respondent) as dependent variable. It turns out that centrists, i.e., voters with $\delta$ and $\theta$ close to 0.5 report the smallest difference between candidates, while the reported difference increases for partisans. For example, for the question on aid to blacks the difference in candidate position is $-15.6\delta + 13.1\delta^2 - 10.7\theta + 9.7\theta^2$ plus the year dummies. It is easy to see that this expression is minimized for $\delta = 0.59$ and $\theta = 0.55$. If we change $\delta$ and $\theta$ by about one standard deviation, with is in the range of 0.12, then the reported difference increase by 0.35, relative to a scale that runs from 0 to 7.

Figure 10 graphs the change in the difference between candidate position as captured by the coefficient of the year dummy. As in our other graph, we take 1976 as the base year. Curves that are not continuous indicate years in which the particular questions was not asked and as a consequence there is not data available. The graphs indicate that except for 1972, perceived differences between the candidates have increased, as predicted by our model.

However, there is a problem with measuring perceived candidate differences by using the respondent ranking of candidates. For example, consider the question of the “role of women” where 1 indicates that “women and men should have an equal role,” and 7 that “women’s place is in the home.” It is safe to say that this issue was not salient in any of the recent elections. In contrast, an individual respondent’s position on this issue is a likely to be strongly correlated with positions on more salient social issues that are policy relevant. Using the questions about voter positions rather than candidate position therefore provides a better measure of the changing importance of cultural and economic issues in elections.

9 Conclusion

In this paper, we have theoretically developed and empirically estimated a model in which voters care about both economic and “cultural” policy. Our particular focus was on the voters’ trade-off between cultural and economic positions. Using data from the American National Election Survey, we show that the importance of cultural factors relative to economic issues for the vote choice has increased significantly over the last generation. As a consequence, the fault line through the American electorate has turned and reflects much more the divisions on cultural issues than a generation ago. The reason for this shift is that party platforms have diverged – considerably on cultural issues, but not so much on economic issues (our model can actually estimate the change in
policy divergence). These results are consistent with a view that parties have become much more internally homogeneous on cultural issues over the last generation. As a consequence, cultural divisions become more salient.

We also show that policy preference intensity has increased substantially over the same time frame. Furthermore, we show that the Republican party gained substantial support by the increased emphasis on cultural issues (i.e., they gained a lot more socially-conservative and economically-liberal voters than they lost socially-liberal and economically-conservative voters).

In contrast, the average of cultural and economic voter preferences in the American electorate was relatively constant over the last 35 years, and also has not become more polarized (though the correlation between economic and cultural conservatism has slightly increased). Thus, our model provides a framework that can reconcile two points of view that have been interpreted as inherently in conflict: On the one hand, there is the notion that cultural issues have lead mainly socially conservative working class voters to abandon the Democratic party in favor of the Republican party, and that the political divide follows cultural issues much more than a generation ago. This notion has been put forward, for example by pollster Stan Greenberg who coined the term “Reagan Democrats” for the culturally conservative voters of Macomb County, Michigan, just north of Detroit (largely white, unionized auto-workers); and by Journalist Thomas Frank who writes about the development of party preferences in the state of Kansas.

On the other hand, political scientists such as Mo Fiorina and Larry Bartels have demonstrated that neither average preferences nor the dispersion of preferences in the U.S. electorate have changed dramatically, and that voting choices continue to be strongly influenced by a voter’s economic position. Our model demonstrates that these two positions and findings are not only logically consistent, but we find evidence for both of them. This is the fundamental contribution of our model.
Appendix

**Proof of Theorem 1.** If we multiply equation (5) by \( v'(g_R) \) and equation (5) by \( v'(g_D) \) and add them together we get

\[
\sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f_\theta(\theta(\delta, \xi, g_D, g_R) \left[ v'(g_R)c_D - v'(g_D)c_R \right] \pi_D(\delta) \pi_\Xi(\xi) = 0. \tag{25}
\]

Note that (25) is equivalent to

\[
\left[ v'(g_R)c_D - v'(g_D)c_R \right] \sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f_\theta(\theta(\delta, \xi, g_D, g_R)) \pi_D(\delta) \pi_\Xi(\xi) = 0.
\]

Since \( f_\theta, \pi_D \), and \( \pi_\Xi \) are non-negative and strictly positive for some realizations, it follows that

\[
v'(g_R)c_D = v'(g_D)c_R. \tag{26}
\]

Finally, note that (26), \( c_R > c_D \) and \( v'' < 0 \) imply \( g_D > g_R \).

(26) implies that \( g_R \) is a differentiable function of \( g_D \). We next prove that

\[
\sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f_\theta(\theta(\delta, \xi, g_D, g_R)) \left[ c_D - v'(g_D)\theta(\delta, \xi, g_D, g_R) \right] \pi_D(\delta) \pi_\Xi(\xi) = 0 \tag{27}
\]

has a solution.

Recall that \( v'(0) = \infty \). Further, \( \theta \notin [0, 1] \) then \( f_\theta(0) = 0 \). Thus, the left-hand side of (27) becomes less or equal to zero as \( g_D \downarrow 0 \).

Next, suppose that \( g_D \to \infty \). By assumption \( v'(\infty) = 0 \). Thus, since \( f_\theta(\theta) = 0 \) for \( \theta > 1 \), it follows that the left-hand side of (27) is greater or equal to zero for a sufficiently large \( g_D \). As a consequence, continuity implies that (27) has a solution.

The second derivatives at a solution of the first order conditions are given by In order to have a minimum and maximum, respectively, the following second order conditions need to be satisfied:

\[
\sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f^2_\theta(\theta(\delta, \xi, g_D, g_R)) \left[ c_D - v'(g_D)\theta(\delta, \xi, g_D, g_R) \right]^2 \pi_D(\delta) \pi_\Xi(\xi)
- \sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f_\theta(\theta(\delta, \xi, g_D, g_R)) v''(g_D)\theta(\delta, \xi, g_D, g_R) \pi_D(\delta) \pi_\Xi(\xi), \tag{28}
\]

for candidate \( D \), and

\[
\sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f^2_\theta(\theta(\delta, \xi, g_D, g_R)) \left[ c_R - v'(g_R)\theta(\delta, \xi, g_D, g_R) \right]^2 \pi_D(\delta) \pi_\Xi(\xi)
+ \sum_{\xi \in \Xi} \sum_{\delta \in \Delta} f_\theta(\theta(\delta, \xi, g_D, g_R)) v''(g_R)\theta(\delta, \xi, g_D, g_R) \pi_D(\delta) \pi_\Xi(\xi), \tag{29}
\]

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For candidate $R$. In order to have a minimum, (28) must be positive, while (29) must negative in order for candidate $R$ to maximize vote share. Since $v'' < 0$, both second order conditions are satisfied as long as $f''_\theta$ is sufficiently small. For example, they would automatically be satisfied for a uniform distribution. ■

**Proof of Theorem 2.** Let $N_A$ be the set of all $i$ with $\tilde{\lambda}_i < 0$. Then let $X_i = 1 - \tilde{X}_i$ if $i \in N_A$, and $X_i = \tilde{X}_i$, otherwise.

Similarly, let $N_M$ be the set of all $i$ with $\tilde{\mu}_i < 0$. Then let $Y_i = 1 - \tilde{Y}_i$ if $i \in N_M$, and $Y_i = \tilde{Y}_i$, otherwise.

Note that $\tilde{\lambda}_i \tilde{X}_i = -\tilde{\lambda}_i (1 - \tilde{X}_i) + \tilde{\lambda}_i$. Thus, for $i \in N_A$ we get $\tilde{\lambda}_i \tilde{X}_i = (\lambda X_i - \lambda_i) \sum_{i=1}^n |\tilde{\lambda}_i|$. For $i \notin N_A$ the definition of $\lambda_i$ implies $\tilde{\lambda}_i \tilde{X}_i = \lambda_i X_i \sum_{i=1}^n |\tilde{\lambda}_i|$. Thus,

$$\sum_{i=1}^n \tilde{\lambda}_i \tilde{X}_i = \left[ \sum_{i=1}^n \lambda_i X_i - \sum_{i \in N_A} \lambda_i \right] \sum_{i=1}^n |\tilde{\lambda}_i| = \left[ \sum_{i=1}^n \lambda_i X_i - \sum_{i \in N_A} \lambda_i \right] \frac{k} {\sigma}. \quad (30)$$

Similarly, it follows that

$$\sum_{i=1}^m \tilde{\mu}_i \tilde{Y}_i = \left[ \sum_{i=1}^m \mu_i Y_i - \sum_{i \in N_M} \mu_i \right] \sum_{i=1}^m |\tilde{\mu}_i| = \left[ \sum_{i=1}^m \mu_i Y_i - \sum_{i \in N_M} \mu_i \right] \frac{1} {\sigma}. \quad (31)$$

Further, the definition of $\lambda_i$ and $\mu_i$ in (12) and (13) imply

$$\lambda_i = -\frac{\min\{\tilde{\lambda}_i,0\}} {\sum_{i=1}^m |\tilde{\lambda}_i|}, \text{ for } i \in N_A, \quad \mu_i = -\frac{\min\{\tilde{\mu}_i,0\}} {\sum_{i=1}^m |\tilde{\mu}_i|}, \text{ for } i \in N_M. \quad (32)$$

Thus, applying (15), (14), and (32) to (16) implies

$$\tilde{a} \sigma + \sum_{i \in N_M} \mu_i - k \sum_{i \in N_A} \lambda_i = \frac{\tilde{a}} {\sum_{i=1}^m |\tilde{\mu}_i|} - \frac{\sum_{i=1}^m \min\{\tilde{\mu}_i,0\}} {\sum_{i=1}^m |\tilde{\mu}_i|} + \frac{k \sum_{i=1}^m \min\{\tilde{\lambda}_i,0\}} {\sum_{i=1}^m |\tilde{\lambda}_i|}$$

$$= \frac{\tilde{a} - \sum_{i=1}^m \min\{\tilde{\mu}_i,0\} + \sum_{i=1}^m \min\{\tilde{\lambda}_i,0\}} {\sum_{i=1}^m |\tilde{\mu}_i|} + a.$$ \quad (33)

Equations (16), (30), and (33) therefore imply

$$\Phi \left( \left[ \sum_{i=1}^n \tilde{\lambda}_i \tilde{X}_i - \sum_{i=1}^m \tilde{\mu}_i \tilde{Y}_i + \tilde{a} \right] \right) = \Phi \left( \frac{1} {\sigma} \left[ k \sum_{i=1}^n \lambda_i X_i - \sum_{i \in N_A} \mu_i Y_i - k \sum_{i \in N_A} \lambda_i + \sum_{i \in N_M} \mu_i + \tilde{a} \sigma \right] \right)$$

$$= \Phi \left( \frac{1} {\sigma} \left[ k \sum_{i=1}^n \lambda_i X_i - \sum_{i \in N_A} \mu_i Y_i + a \right] \right). \quad (34)$$
Finally, we prove equation (17) that relates $\delta$ and $\theta$ to the parameters of the modified model. Recall that $\delta = \sum_{i=1}^{n} \lambda_i X_i$. The first equality in equation (30) and (32) therefore imply

$$\delta = \frac{\sum_{i=1}^{n} \tilde{\lambda}_i \tilde{X}_i}{\sum_{i=1}^{n} |\tilde{\lambda}_i|} + \sum_{i \in \Lambda} \lambda_i = \frac{\sum_{i=1}^{n} \tilde{\lambda}_i \tilde{X}_i - \sum_{i \in \Lambda} \min\{\tilde{\lambda}_i, 0\}}{\sum_{i=1}^{n} |\tilde{\lambda}_i|} = \frac{\sum_{i=1}^{m} [\tilde{\lambda}_i \tilde{X}_i - \min\{\tilde{\lambda}_i, 0\}]}{\sum_{i=1}^{m} |\tilde{\lambda}_i|}.$$ 

Proof of Theorem 3. The first statement follows immediately from (7) and (8).

Note that on the line $\theta = k \delta + a$, the probability of voting Republican or Democrat is 50%. All parallel lines connect voters who all have the same probability of supporting one of the candidates — we refer to these lines as isoprobability curves. A decrease of $\sigma$ means that the probability of voting Republican strictly increases on all isoprobability curves below the 50% line and strictly decrease above the 50% line. Thus, $H_{t_1}(0.5) = H_{t_2}(0.5)$, while $H_{t_1}(q) > H_{t_2}(q)$ for all $q < 0.5$ and $H_{t_1}(q) < H_{t_2}(q)$ for all $q > 0.5$. This, however, means that $H_{t_1}$ second order stochastically dominates $H_{t_2}$.

Finally, note that if we increase $k$ we rotate line the equilibrium line counter-clockwise. Thus, new Republican voters have high $\theta$ and high $\delta$ compared to new Democratic voters. See the discussion in the main text.
References


