Reexamining the Effect of Unemployment Rate on Voter Turnout

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May 5, 2016

Introduction

While a great deal of scholarship has examined the effect of economic conditions on election outcomes, the relationship between economic conditions, vote choice, and turnout is not conclusive. In this paper, we replicate and reexamine Burden and Wichowsky's (2014) paper which investigates the effect of state and county level unemployment rates on turnout and vote choice. We are able to replicate most of their findings, but we focus substantively on their hypothesis that higher unemployment levels lead voters to punish Republican candidates and favor Democratic candidates at the ballot box. In general, we find that increases in the state unemployment rate are associated with increases in aggregate turnout, but, upon reexamining the authors' models, we do not see evidence that these increases in state unemployment rate are associated with higher levels of vote choice for Democrats.

Burden and Wichowsky examine the effect of state and county level unemployment rates on turnout for presidential and gubernatorial elections. They theorize that indicators of economic downturn, like the unemployment rate, prod citizens to turnout in order to voice discontent and hold politicians accountable. This theory runs counter to that of Radcliff (1994) who suggests that poor economic conditions depress turnout, especially among those most affected by the downturn. The Burden and Wichowsky's results suggest that higher unemployment levels do indeed increase turnout, and that the effect is greater for state-level unemployment rates compared to county-level, likely due to the fact that an individual's state unemployment rate is a more politically salient metric than her county rate. Furthermore,

the authors argue that turnout increases more under Republican governors, and that this increase in turnout primarily advantages Democratic gubernatorial candidates. The bulk of our analysis in this paper will focus on the authors' results demonstrating that turnout, under high levels of unemployment, increases under Republican governors and that those turning out are punishing Republican candidates to the advantage of Democratic candidates.

Burden and Wichowsky present results suggesting that higher levels of state unemployment leads to higher turnout for gubernatorial elections, and that this turnout differentially advantages Democratic candidates at the expense of Republican candidates. This theory is supported by existing scholarship on the asymmetry in how economic indicators affect votes for the two parties (Petrocik 1996; Stevens 2007; Wright 2012). The theory suggests that voters believe Democrats are better able to handle domestic social issues, like unemployment, than are Republicans; therefore, voters will be more likely to vote for Democratic candidates in the face of indicators of economic hardship, like high unemployment rates. The main contribution of our paper will be a re-specified model of the effect of state-level unemployment rates on vote choice in gubernatorial elections in which we control for time variation not captured in the authors' original model. It is likely that over the course of the thirty years represented in the dataset, voters' beliefs about which party is better able to handle economic issues and downturns changed as the parties' platforms and profiles changed. We will explore this model re-specification in more detail later.

The outline of the paper is as follows: we will present a few model tweaks that we believe were simple oversights by the authors, a series of more interpretable results from the authors' vote choice models, and our own reexamination of the data and modeling assumptions. While we believe the authors' analysis to be, on the whole, thorough and convincing, we will focus our analysis specifically on their hypotheses regarding the effect of state-level unemployment levels on gubernatorial vote choice. Using a series of re-specified models, we will cast doubt on the authors' hypothesis that Republican governors suffer, while Democratic governors benefit, from higher state-level unemployment rates.

Analysis

In the original article, the authors present five tables. We were able to successfully replicate Tables 1-3, which together show that an increase in the state unemployment rate increases aggregate turnout and that this increase is not because parties and candidates make elections more competitive when unemployment increases. Most of our contribution will focus on Table 5, a multinomial logit model that predicts individual vote choice, but we will briefly present an issue with Table 4.

Modeling Aggregate Turnout

Table 4 is a regression of the state unemployment rate on county turnout that includes controls and an interaction term between the unemployment rate and whether there is a Republican incumbent. The model includes state and year fixed effects. In the original paper, the authors find that turnout increases with unemployment rate for Republican incumbents but not for Democratic incumbents. We were only able to replicate these exact results when we removed the year fixed effects from the model. Adding year fixed effects changes the results somewhat, as now turnout rises with state unemployment rate for incumbents of both parties, but this increase is higher for Republicans.

The results of the regression both with and without year fixed effects are presented in Table 1, where Model 1 replicates the paper exactly and lacks fixed effects for year, while Model 2 adds in fixed effects. Unlike Model 1, the coefficient on state unemployment rate is large and statistically significant in Model 2. Regardless of incumbent party, state unemployment rate is associated with higher aggregate turnout. The interaction term is still significant but a bit weaker, suggesting the effect is larger when there is a Republican incumbent. Figure 1 provides a visual representation of the difference in adding year fixed effects via two marginal effects plots. Without year fixed effects, the unemployment rate is associated with higher turnout only for Republicans. Adding the year fixed effects makes the effect of the unemployment rate on turnout statistically different from zero for incumbents of both parties.

It is clear that year fixed effects have a substantial impact on the results of this model.

This makes sense because the data in this project, based on elections, covers several years. These time trends are themselves associated with increases and decreases in turnout. In order to determine what effect the state unemployment rate or any other variable has, we need year fixed effects to control for these time trends.

Table 1

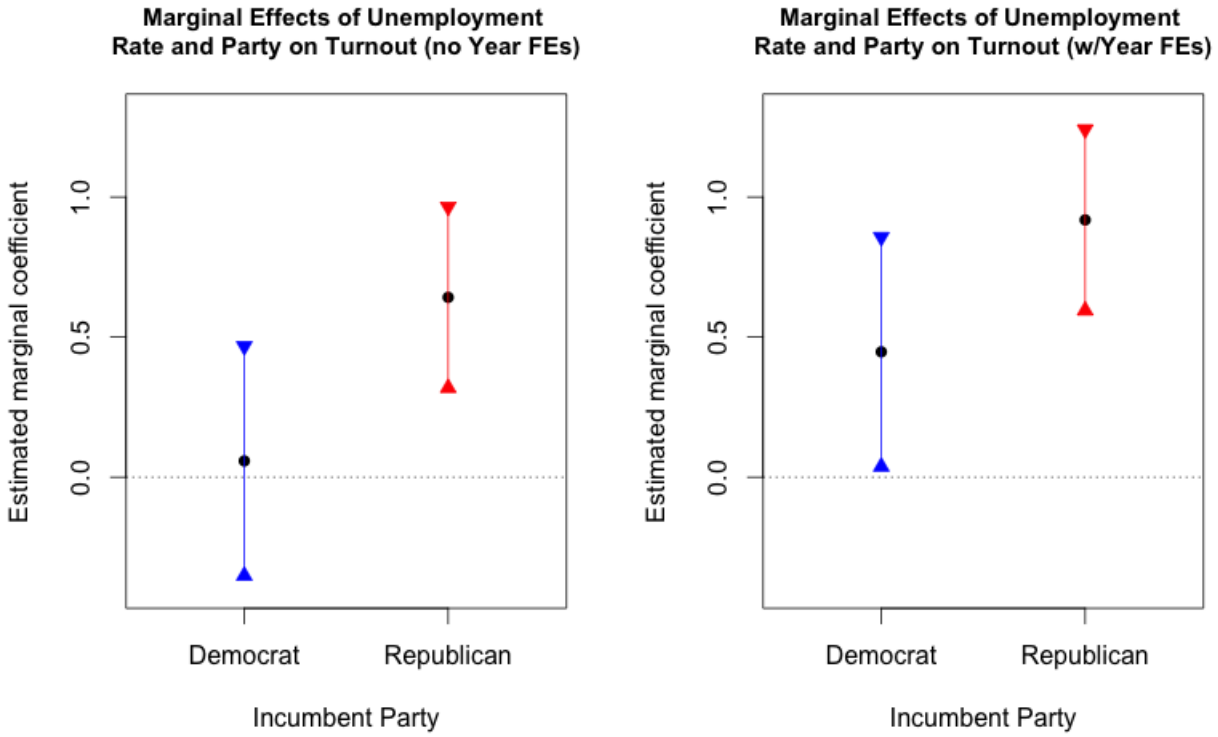
	Dependent variable:	
	Voter turnout by county	
	(1)	(2)
State unemployment rate	0.058	0.447**
	(0.127)	(0.209)
Republican incumbent	−0.044***	−0.038***
	(0.013)	(0.012)
Republican incumbent × state unemployment rate	0.584***	0.471**
	(0.191)	(0.194)
% Black	1.112**	1.217**
	(0.548)	(0.558)
% College	0.043	0.176
	(0.084)	(0.124)
Simultaneous senatorial election	0.014***	0.016***
	(0.005)	(0.004)
Observations	285	285
State fixed effects	Yes	Yes
Year fixed effects	No	Yes

Note: Ordinary least squares models. Standard errors clustered by county. *p<0.1; **p<0.05; ***p<0.01

Modeling Vote Choice

In Table 5, Burden and Wichowsky want to move from modeling aggregate level turnout to modeling individual vote choice to better get at the question of whether an increase in

Figure 1



the unemployment rate leads voters to punish Republican politicians more than they punish Democrats. The authors employ a multinomial logit model with a three-level outcome variable: vote Democrat, vote Republican, or abstain from voting. This model is an appropriate way to test this question, as the levels of the outcome variable accurately reflect the choices voters may face. In theory, the use of the multinomial logit in this case should not violate the "independence of irrelevant alternatives" (IIA) assumption, since it is unlikely that voters are first deciding to vote and then choosing a party. While some voters may make decisions in such a manner, it is certainly plausible that many voters will be deciding between voting for one of the two parties and staying home, particularly during midterm years. This model uses data from the American National Election Study, adding in state unemployment rate and campaign expenditures. We replicate their findings for their original model specification, but we would like to present alternate specifications of this model. In addition, we will present more intuitive ways of understanding the results of the model.

First, we will return to the issue of year fixed effects. The authors do not include year

fixed effects in their multinomial logit model. As in Table 4, we find that this omission has substantial impacts on the results of the model. Additionally, the theory on which Burden and Wichowsky rely for their hypothesis, that voters will punish Republican candidates to the advantage of Democrats, relies on voters' perceptions of the ability of each party to handle the issue of high unemployment rates. It seems likely that voters' perceptions are not constant over time, especially during the span from the late 70s to late 90s, as the parties' platforms and profiles changed substantially during this time period. Unfortunately, the authors did not include the year variable in their replication dataset, so we instead pulled data directly from the ANES to create a new dataset with the year variable included. It is worth noting that a few of the variables in our ANES data and the provided replication data do not have identical counts, but many of them are exact matches. A potentially worrisome difference is that there are about 300 respondents for which our coded vote choice is "Abstain" but are listed as "NA" in the replication dataset. We do not think this is a serious issue, considering that our analysis has 4921 observations. Additionally, we were unable to recover the authors' exact campaign expenditures variable. Instead, we used spending data from Jensen and Beyle (2003) and data on the number of eligible voters by state from the United States Election Project (McDonald 2015). Unfortunately, this second dataset only goes back to 1980, so we were forced to drop 1978 from our data. Our variable does not have the same effect as the authors' variable, but it does not substantially alter the model's results.

Furthermore, we decided to drop 1994 from our dataset, due to potential issues during this year in the ANES. For some reason, the amount of voters choosing "Abstain" is significantly less in 1994 than any other year, to a point that seems too extreme to be explained by higher turnout. For example, in 1986 in the ANES, 871 voters abstained, 511 voted Democrat, and 364 voted Republican. This is fairly typical of the dataset. In 1994, however, 29 voters abstained, 353 voted Democrat, and 411 voted Republican; something seems to be wrong with the Abstain variable here. This may have to do with a larger number of individuals reported as having no gubernatorial election in that year compared to other years. In any event, there are likely errors here, so we did not use this year. Unfortunately, dropping 1978 and 1994 reduces our data set from 8660 to 4921, but we see no other alternatives.

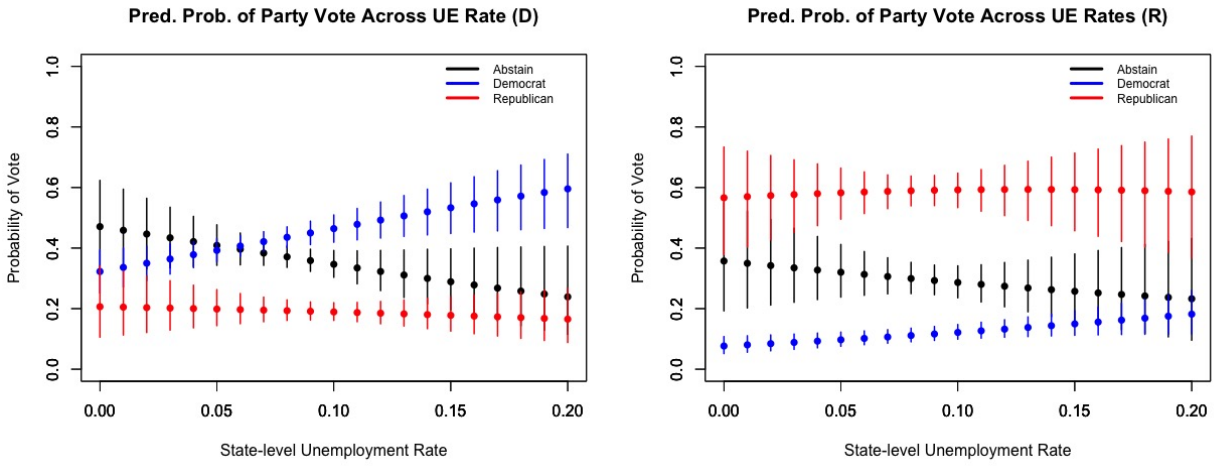
Moving forward, we present a modified model that should offer a more rigorous test of the hypothesis that higher unemployment rate increases turnout to vote out Republican incumbents. In this model, we replace state fixed effects with year fixed effects. State fixed effects do not add explanatory power here because the treatment is at the state-year level; in other words, because unemployment rate is measured at the state level, the state-level variation of interest is already captured by the unemployment rate variable; therefore, adding state-level fixed effects is unnecessary. Year fixed effects are important, on the other hand, to capture time trends and ensure that the changes in state unemployment rate are actually associated with changes in turnout and vote choice, and that these effects are not just the results of year changes.

There is one more minor difference between our models and the models in the original paper. The authors include a binary variable "incomedk", capturing whether or not respondents know their income. This variable does not make sense to include in a multinomial logit model, since it is perfectly co-linear with the income variable; therefore, we left this variable out of our model. We are fairly certain that the only way this variable ran without error in the authors' model is due to an error in the dataset. All of the respondents in the authors' dataset with a "1" (indicating that they do not know their income) for "incomedk" also have a specific value for income listed, which does not make sense for coding. As we will show, this change and other differences in our ANES data do not have a substantial effect on the results.

Table 2 shows a comparison of results for Burden and Wichowsky's multinomial logit model with the results from two of our models. Model 1 displays the results for the original model from the paper; Model 2 employs the same multinomial logit model with our modified ANES dataset as described above. There are some differences in the results, but the general effect is the same. A higher state unemployment rate is associated with a higher chance of voting Democrat but not Republican. Model 3 replaces state fixed effects with year fixed effects, which effectively wipes out the effects found in the other two models. Here, there is no effect of higher state unemployment rate on vote choice for either party. The coefficient, while not significant, is actually in the opposite direction for voting Democrat. These results suggest that when accounting for time variation, the effect of higher turnout on the likelihood

of voting for a Democratic candidate is greatly reduced, calling into question the authors' claims that indicators of economic hardship, like high state unemployment rates, result in electoral benefits for the Democrats on Election Day. In the Appendix, we have included an alteration of this model that includes controls for incumbency for each party and do not find any significant differences in the results.

In order to better visualize the effects from the multinomial logit models, we have created graphs of predicted probabilities for "median" voters created from each data set. We will first present results from the authors' model below. In calculating the predicted probabilities, we created reference voters by holding all covariates at their median with the exception of unemployment rate, which we let vary over it's range of values, party identification, which we specified as Democrat or Republican, and state, which we set to Michigan, as it is the median state in our data set based on FIPS codes, and it a reliable swing state, meaning the voters in the state are not likely pulled strongly in either direction ideologically. Figure 2 below displays these simulated predicted probabilities of voting for a Democrat, Republican, or abstaining broken out by party of the respondent (Democrat or Republican).



(a) Predicted Probabilities for Democratic Voter (b) Predicted Probabilities for Republican Voter

Figure 2: Plots of Predicted Probabilities from Authors' Model

The results from our simulations suggest that for Democrats and Republicans, an increase in state-level unemployment rate is associated with an increasing likelihood of voting for a Democratic candidate, but this effect appears to be stronger for Democratic voters than

Table 2

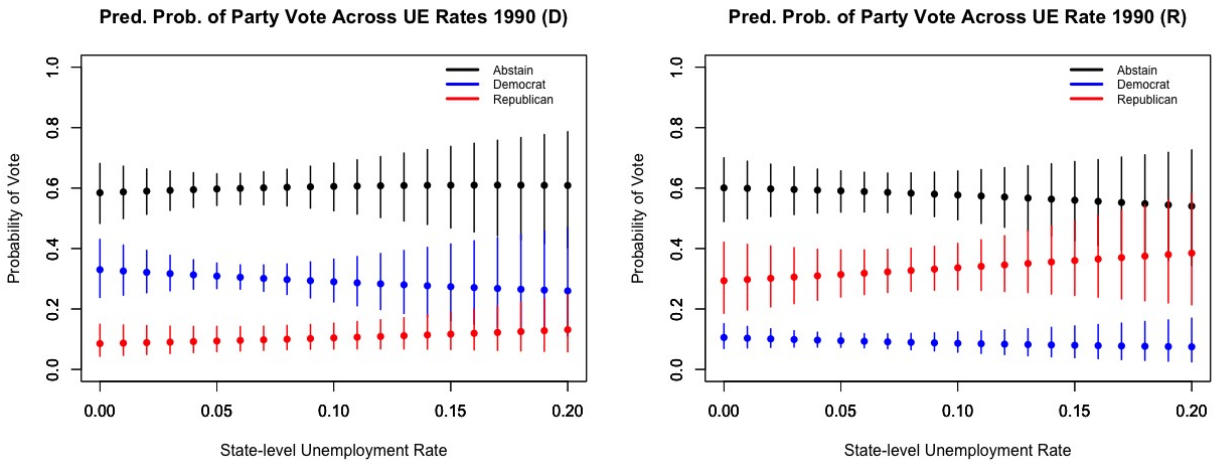
	Dependent variable:		
	Party Vote		
	(1)	(2)	(3)
Democrat: State unemployment rate	6.639**	9.039***	−1.630
	(3.254)	(3.018)	(3.628)
Republican: State unemployment rate	2.505	5.389	1.853
	(4.845)	(3.387)	(3.238)
Democrat: Campaign expenditures	0.229**	0.075**	0.073***
	(0.090)	(0.035)	(0.027)
Republican: Campaign expenditures	0.335***	0.062	0.069
	(0.120)	(0.072)	(0.043)
Democrat: Democrat	1.378***	1.364***	1.315***
	(0.075)	(0.124)	(0.125)
Republican: Democrat	0.351**	0.311	0.296
	(0.138)	(0.222)	(0.224)
Democrat: Republican	0.226*	0.230*	0.141
	(0.133)	(0.137)	(0.128)
Republican: Republican	1.688***	1.572***	1.531***
	(0.121)	(0.177)	(0.167)
Observations	7,620	4,921	4,921
State Fixed Effects	Yes	Yes	No
Year Fixed Effects	No	No	Yes

Note: Multinomial logit models. Dependent variable is three categories where abstain is the reference category. Robust standard errors clustered by state. Controls for Black, Hispanic, other race/ethnicity, female, age, education, income, married, and unemployed also included. *p<0.1; **p<0.05; ***p<0.01

for Republican voters. For voters of both parties, increasing unemployment rates decreases the likelihood of abstaining, consistent with the authors' hypotheses. In order to determine

whether differences in vote choice based on party I.D. of the respondent are significant, we ran the authors' model with an interaction effect between unemployment rate and party of the respondent; the results from this model (found in the Appendix) showed no statistically significant differences in how voters of each party respond to increasing unemployment rates. Nonetheless, because predicted probabilities require the creation of reference voters to calculate associated probabilities of vote choice, we were required to specify the party identification of the respondent, and think it is still a useful exercise to present separate results for the median voter of each party. In sum, the above results from our simulations lend support to the authors' hypotheses that higher state unemployment rates lead to increased turnout that benefits Democratic incumbents.

Figure 3 displays predicted probabilities calculated from our re-specified model using our modified ANES dataset. The reference voters for these calculations are "median" voters with varied party identification for a given year. Because our re-specified model uses year instead of state fixed effects, we are fixing the year of the election rather than the state of the election. We have chosen to present the results from 1990, as it is the median year of the data set and results are similar to other years. Figure 3 below displays the results for our simulated predicted probabilities of voting for a Democratic candidate, Republican candidate, or abstaining, across levels of unemployment rate in 1990.



(a) Predicted Probabilities for Democratic Voter (b) Predicted Probabilities for Republican Voter

Figure 3: Plots of Predicted Probabilities from Re-specified Model

The results from our simulations suggest that accounting for time-variation washes out the effect of unemployment rate on turnout and vote choice, consistent with the coefficients from the model. Neither Democrats nor Republicans display an increasing likelihood of voting for a Democratic candidate, nor do we see evidence of increasing turnout; the probability of abstaining is nearly identical and unchanged across unemployment rates for both Democrats and Republicans. While not shown in the paper, we calculated the predicted probabilities in the same manner, with all covariates held at their medians, for years 1986 and 1998, neither of which produced results different than those of 1990; the plots for these years are included in the appendix.

Discussion

While we are limited in the conclusions we can draw from the predicted probability graphs, the trends in party vote reflect the results from the models and certainly provide a more intuitive interpretation of the effect of unemployment rate on turnout and vote choice. Furthermore, our limited sample size for the re-specified model obviously reduces our ability to draw conclusions about the effect of time variation on turnout and vote choice; however, even with a limited dataset, our results are dramatically different than the authors' original model, and we suspect that with all the years included, our results would hold. It is unlikely that voters responded the same way to high unemployment rates from the mid-1970s until early 2000s; the realignment of the parties was underway in the 70s, resulting in different platforms by the early 2000s. Because of this lack of continuity in party platforms and the resulting differences in voters' perceptions of the parties' abilities to handle economic issues, it seems highly unlikely to us that voters responded the same to unemployment rates throughout this time period. This is an interesting empirical question that should be further investigated with a more complete dataset than the one we have compiled for this paper.

In general, the results from our respecified models in Table 1 and Table 2, the regression and multinomial logit models, show that an increase in unemployment rate does not lead to increased turnout for the Democrats. Without year fixed effects, our respecified model (model 2) in Table 1 (Table 4 in the original paper) shows that increases in the state un-

employment rate are associated with increases in turnout, only when there is a Republican incumbent. Fixed effects for year change these findings so that there is a general effect on turnout for both parties, but this effect is higher when there are Republican incumbents. On one hand, this seems to contradict our results from Table 2 model 3 (our respecified model), which shows no change in party choice with a rise in unemployment rate, given the inclusion of year fixed effects. Rather, the results from our respecified multinomial logit model from Table 2 show that this increase in turnout for Republican incumbents does not necessarily mean that more voters are voting for Democrats - just that there is an increase in turnout. Combining the results and implications from these two models suggests that there is no increase in punishment for Republican incumbents when state unemployment rate increases, even if aggregate data shows higher turnout.

An additional check of the authors' results would be to test the hypothesis that higher unemployment leads to greater turnout to the advantage of Democratic candidates by examining turnout and vote choice in House elections. While the public may be less informed about Congressional elections than gubernatorial elections, we would expect, according to Burden and Wichowsky's theory, that voters would associate Democratic House candidates with the same advantage on social issues that they award to Democratic candidates for governor. Again, due to data limitations, we are unable to examine this relationship in this paper. However, it seems to be a straightforward check on the authors' claims regarding a differential impact of turnout effects on candidates of the two parties.

Conclusion

In this paper, we have replicated and reexamined Burden and Wichowsky's analysis of the effect of unemployment rate on voter turnout and vote choice. We made small fixes to their models, presented more intuitive visualizations of the results using simulated predicted probabilities from their multinomial logit model, and examined their hypothesis about the differential impact of increased turnout on the two parties using a new dataset compiled from the ANES which includes year fixed effects. Our re-specified multinomial logit model with year fixed effects included shows no significant effects of state-level unemployment

rate on vote choice; that is, voters are not punishing Republicans at the ballot box to the advantage of Democrats at higher level of unemployment rates when accounting for time variation. We admit that the range of years covered in our dataset is unfortunately limited, and due to other issues merging our ANES data with the authors' original set, we lose a significant number of observations, restricting our N and the conclusions we can in turn draw from our results. Nonetheless, we believe our contribution is a productive first step in the direction towards more rigorous testing of the hypothesis that intervening factors that translate economic indicators like unemployment into election outcomes.

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Appendix

Table 3: Adding Incumbency Controls Has Little Effect

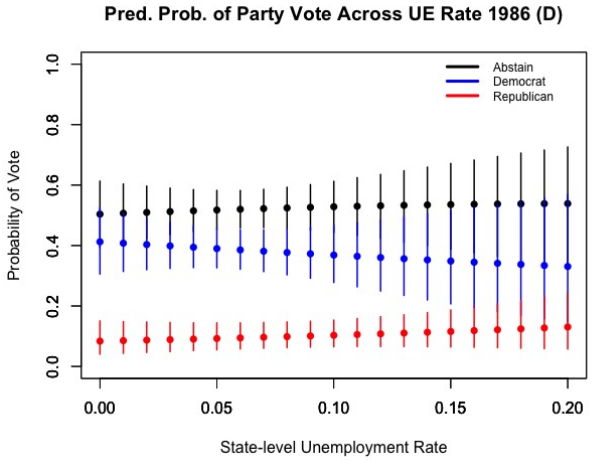
	Dependent variable:	
	Party Vote	
	(1)	(2)
Democrat: State Unemployment Rate	−1.630	−1.796
	(3.628)	(3.732)
Republican: State Unemployment Rate	1.853	2.617
	(3.238)	(3.932)
Democrat: Republican Incumbent		−0.209
		(0.193)
Republican: Republican Incumbent		0.340**
		(0.149)
Democrat: Democratic Incumbent		0.051
		(0.190)
Republican: Democratic Incumbent		−0.621***
		(0.219)
Observations	4,921	4,885
State Fixed Effects	No	No
Year Fixed Effects	Yes	Yes

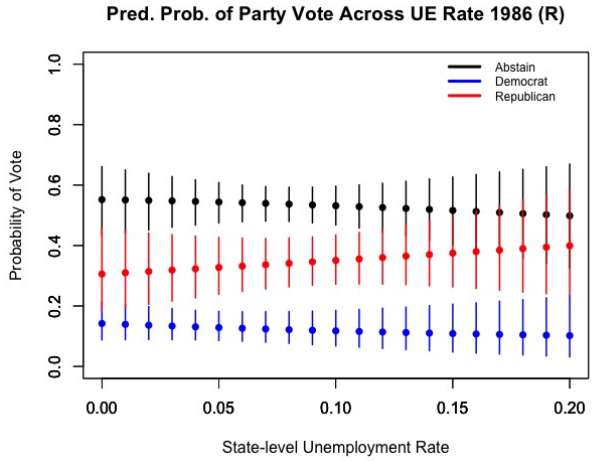
Note: Multinomial logit models. Dependent variable is three categories where abstain is the reference category. Robust standard errors clustered by state. Controls for Black, Hispanic, other race/ethnicity, female, age, education, income, married, and unemployed also included. *p<0.1; **p<0.05; ***p<0.01

Table 4: Interaction of Unemployment Rate and Party ID Not Significant

	Dependent variable:
	partyvote
Democrat: State unemployment rate	−3.015
	(4.017)
Republican: State unemployment rate	3.885
	(4.715)
Democrat: UE Rate × Ind.	3.190
	(4.291)
Republican: UE Rate × Ind.	−11.022
	(10.344)
Democrat: UE Rate × Rep.	5.438
	(3.683)
Republican: UE Rate × Rep.	−1.069
	(5.120)
Observations	4,921
Year Fixed Effects	Yes

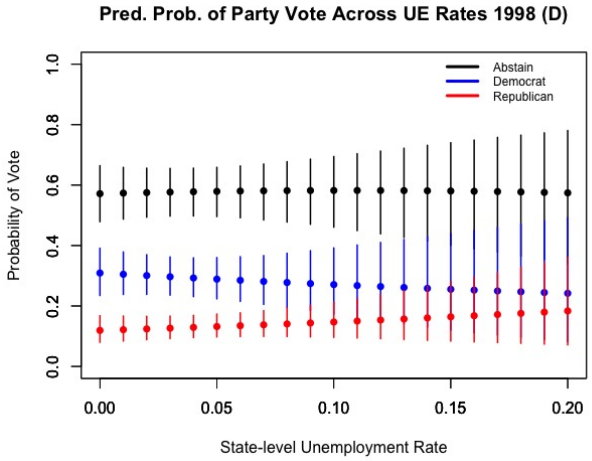
Note: Multinomial logit models. Dependent variable is three categories where abstain is the reference category. Robust standard errors clustered by state. Controls for Black, Hispanic, other race/ethnicity, female, age, education, income, married, and unemployed also included. *p<0.1; **p<0.05; ***p<0.01

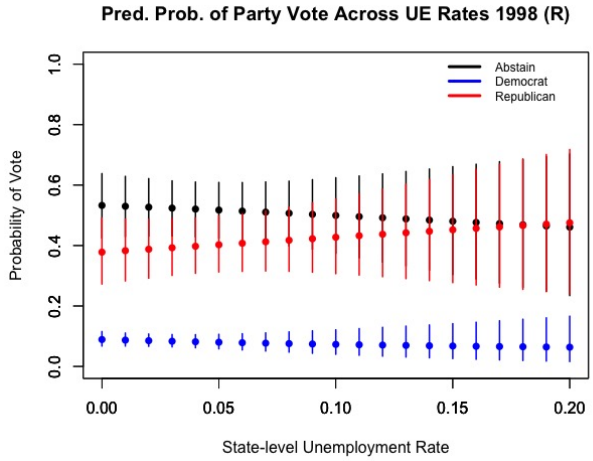




(a) Predicted Probabilities for Democratic Voter - 1986(b) Predicted Probabilities for Republican Voter - 1986

Figure 4: Plots of Predicted Probabilities from Re-specified Model - 1986





(a) Predicted Probabilities for Democratic Voter - 1998(b) Predicted Probabilities for Republican Voter - 1998

Figure 5: Plots of Predicted Probabilities from Re-specified Model - 1998