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The Democrat-Republican growth gap paradox

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Abstract

Economic performance has been historically better under Democrat presidents compared to Republican ones. This gap has not yet been fully explained appealing to better management or luck. In fact, the economic cycles under one group of administrations or the other are quite similar. Blinder and Watson (2016) provide the best attempt so far at solving the paradox, but can explain only half of the gap. Drawing from them, and using a different method to account for the initial conditions of each presidential term, we are able to show that the phase of the economic cycle at the different elections are correlated to the party of the president. We also find ample evidence suggesting that there is a subtle causality: when the unemployment is high, the probability of a person voting for a Democrat president increases, thus causing Democrats being elected more often at the end of a recession and the beginning of a recovery. This, and not the difference in competence dealing with the economic cycles, is enough to close the gap.

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1. Introduction

Since the second Truman administration until the first term of Obama's presidency, American economy grew at an average of 3.3 percent per year. However, this growth average is not uniform among administrations. In particular, the average growth rate was 4.3 percent during the Democrat administrations whereas it dropped to 2.5 percent during the years of Republican terms. This Democrat-Republican gap (D-R GAP from now on) of 1.8 percentage points has not been convincingly explained yet.

In a recent work, Blinder and Watson (2016) (B&W from now on) conduct a detailed analysis to conclude that there is still much to investigate. In their work, the authors collect an impressive amount of information regarding government expenditure, employment, productivity and many other indicators of economic activity, but cannot reach a definite conclusion. Their work points in the direction of there not being a unique or dominating cause for the D-R GAP, and discard some possible explanations. For instance, early in their work, B&S rule out the initial conditions that existed at the beginning of each administration as a convincing hypothesis. In other words, neither the policies inherited from previous administrations nor the ones implemented in the initial stages of the term explain the D-R GAP. However their analysis is restricted to show that there are no differences in the characteristics of the economic cycles conditioned on the political affiliation of the president and is based on forecasts previous to elections.

By contrast, we show that the average profile of the cycle after the election of a Democrat president is in fact different than the average profile after the election of a Republican one, and that the difference is due to the phase of the cycle in which a president takes office rather than the differences in the cycles. Thus, the difference is explained by the moment when Democrat presidents are elected, and, in line with B&W, not by the specific policies implemented by these presidents. More specifically, we show that relative to Republican presidents, Democrat presidents have a higher probability of experiencing an economic recovery. However, the different composition of the cycle phases in the Democrat term is not due to chance, but very probably related to the economic cycles themselves; in particular, to the employment and its influence over electoral preferences of the voters. As previous research has shown before, we find that since 1948 the political preferences of Americans change systematically with their situation in the labor market and, thus, with macroeconomic conditions. Our argument is that the economic cycle determines in part who enters the White House, and this way conditions the phase of the cycle each president faces. In addition, we present similar evidence for some other countries, assuming Social Democratic or Labor parties are assimilated to the Democratic Party in the United States. Finally, we replicate and extend the analysis by R&D to conclude that this hypothesis about the difference in the economic phase experienced by the two parties explains most of the D-R GAP.

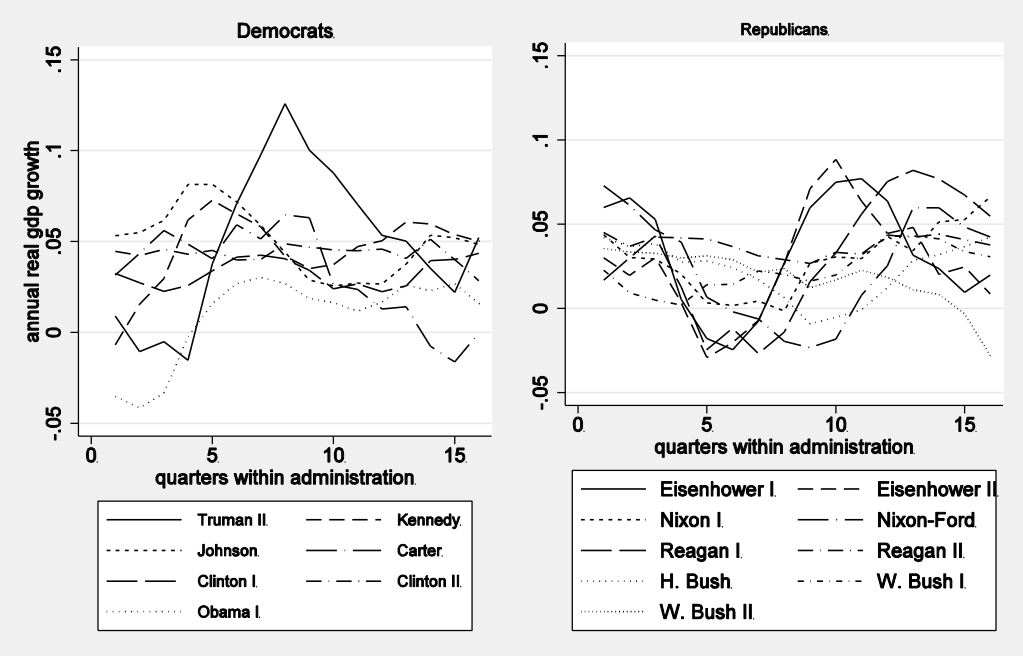
The rest of the paper is organized as follows. Section 2 documents the D-R GAP in relation to the economic phases of the different administration. Section 3 studies the initial conditions and how they affect the election of a Democrat president as an explanatory hypothesis for the D-R GAP. Section 4 measures the size of the gap explained by the hypothesis. Section 5 concludes.

2. The Democrat-Republican GAP within the presidential term

Figure 1 shows the GDP growth rate for each of the sixteen presidential terms since 1948, from the second Truman Administration until the first term with Obama as president. In the left graph, we plot the growth rates for Democrat terms and, in the right, for Republican terms. The

horizontal axis shows the quarters since the beginning of the presidential term, and the vertical axis shows the growth rate. In the graphs, we can observe different cyclical patterns: while the Democrat Administrations present an inverted U-shaped profile, the Republican Administrations present a U-shaped profile. Only after the tenth quarter there are no significant differences between the two groups of administrations. In a way, it looks like the cycle in the Republican terms is out of phase by two years relative to the Democrat ones.

Figure 1. Presidential real GDP growth during the sixteen quarter 1948-2008

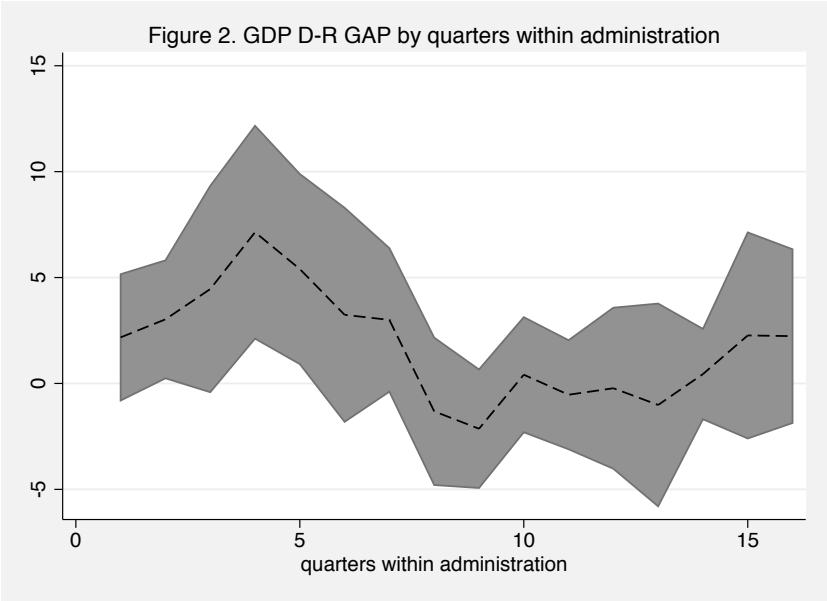


The next step is to distribute the G-R GAP, estimated in 1.79 percent, along the sixteen quarters of a presidential term. Figure 2 clearly shows that the growth gap is concentrated in the first seven quarters of the presidential terms. To obtain this representation we estimated an artificial panel, where the time variable takes values from 1 to 16, while the variable corresponding to the individual is the administration. The estimation is carried out using fixed effects for each quarter, and then multiplying each quarter by a dummy variable that takes the value one if the administration is Democrat and zero if it is Republican. The confidence intervals are estimated using bootstrapping with 100 iterations[1], and are conducted with the restriction that the sum of the 16 coefficients adds up to the total D-R GAP of 1.79 percent estimated in B&S. The Table A.1 in Appendix A contains the regression results.

As B&W argue, one possible explanation for this difference is that Democrat presidents implemented more expansive economic policies as soon as they took office. Another hypothesis is that a Democrat president finds more support from the presidents of the Federal Reserve and thus can enjoy a laxer monetary policy. Alternatively, the higher growth may be due to the inherited policies correctly implemented by their Republican predecessors and that only took off during the Democrat term that followed. The list of hypotheses does not end here; the

[1] The standard error for the total sum does not coincide with the estimation in B&W because they estimate robust errors based on Newey. Nevertheless, we do not consider this to be relevant for the purpose of this analysis. In the next section, all replications assume the same hypotheses as in B&W so that both analysis would be readily comparable.

Democrats may be better at taking advantage of the international expansions, or at making citizens more confident. B&W consider all these possible explanations, but are able to explain just over half of the D-R GAP, 0.96 percentage points out of 1.79. The authors are not satisfied and concede that there is still a big part of the difference that needs to be explained.



We take their challenge, and study as our main hypothesis stating that the better performance during the first terms of the Democrat administrations is due to a different phase of the cycle. In particular, Democrat presidents have enjoyed expansive phases with a higher probability, and contractive ones with a lower probability.

Next, we show that the reason for this regularity is the fact that the coincidence of presidential elections with different phases of the economic cycle affects the choice of president.

3. Initial conditions

That initial conditions in a presidential term may influence the rest of the mandate is an interesting question to study. In fact, B&W address this possibility, and develop a detailed analysis to see if they can explain the D-R GAP. They pose the question of whether the different economic performance under Democrat presidents is explained because they enter the White House just when the economy starts growing. To answer it, B&S use different techniques. First, they take the Survey of Professional Forecasters (SPF) and compute the mean of forecasts for the first four quarters of each presidential term as reported during the first quarter. To adjust for the vintage of the predictions when they are made for a period far from the moment of the prediction, B&S use near term revisions. What they find is that forecasts did not predict differences between the parties for the expected growth during the first four quarters of each term.

In a second attempt, B&S use data from the Federal Reserve's Greenbook forecast of growth. These estimations have a higher success at anticipating GDP movements, but still cannot predict a gap between parties. Finally, the authors use their own AR(4) and VAR(4) models, including series like the yield curve spread along with the real GDP growth, but still cannot explain the D-R GAP with differences in the initial conditions.

However, we believe that this way of proceeding does not extract all the information from the data. The capability of VAR or AR models to project a mid-term trend, or even a short-term, of the GDP growth during the quarters following a presidential election is very limited unless one feeds the model with the different shocks that modify the trend or the cycle itself, or use error correction models. We consider that in order to address the question of the effects of initial conditions one needs a different approach.

We will proceed in various steps. First, we show that Democrat presidents were elected in the phase close to the valley of the growth cycle. Even more, absolutely all Democrat presidents were elected in the lowest phase of the employment cycle when it coincided with an election year. By contrast, Republican presidents were elected at moments far from the valley in each cycle. Second, we establish that the phase of the cycle is the only thing different, as cycles themselves are not particularly different from one administration to the other. Third, we show that, according to the polls since the 1950s, support for Democrat candidates in election years was bigger when the employment was worse, and, more specifically, using microdata from the polls, we are able to show that a change in the working status of the person interviewed in the poll from employed to unemployed significantly increases their probability of voting Democrat. Finally, we find evidence that this voting behavior could be spread to a panel of 30 countries in the last 60 years.

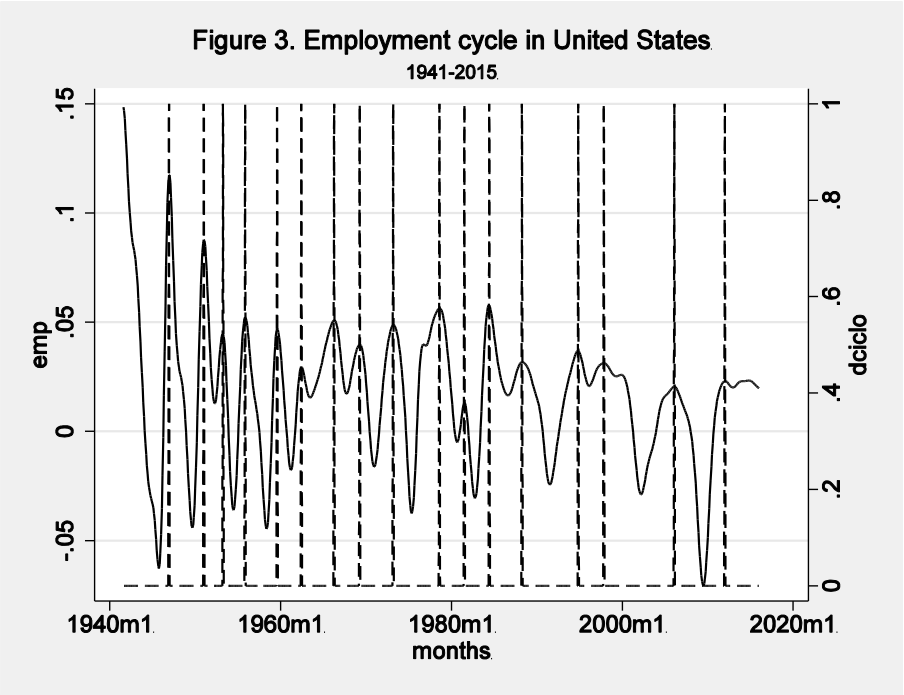
3.1 Employment cycle and presidential elections

Is there any connection between the economic cycle and the probability of electing a particular party? To explore this question and provide an answer we conduct an analysis using the employment series form the 1940s, and then relate the series to the dates in which the different presidents were elected. We take the US monthly unemployment series published by the US Bureau of Labor Statistics from 1941 until 2015. The first step is to identify the turning points in the series for the year-to-year growth rate smoothed using a low frequency filter[2]. The turning points correspond to peaks and valleys estimated with the series of growth in employment and using the methodology after Bry and Boschan (1971) (see Appendix B for details.)

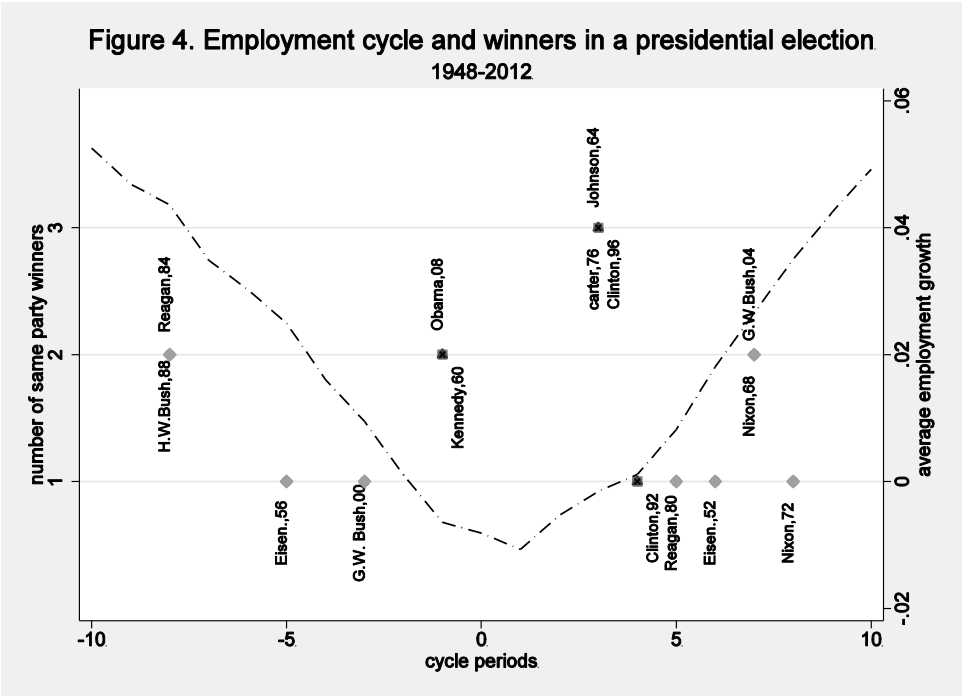
The reason to use the Bry-Boschan method, instead the chronology from the National Bureau of Economic Research (NBER), to obtain the profile of the employment cycles is for us to be able to date not only the recessions but also the periods in which the employment was weaker, as the effects could be significant among the citizens when voting for a candidate, even if the period of weak employment was not categorized as a recession. Figure 3 shows all these cycles through the smoothed inter-annual employment growth rate.

The discontinuous vertical lines show the peaks, and the interval between two lines corresponds to an employment cycle form peak to peak, with a valley between them. In total, we count 16 employment cycles from the late 1940s to 2012. Every cycle is different in amplitude (vertical distance from peak to valley) and in duration (horizontal distance between the two peaks), but, obviously, all have the same structure peak-valley-peak.

[2] We use the Hodrick-Prescott filter with λ=100 (Hodrick and Prescott, 1997). The goal is to eliminate small points in the series that can hide the turning points of the cycles, something we need to mark the duration and extension of the cycles.



Once we have all the cycles for the last 70 years we estimate an average cycle to provide a visual representation of all the employment cycles experienced in the American economy. We divide all the cycles in 20 intervals in the scale [-10, 10], where the zero corresponds to the valley and the extremes -10 and 10 correspond to the peaks. Next, we calculate the average growth rate for all intervals in all cycles. Finally, we plot the moment in which each president was elected in his cycle. The results are presented in Figure 4, where we clearly observe that the distribution of the election of presidents along the employment cycle is not random at all, but, rather, that a pattern emerges. All Democrat presidents were elected in the months near the valley of the cycle, while the Republican presidents were elected when the growth was consolidated or when it started to fade.



Being elected in the low phase of the employment cycle helps the Democrat presidents take advantage of the momentum in growth during the first quarters of their term, thus increasing the average growth for the whole mandate. In this sense, the composition of the economic cycle is important to explain the D-R GAP, a composition that may be the cause rather that the effect of the different economic performance under different parties holding the presidency.

To quantify this difference, Table 1 shows the average number of months from the elections day to the closest employment valley in the past by party. Thus, while the average number for the Democrats is 7.3, the distance increases up to 17,7 months for the Republicans.

Table 1. Months between a presidential election and the last previous employment valley

	Average	Standard Deviation
All	14.13	10.15
Democrats	7.33	5.78
Republicans	17.66	9.65

3.2 The economic cycles under Democrat and Republican administrations

The economic cycle may affect the gap not only through the phase in which the candidate is elected, but also through differences in the cycles themselves. As a first hypothesis we may claim that, once a Democrat candidate is elected, his economic policies benefit the economy. However, this is hard to accept, as countercyclical policies, especially fiscal policies and structural reforms, are not capable of having an immediate influence and thus cannot explain the fact that the election of the Democrat candidate is observed right at the moment employment recovers or just a few months before, as shown in Figure 4. A second hypothesis is that cycles are different and, by chance, the Democrats happen to be ruling during the best ones. This is what we explore next. We do not bother with further analysis about the first hypothesis as it is widely accepted that policies take more time to have significant effects.

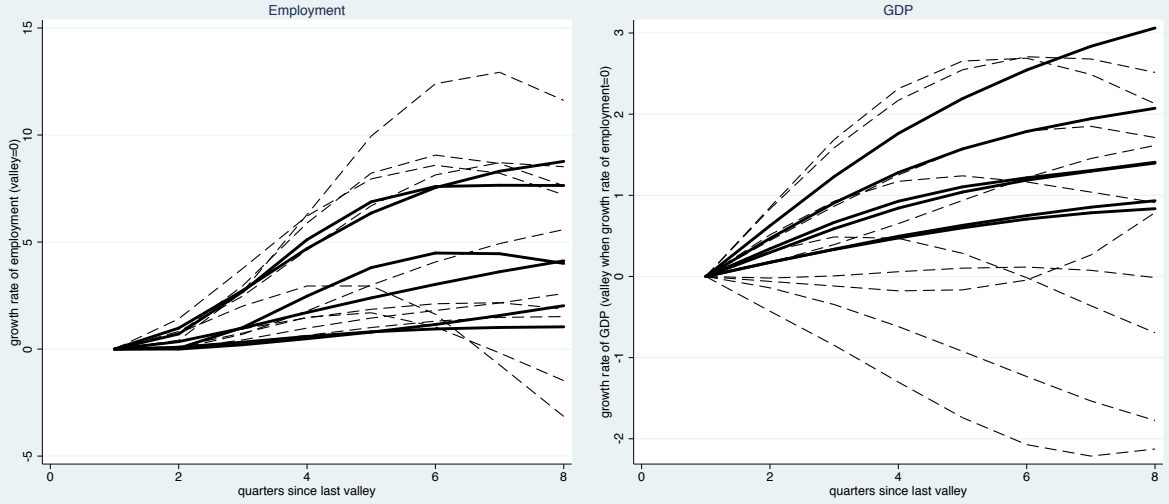
Is there a difference between economic recoveries?

If Democrat administrations are better at managing economic recoveries, one would expect that recoveries after a Democrat president is elected show better indicators than recoveries that occur after the election of a Republican president. The absence of differences would be a clear indicator that the party of the president does not influence the strength of recoveries. To test this hypothesis, we have selected all valleys on the employment series and plotted all recoveries initiated after them. Specifically, in Figure 5 we show the growth in employment and on GDP for the next eight quarters, where most of the D-R GAP is concentrated. Recall that all Democrat presidents were elected at times very close to the moment of the valley in the employment series. Democrat administrations are marked with a thick, solid line.

In the left graph, we observe no special patterns in the employment recoveries during the Democrat administrations, as they seem to be randomly distributed among the 16 recoveries since the 1940s. If anything, they are less intense. To confirm this observation, we conducted a regression of the employment growth rate on a standard variable of the cycle phases

(normalized quarters after the valley), its square to capture the non-linear shapes shown in Figure 5 and a dummy that identifies if the recovery took place under a Democrat or a Republican president. This is shown in the first column in Table 2.

Figure 5. Growth rate of employment and GDP since the last valley. Growth rate in a valley normalized to 0



Again, it becomes clear that it is the natural growth path after a valley, and not the political affiliation of the president, what explains the recovery. Both conclusions can be drawn after observing the significance of the coefficients associated to variables measuring the phase of the cycle and the absence of significance of the one corresponding to the dummy variable that selects a Democrat administration.

In the graph to the right in Figure 5 we show the results of a similar regression, but using GDP growth as the dependent variable. Again, no pattern is found, as assessed by the regression coefficients in Table 2.

Table 2

	(1)	(2)
VARIABLES	Employment	GDP
employment cycle phase	1.736***	0.378**
	(0.487)	(0.184)
employment cycle phase sqr	-0.110**	-0.0274
	(0.0529)	(0.0199)
democrat administration	0.128	0.0916
	(0.494)	(0.186)
Constant	-2.205**	-0.394
	(0.987)	(0.372)
Observations	128	128
R-squared	0.301	0.093

Is there a difference between economic recessions?

An alternative argument is to consider that the election of a Democrat president is more the consequence of the failures of a Republican predecessor rather than of the economic cycle. Is it possible that Democrat presidents were elected in the lowest phase of the cycle because the previous Republican president applied recessive policies? Could this be a better explanation of the differences?

Let us try to answer these questions. In particular, we will be interested in knowing whether the characteristics of recessions during Republican presidents explain the higher probability of electing a Democrat president, and, then, the better economic performance as the Democrat presidents would, in that case, enjoy more recoveries than the Republicans. In other words, we ask whether there is something particular in the Republican administrations that, in coincidence with a descendent phase of the employment or GDP, could explain a higher probability of electing a Democrat president in the next elections.

Figure 6 answers this question. Thick lines show employment cycles that end in a Democrat administration after coming from a Republican one. Once more, we observe that the intensity of the fall in employment is not exceptionally greater in the case a Democrat president is elected after it relative to the total of cases. The same can be said of the GDP growth cycle, where, as it happened with the recoveries, the previous recessions leading to a Democrat administration are less intense.

Figure 6. Growth rate of employment and GDP before the next valley. Growth rate in a valley normalized to 0

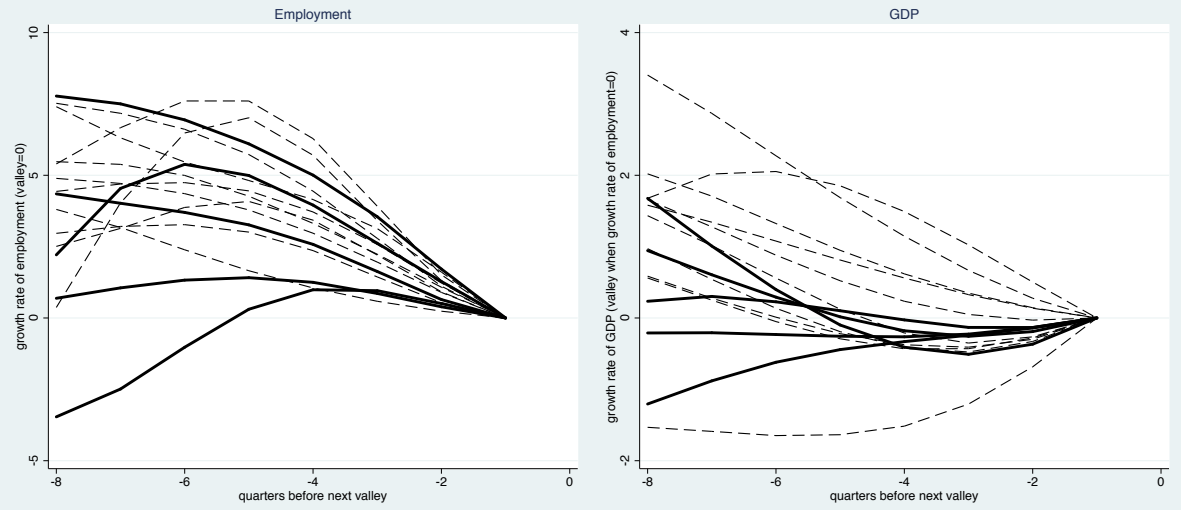


Table 3 shows the results for the regressions that quantify the above appreciations. In column 1 we show the coefficients with employment as the dependent variable, and in column 2 we do the same with GDP. The dummy variable now selects cycles that end in a Democrat presidency after a Republican one. The coefficients show that the employment cycle is more benign previous to the election of a Democrat president, and also that the GDP cycles are not different for the same elections. For example, coefficient 0.938 in the employment column means that, previous to the election of a Democrat president after a Republican administration, employment was growing almost one percentage point more than in the cases a Democrat president was re-elected. There is nothing special in the cycles previous to the election of a Democrat president

that was not observed in the whole set of employment and GDP cycles. If anything, previous cycles with a Republican administration are more benign than the average.

Table 3

VARIABLES	(1) Employment	(2) GDP
employment cyc. phase	1.983***	-0.152
	(0.332)	(0.153)
employment cyc. phase sqr	-0.151***	0.0312*
	(0.0360)	(0.0166)
Republican administration	0.938**	-0.0802
	(0.381)	(0.176)
Constant	-2.293***	0.0836
	(0.657)	(0.303)
Observations	128	128
R-squared	0.445	0.132

3.3 Economic conditions and candidate preferences. Causality of coincidence?

After detecting a correlation between the phase of the cycle and the probability of a Democrat or Republican president being elected, and after ruling out the first obvious hypothesis that the difference in economic cycles may explain the D-R GAP, the next step is to establish whether a causal connection exists between the phase of the cycle and the probability of electing a candidate from a particular party. Of course, there is the possibility that both the election and the phase of the cycle are not causally related, and just show a spurious correlation due to common causes. However, as we discuss now, the evidence suggests that the economic conditions may influence the vote and explain a higher probability for a Democrat candidate to be elected when the employment cycle is near a valley.

Unemployment level and support for a Democrat candidate (aggregate level)

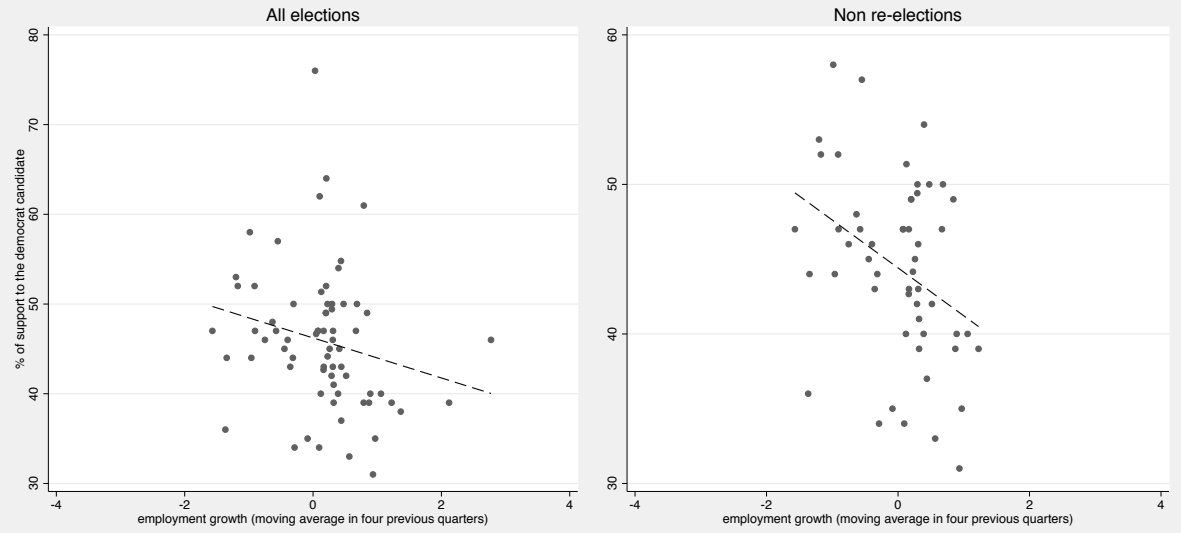
Our hypothesis is that the employment situation in the moments previous to an election may affect the support for a candidate depending on their party. To that end, we use micro data from the different polls published since the 1940s and relate them not only to the economic cycle, but also to the employment situation of the respondent.

Figure 7 shows a first look at the aggregate data from the polls since Truman's reelection until the first election of Obama. The figure shows the correlation between the support for the Democrat candidate in the polls in the vertical axis and the moving average of the employment growth rate for the previous four months of the poll in the horizontal axis. The graph in the left shows all elections, and although the relation is not perfect, it clearly shows that a lower rate of growth for the employment is related to a higher support for the Democrat candidate.

It could still be the case that the higher support for the Democrat candidate is due to the policies that this candidate applied before reelection. To avoid this possible effect of reelections, the graph in the right shows only the elections in which a president is elected for the first time. Now

the relation between the employment and support for the Democrat candidate is even stronger, which favors the idea that previous evolution of the economy affects the election.

Figure 7. Correlation between growth in employment and support to dem's candidate



As a last piece of the aggregate analysis, Table 4 shows the results of simple OLS regressions where the dependent variable is the support for the Democrat candidate (as a percentage of interviews) and the independent variable is the growth rate of employment alone (1), or after controlling for reelections (2) and also for growth in GDP (3). One can check that support for the Democrat candidate is both more significant and higher in case the economy is in a valley of the employment cycle and the candidate is not in office at the time.

Table 4
Correlation between former employment growth rate
and Democrat candidate support (% polls)

Dependent variable: % of supporters to the Democrat candidate	(1)	(2)	(3)
employment growth r.	-2.232*	-3.949***	-4.035***
	(1.217)	(1.156)	(1.358)
first Dem. election		8.879***	9.288***
		(2.070)	(2.184)
GDP growth r.			0.927
			(1.722)
Constant	46.23***	44.42***	43.48***
	(0.937)	(0.935)	(1.976)
Observations	69	69	67
R-squared	0.048	0.255	0.262

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.
Notes: employment growth rate is the average for the previous four quarters in annual employment growth rate. Dependent variable is the percentage of supporters for the democrat candidate. Variable "first Dem. election" is a dummy that takes value one when the democrat candidate is not the actual president. GDP growth rate is the average of four previous annual growth rates of GDP.

Employment situation and Democrat support (individual level)

The two previous exercises showed a correlation between economic conditions and support for the Democrat candidate. Looking for a causal connection, in the literature we find ample evidence that the economic conditions and, in particular, the level of unemployment influence the direction of the vote in the USA (Hopkins and Pettingill, 2015). Using micro data, Grafstein (2000) shows that those workers that face a higher probability to be fired or have been fired show a higher predisposition to vote for a Democrat candidate. In the same line, Wright (2012), after analyzing 175 midterm gubernatorial elections and 4 presidential elections, finds that the evolution of employment and the election of a Democrat candidate move together and, further, that the probability of a Democrat victory is greater when the unemployment is higher and the current administration is Republican. Even if the incumbent is a Democrat, their victory is still more likely if the unemployment is bigger.

A possible explanation of this evidence is that the employment situation influences the moral perception upon which individuals build their opinions on political and social issues. The existing relation between being unemployed and mental health and, in general, the wellbeing of a person may modify the perception on the ethics behind social programs and redistribution when that person's situation changes from being employed to being unemployed. In general, the literature considers that the moral preferences of individuals on issues like income inequality and redistribution are endogenous to the social conditions (see Barr *et al*., 2016, and Fehr and Koff, 2011.)

Next, we study whether this relation holds in the data we use. In particular, we study whether the employment status is related to the likelihood to vote for a Democrat candidate using the micro data published by the American National Elections Studies (the ANES Time Series Cumulative Data File). The data covers the elections from 1948 until 2012 with a total of 55,674 observations in polls conducted during the election years and at midterms. The information in the data base includes revealed vote and personal information on 952 variables, although not all variables are present in all polls.

We conduct three complementary exercises. First, we provide a pooled estimate of the available information for the interviews where the dependent variable is the intention to vote for the Democrat candidate in the next elections. Among the explanatory variables, we include the professional situation and, in particular, the employment status of the respondent (employed, unemployed, retired, student, or at home), and we use controls such as education level and ethnicity. Given the binary character of the variables, we estimate a logit model, that explains which variables are related with a higher or lower probability of voting Democrat. In a second exercise, we estimate an ordered logit model where this time the dependent variable takes values between 1 and 5, where 1 is total sympathy for the Republican party, and 5 is total sympathy for the Democrat. We use the same explanatory variables and controls as in the first exercise. In a third exercise, we exploit the panel structure of the data for some years and are able to check the effects on voting decisions of a change in the employment status from employed to unemployed.

Before we show the results of these exercises we can anticipate that all three demonstrate that being unemployed significantly increases the probability to vote for the Democrat candidate in the next elections. Further, individuals changing their status from employed to unemployed will experience a change in their perception of the Democrat candidates, increasing their likelihood to vote for them.

In Table 5 we can see the different estimations performed in order to determine the probability that an interviewed person expresses preferences for the Democrat candidate. Relative to being employed, being unemployed increases the probability to vote Democrat. The same is true for being a student. However, other categories, like being a homemaker, decreases the probability.

Table 5
Probit model for preferences for the Democrat candidate.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unemployed	**0.795*****	**0.757*****	**0.772*****	**0.767*****	**0.721*****	**0.436*****	**0.435*****	**0.529*****
	(0.0542)	(0.0625)	(0.0544)	(0.0544)	(0.0549)	(0.0587)	(0.0597)	(0.0652)
Retired	0.0116	-0.0501	-0.00308	-0.00375	-0.0694*	-0.00247	0.00566	0.120***
	(0.0367)	(0.0440)	(0.0368)	(0.0368)	(0.0376)	(0.0393)	(0.0400)	(0.0454)
Home	-0.314***	-0.260***	-0.488***	-0.485***	-0.581***	-0.410***	-0.408***	-0.394***
	(0.0371)	(0.0613)	(0.0403)	(0.0403)	(0.0414)	(0.0432)	(0.0437)	(0.0523)
Student	0.534***	0.661***	0.506***	0.504***	0.574***	0.379***	0.359***	0.435***
	(0.0906)	(0.108)	(0.0908)	(0.0909)	(0.0920)	(0.0992)	(0.100)	(0.107)
Male			-0.316***	-0.315***	-0.342***	-0.285***	-0.280***	-0.309***
			(0.0283)	(0.0283)	(0.0286)	(0.0302)	(0.0307)	(0.0347)
North				0.0505*	0.0505*	-0.251***	-0.209***	-0.269***
				(0.0288)	(0.0290)	(0.0317)	(0.0323)	(0.0368)
Gr. Sch. or less					0.296***	0.311***	0.286***	0.186***
					(0.0451)	(0.0470)	(0.0474)	(0.0603)
Some Col.					-0.213***	-0.272***	-0.270***	-0.143***
					(0.0338)	(0.0358)	(0.0364)	(0.0414)
Col. or advance					-0.209***	-0.150***	-0.155***	0.113***
					(0.0343)	(0.0358)	(0.0365)	(0.0439)
White						-1.744***	-1.740***	-1.764***
						(0.0395)	(0.0402)	(0.0441)
Urban							0.352***	0.312***
							(0.0363)	(0.0440)
Upper working								-0.124**
								(0.0614)
Avg. middle								-0.251***
								(0.0376)
Upper middle								-0.598***
								(0.0609)
Upper class								-1.506**
								(0.662)
Better next yr.		0.0362***						
		(0.00841)						
Better past yr.		-0.111***						
		(0.0352)						
Constant	0.0867***	0.226***	0.263***	0.248***	0.355***	1.800***	1.720***	1.749***
	(0.0166)	(0.0254)	(0.0230)	(0.0246)	(0.0296)	(0.0466)	(0.0483)	(0.0546)
Observations	24,317	14,792	24,317	24,317	24,158	24,158	23,560	18,287

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Each estimation estimates is a probit model wich the probability that an interviewed person expresses preferences for the Democrat candidate.

Table 6 shows the results of the ordered logit model. In this case, we use the "Major party presidential thermometer index", a question in the polls that takes values from 2 to 99, where 2 is most Republican and 99 most Democrat. We have normalized the answers to values between 1 and 5, where 1 indicates highest sympathy for the Republican candidate and 5 for the Democrat. Again, the results clearly show that being unemployed increases the probability that the individual's political preferences are higher in the index and, then, favor more the Democrat candidate. For any specification, the effect is significant and positive.

Table 6
Ordered Logit Model for sympathy for the Republican and Democrat parties

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Unemployed	0.638***	0.610***	0.618***	0.622***	0.600***	0.369***	0.361***	0.384***
	(0.0382)	(0.0422)	(0.0382)	(0.0383)	(0.0388)	(0.0393)	(0.0398)	(0.0426)
Retired	0.0144	-0.0311	-0.000269	-0.000648	-0.0247	0.0606*	0.0559*	0.0873**
	(0.0314)	(0.0352)	(0.0314)	(0.0314)	(0.0322)	(0.0323)	(0.0328)	(0.0352)
Home	-0.240***	-0.151***	-0.412***	-0.413***	-0.441***	-0.310***	-0.305***	-0.230***
	(0.0339)	(0.0464)	(0.0362)	(0.0362)	(0.0369)	(0.0372)	(0.0376)	(0.0394)
Student	0.522***	0.575***	0.504***	0.505***	0.513***	0.350***	0.336***	0.355***
	(0.0652)	(0.0739)	(0.0653)	(0.0653)	(0.0661)	(0.0663)	(0.0668)	(0.0704)
male			-0.323***	-0.324***	-0.329***	-0.291***	-0.287***	-0.255***
			(0.0233)	(0.0233)	(0.0235)	(0.0236)	(0.0240)	(0.0254)
North				-0.0485**	-0.0554**	-0.291***	-0.279***	-0.295***
				(0.0237)	(0.0238)	(0.0243)	(0.0247)	(0.0262)
Gr. Sch. or less					0.135***	0.0799*	0.0785*	0.0517
					(0.0422)	(0.0425)	(0.0427)	(0.0448)
Some Col.					-0.0632**	-0.0809***	-0.0813***	-0.0366
					(0.0276)	(0.0276)	(0.0281)	(0.0299)
Col. or adv.					-0.0534*	0.0318	0.0317	0.174***
					(0.0290)	(0.0292)	(0.0298)	(0.0334)
White						-1.328***	-1.334***	-1.324***
						(0.0270)	(0.0275)	(0.0294)
Urban							0.0969***	0.0803**
							(0.0296)	(0.0319)
Upper working								-0.181***
								(0.0454)
Avg. middle								-0.197***
								(0.0274)
Upper middle								-0.523***
								(0.0463)
Upper class								-1.044***
								(0.383)
Better next yr.		0.0414***						
		(0.00623)						
Better past yr.		-0.244***						
		(0.0265)						
Constant cut1	-2.091***	-2.172***	-2.272***	-2.287***	-2.321***	-3.451***	-3.435***	-3.509***
	(0.0216)	(0.0276)	(0.0254)	(0.0265)	(0.0298)	(0.0382)	(0.0395)	(0.0428)
Constant cut2	-0.778***	-0.922***	-0.955***	-0.970***	-1.001***	-2.085***	-2.071***	-2.117***
	(0.0159)	(0.0217)	(0.0205)	(0.0218)	(0.0255)	(0.0342)	(0.0356)	(0.0386)
Constant cut3	0.453***	0.238***	0.283***	0.268***	0.238***	-0.754***	-0.740***	-0.770***
	(0.0154)	(0.0207)	(0.0197)	(0.0210)	(0.0247)	(0.0321)	(0.0335)	(0.0364)
Constant cut4	1.958***	1.729***	1.794***	1.779***	1.750***	0.863***	0.870***	0.802***
	(0.0205)	(0.0249)	(0.0235)	(0.0246)	(0.0280)	(0.0330)	(0.0343)	(0.0371)
Observations	26,851	19,888	26,851	26,851	26,640	26,640	25,878	23,217

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Results of the ordered logit model. Dependent variable is "Major party presidential thermometer index", a question in the polls that takes values from 2 to 99, where 2 is most Republican and 99 most Democrat. We have normalized the answers to values between 1 and 5, where 1 indicates highest sympathy for the Republican candidate and 5 for the Democrat.
Cuts represents the thresholds between each of the five values we cut the 2sympathy" for each party.

Lastly, in Table 7 we show the estimations in a panel multinomial logit model, where we estimate the probabilities of reporting a vote for the Democrat (alt. Republican) candidate in the next election when the same individual reported a vote for the Republican (alt. Democrat) candidate one year earlier, and the probability of not changing the report of the vote.

Since there are three different alternatives, the model was estimated having the "no vote change" as a reference. The probability of taking either value is related to the changes in employment status as one of explanatory variables, in particular the change from employed to unemployed. In addition we included several control variables, as ethnicity, education level and age, among others.

Table 7
Change in probability to the transition in the presidential vote

VARIABLES	(1) From Rep (t-1) to Dem (t)	(2) From Dem (t-1) to Rep (t)
Employment status	0.951**	0.445
	(0.438)	(0.355)
High school	0.0419	-0.0249
	(0.248)	(0.183)
Some college	-0.0227	-0.365
	(0.319)	(0.239)
College or advanced degree	-0.308	-0.676***
	(0.336)	(0.247)
Female	0.0543	-0.0649
	(0.176)	(0.128)
Black non-Hispanic	0.227	0.312
	(0.300)	(0.215)
Other	0.152	0.585*
	(0.500)	(0.308)
Age	-0.0588*	0.0145
	(0.0305)	(0.0252)
Age square	0.000505*	-0.000199
	(0.000287)	(0.000238)
Central cities	-0.0617	0.295*
	(0.229)	(0.168)
Suburban areas	-0.354	0.105
	(0.217)	(0.156)
North	-0.0992	-0.0870
	(0.203)	(0.150)
1976	-0.315	0.701***
	(0.218)	(0.157)
1996	-0.0568	0.421**
	(0.237)	(0.188)
Constant	-0.569	-2.105***
	(0.827)	(0.679)
Observations	2,059	2,059

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Despite having information for all elections since 1948, we can only build the panel for the interview surveys of the elections in 1956, 1960, 1972, 1976, 1992, 1996 and 2000. This is because we are interested in the change of vote between at least two consecutive elections: between 1956 and 1960, 1972 and 1976, 1992 and 1996, and finally between 1996 and 2000. Even with this limitation we have 2059 interviews. Of them, 150 changed their vote from Republican to Democrat, a 7.3 percent of the total; 1,597 did not change, a 77.6 percent, and 312, a 15.2 percent changed from Democrat to Republican. The results are shown in Table 5. Column 1 (alt. 2) shows the coefficients associated to changing from Republican to Democrat (alt. from Democrat to Republican.) The first variable, employment status, takes the value 1 if the interviewed person has changed his or her status from employed to unemployed between the two elections where the vote is compared. In any other case the dummy takes value zero. One observes that transiting from employed to unemployed increases the probability of voting Democrat when the previous vote was Republican. This coefficient is significant at a 5 percent value. This transition in the labor status has no effect in the change from Democrat to Republican.

In short, both the existing literature and the last three exercises leave little room for doubts about the strong relation between being unemployed, the employment cycle and the probability of victory for the Democrat candidate. This way we are able explain the data in Figure 7.

3.4 The International evidence

So far we have shown evidence of a possible relation between the employment cycle and the probability of voting Democrat. Now we check whether this is an American peculiarity or, on the contrary, is a phenomenon to be found in other countries.

To this end we conduct a last analysis using the data in Funke, Schularick and Trebesch, (2016). In this work, the authors study the consequences of financial crises in the composition on democratic parliaments in 36 OECD countries between 1870 and 2014. Even if we are only interested in establishing a relation between the employment cycle and electoral results to analyze the support for left wing parties, their data are of great interest for our goal. In particular, we borrow an index that the authors design to assess the weight of left wing parties in the parliaments. The index takes values between zero (a completely right wing parliament) and ten (completely left wing) and is built upon earlier specifications (Castles and Mair, 1983; Huber and Inglehart, 1995; Benoit and Laver, 2006; and Bakker et al., 2015.)[3]

The Funke, Schularick and Trebesch indicator is a continuous variable that changes with every new election. Our interest is to explain this change between two consecutive elections. Although we have information for years between 1870 and 2014, we will restrict our analysis for the second half of the 20th century to match the period considered in the USA.

The data for the explanatory variable, the evolution of employment in each country, are obtained from the Penn World Tables 9.0 database. The estimation of peaks and valleys in the employment cycle for each country is calculated using the difference between the employment series and the long run tendency estimated using the Hodrick-Prescott filter. We do it this way because we do not have data for periods smaller than a year for all countries.

With those data, we estimated a panel where the dependent variable is the variation of the weight of the left-wing parties in the parliament for every year since 1950, and our employment cycle indicator with a one-year lag as an independent variable. I.e., we check if there is a change in the parliament composition after a change in the employment cycle.

As control variables we included GDP growth rate. In estimations (2) and (4) we also include the value of the indicator showing the left-right composition of the parliament the year before to capture possible phenomena like alternations or inertias. The results are shown in Table 8, where columns (1) and (2) include all years with information for all countries, while columns (3) and (4) shows the estimations only for election years.

The coefficient associated to the variable employment cycle is the one that interests us. There is a significant, inverse relation between the employment cycle and the change in the weight of the left wing parties in the parliament: the smaller the increase in employment, the higher the number of left wing representatives. Thus, the relation found for the US is not specific to this

[3] The construction of the index is shown in http://www.parlgov.org/documentation/codebook/#party

country as we observe a similar correlation for OECD countries. In fact, up to a fifth of the variation of the parliament composition can be explained using this simple specification.

As a conclusion, the hypothesis that employment cycles have the capability to determine changes in parliaments and the party in government has important data in its favor.

Table 8. Correlation between employment cycle and Parliament composition change

Dependent variable: change in parliament composition (positive change implies going to the left)				
	(1) dleft	(2) dleft	(3) dleft	(4) dleft
Employment Cycle	-0.041***	-0.039***	-0.142***	-0.100**
	(0.0113)	(0.0109)	(0.0376)	(0.0352)
Parliament composition in t-1		0.121***		0.418***
		(0.0219)		(0.0621)
Real GDP per capita	-0.004*	-0.004	-0.016	-0.014
	(0.0024)	(0.0034)	(0.0093)	(0.0118)
Constant	-10.075	-6.290	-38.466	-25.041
	(6.1993)	(8.3646)	(24.1045)	(30.4351)
Observations	1114	1114	319	319
R-square	0.0095	0.0672	0.0341	0.2250

Notes: Estimations (1) and (2) are done for all the disposables years. Estimations (3) and (4) are done only for elections years.

4. Explaining the R-D GAP

In their article, B&W explore whether the D-R GAP can be explained using an ample set of variables, like public expenditure, defense budget, monetary series, oil price and tax rates. They even include consumers' expectations, changes in the credit supply and the evolution of total factor productivity (TFP) to capture supply shocks. However, in the best case, and despite all these explanatory variables, B&W can only explain 96 basic points in the gap, estimated to be somewhere between 172 and 191 basic points, depending of the period considered. This means that there is still a 50 percent of the gap to be explained.

In the previous sections, we showed that Democrat presidents tend to take office near the valley phases of the employment cycles relative to the Republicans. In this section, we test the hypothesis that the difference in the phase of the cycle completes the explanation of the gap. It is important to understand the difference between our hypothesis and the hypotheses considered in B&W. In their paper, B&W argue that initial conditions do not explain the gap, but their analysis is restricted to show that there are no differences in the characteristics of the economic cycles conditioned on the political affiliation of the president. In particular, recessions and recoveries are not deeper or stronger when Democrats are in the White House. This is something that our analysis in the previous sections also showed. What we also found is that the Democrat presidents are more likely to take office when recoveries are about to start, and that the sympathy for Democrats among unemployed is a casual explanation for this fact. This way the average of growth rates will be biased in favor of the Democrat administrations. We

now study whether the composition of the cycle in the different administrations explains the rest of the gap.

4.1 The model

Like B&W, we estimate the D-R GAP as a dependent variable using a set of explanatory variables. Drawing on their work, we use only the three variables that offer the best explanatory power in their models, and add our new variable to them. These variables are Hamiltons' oil shock (Hamilton, 1983), defense spending shocks (Ramey, 2011) and total factor productivity (TFP) cyclically adjusted by B&W. Taken together they explain 96 out of 179 basic points in the D-R GAP in the multivariant analysis conducted by B&W, more than any other combination of the 23 variables they consider.

Thus, we start with an econometric specification similar to B&W:

$$y_t = \gamma(L)e_t + \text{other factors}, \qquad (1)$$

where $\gamma(L)$ is a polynomial that captures the effect of a change in the explanatory variable, e_t, in the current and past six periods on GDP growth. As B&W, we estimate (1) both under the restriction of common coefficients of $\gamma(L)$ for both parties, and allowing party-specific coefficients. Also, following B&W the estimations of the standard errors are corrected for possible heteroscedasticity and auto-correlation, and we use the standard Newey-West formulation (Newey and West, 1987) for their estimations. This way expression (1) becomes a regression of the form

$$y_t = \gamma_0 + \gamma_1(L)e_t + u_t \qquad (2)$$

if only one variable is included, and

$$y_t = \gamma_0 + \gamma_1(L)e_{1t} + \gamma_2(L)e_{2t} + \cdots + \gamma_k(L)e_{kt} + u_t \qquad (3)$$

if *k* variables are included in a multivariant specification.

Let us define the D-R GAP as the difference in the average growth rates for each party. Thus, the D-R GAP is defined as $\bar{y}_t(D) - \bar{y}_t(R)$, where *D* and *R* stand for Democrat and Republican, respectively.

After (2) is estimated, B&W specify and calculate the following difference:

$$\bar{y}_t(D) - \bar{y}_t(R) = \hat{\gamma}_1(L)[\bar{e}_t(D) - \bar{e}_t(R)]. \qquad (4)$$

Expression (4) just reflects the composition effect of the explanatory variable in the D-R GAP. It corresponds to one of the two parts in which an Oaxaca-Blinder decomposition would divide the gap, as long as we use the pooled estimation as reference (Neumark, 1988). A similar decomposition can be done after expression (3). This is the common explanation in B&W. In addition, they re-estimate (2) using party-specific coefficients for $\gamma(L)$, according to expression

$$y_t = \gamma_0 + [\gamma_1(L) + \gamma_2(L)I_D]e_t + u_t, \qquad (5)$$

where

$$I_D = \begin{cases} 1 & \text{if a democrat is in presidence} \\ 0 & \text{otherwise} \end{cases}.$$

With this specification, expression (4) for the differences becomes

$$\bar{y}_t(D) - \bar{y}_t(R) = \hat{\gamma}_1(L)[\bar{e}_t(D) - \bar{e}_t(R)] + \hat{\gamma}_2(L)\bar{e}_t(D). \quad (6)$$

If $\hat{\gamma}_2(L)$ is not significant (the null hypothesis is H_0: $\hat{\gamma}_2(L) = 0$) then the explained parts using common coefficients and party-specific coefficients will not differ. However, the rejection of the null hypothesis (H_1: $\hat{\gamma}_2(L) \neq 0$) implies a true difference in the effects of shocks between Democrat and Republican presidencies, and the estimated effects in (4) and (6) should be different.

The party-specific estimation allows us to test if the evolution of the variable e_t through time has had a different effect on the GDP growth depending on the party in the White House. If we reject the null hypothesis that $\hat{\gamma}_2(L) = 0$, then defense spending, oil prices or the evolution of TFP has had an effect on the GDP growth for the American economy different for each of the two parties. Contrariwise, if we cannot reject the hypothesis, the effect of each one of the variables on the GDP growth has been the same under the two parties, and the final effect would come through a composition effect, measured by $[\bar{e}_t(D) - \bar{e}_t(R)]$.

In B&W, the results for the three variables indicate that they cannot reject the null hypothesis $\hat{\gamma}_2(L) = 0$ for the price of oil and for the TFP. By contrast, for the variable measuring defense spending there seems to be some effect when they allow for party-specific coefficients. In this case, the results in B&W support the rejection of the null hypothesis $\hat{\gamma}_2(L) = 0$.

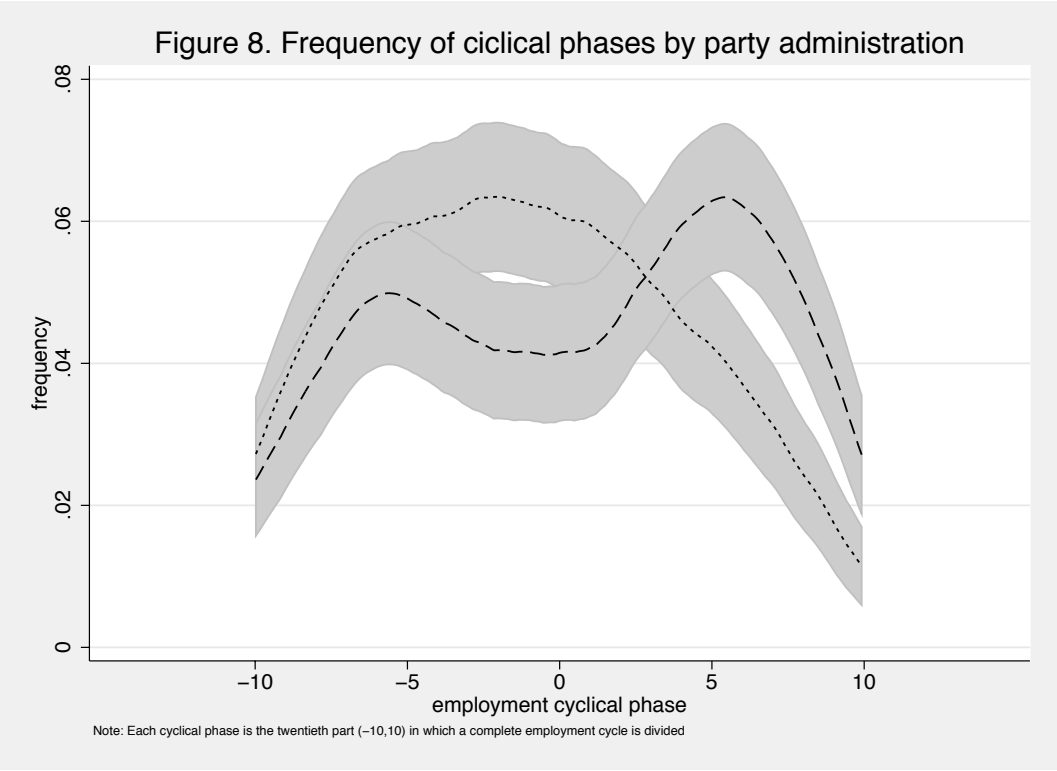
We take it from here and add our contribution with the incorporation of the new variable that measures the effect of the composition of the employment cycle in the model as explained in Section 3.1. The goal is to see if we can increase the explanatory power of the model using the fact that Democrat presidents have been elected in specific moments of the employment cycle as an independent variable. This, and the apparent similarity of all employment cycles once we control for their timing, could reduce the D-R GAP.

To this end, we estimate both individual effects as in expression (2), and multivariant specifications as in (3). We will show how that indeed, once we control by the employment cycle, we are able to explain almost all the gap and that this explanatory power does not decrease when we allow for differentiated coefficients, which shows the exogenous nature of the employment cycle in the differences.

4.2 Controlling for the cycle: the importance of the composition effect

In Figure 8 we show the Kernel estimation of the frequency of the cyclical phases by party administration. In the horizontal axis, we represent the normalized phases of the different cycles, like in Figure 1. In the vertical axis, we measure the frequency with which a phase is

present in Democrat and Republican administrations. The frequencies are plotted with 90 percent confidence intervals.[4]



Our observations in Section 2 are confirmed here, there are important differences in the frequencies of each phase of the cycle conditioned on the party of the president. Although this does not come as a surprise after our analysis in the previous sections, it helps to visualize how a sizable part of the differences in economic performance under the two parties can be explained by the differences in the frequencies of the economic cycle. If, for instance, GDP growth were similar in similar phases of the different economic cycles, the GDP gap would disappear or at least would be drastically reduced once we control for the composition of the cycle. However, if GDP growth were different for the same phases of the economic cycle depending on the party of the president, then when we control for the composition it would only explain a part of the D-R GAP. The work in B&W already showed that there are indeed other variables that explain part of the gap, so the composition effect will not explain all of it.

4.3 Explaining the D-R GAP. The composition effect

Table 9 shows our replication of the B&W results. We only replicate the model using the three variables that give B&W the best explanatory power: oil prices, defense spending, and TFP.

The D-R GAP is 1.79 percentage points when we take the sample period since the third quarter in 1949 until the first quarter in 2013. This gap is slightly smaller when we initiate the sample period in the first quarter in 1950, when we have data to include the variable TFP in the analysis. The "Common" column presents the part of the D-R GAP explained by each of the variables alone and using common coefficients for both parties. The "Multivariate" row considers the

[4] The figure presents estimated density functions using Kerner functions. Thus, the total probability, that has to add up to one, is the area below the graph of the function.

case in which shocks for the three variables in B&W are included in the specification after model (3). As B&W correctly state, in this model oil prices explain 0.49 basic points out of 1.79 of the total D-R GAP. The difference remains unexplained in this simple specification. Defense spending explains 0.21 and the evolution of productivity (TFP), 0.53. In the specification with all three variables, the explained gap with common coefficients is 87 basic points, 74 short of the total gap. In the rightmost column, we have the results for the model with different coefficients for the parties. Now the multivariate model explains 97 out of 172 basic points, leaving 75 points unexplained.

Table 9
The D-R Growth GAP: Blinder and Watson Results

Shock	Sample Period	Total D-R Gap	Common	Party-specific
Oil Prices (Hamilton)	1949:II-2013:I	1.79 (0.64)	0.49 (0.10)	0.51 (0.11)
Defense spending (Ramey)	1949:II-2013:I	1.79 (0.64)	0.21 (0.04)	-0.04 (0.44)
TFP (B&W)	1950:III-2013:I	1.72 (0.62)	0.53 (0.07)	0.53 (0.07)
Multivariate	1950:III-2013:I	1.72 (0.62)	0.87 (0.10)	0.97 (0.38)

Both the oil price and, specially, the TFP effects do not show important differences when we impose or eliminate the restriction of common coefficients. However, defense spending does show a big difference between the two estimations. Thus, we can argue that this policy is not exogenous to the parties, and can represent a difference in the policies that may cause different economic performance.

In Table 10 we repeat the analysis, but now we include the variable measuring the composition of the cycle as an explanatory variable. The first three rows add the variable "Composition" to each of the variables, and in all cases we have separated the part of the D-R GAP explained by the different variables alone (upper number in the last two columns) and by the same variables together with the variable "Composition" (lower number). For instance, when we add the new variable to the model that includes only "Oil Prices", these prices explain 47 basic points of the D-R GAP, and the differences on composition of the economic cycle explain an additional 44 points in the common coefficients model. The numbers are similar (48 and 43, respectively) for the party-specific coefficients model. This can be interpreted as both variables being exogenous to the parties. We find the same exogenous effect for TFP, but not for defense. In all cases, the composition of the economic cycle adds between 43 and 50 points to the explanation of the D-R GAP by one variable alone.

The fourth row shows the results after including the composition of the cycle in the multi-variant model with all the variables. The explanatory power of this model is very high. In the specification with common coefficients, the three variables in B&W explain 88 basic points, and the cycle composition explains an additional 58 points, giving a total of 146, or 85 percent of the total D-R GAP of 172. For the case of party-specific coefficients the total explained D-R GAP is 142, or 83 percent explanation of the total gap. Further, the difference between the explained and the total part is not statistically significant. The last row shows the *p*-value associated with the difference $\bar{y}_t(D) - \bar{y}_t(R)$ once we subtract the explained part in specifications (4) and (6) when the three variables in B&W are included along with our Composition variable. In both cases the null hypothesis that the difference is zero cannot be rejected. This result completes our analysis to explain the D-R GAP.

Table 10
The D-R Growth GAP: Blinder and Watson + Composition Results

Shock	Sample Period	Total D-R Gap	Common	Party-specific
Oil Prices (Hamilton)	1949:II-2013:I	1.79 (0.64)	0.47 (0.08) 0.44 (0.14)	0.48 (0.10) 0.43 (0.15)
Defense spending (Ramey)	1949:II-2013:I	1.79 (0.64)	0.24 (0.06) 0.48 (0.16)	-0.21 (0.39) 0.49 (0.16)
TFP (B&W)	1950:II-2013:I	1.72 (0.62)	0.51 (0.07) 0.48 (0.15)	0.51 (0.07) 0.50 (0.15)
Multivariant	1950:III-2013:I	1.72 (0.62)	0.88 (0.09) 0.58 (0.10)	0.81 (0.29) 0.61 (0.30)
p-value in Mult. Comp. (Democrat Dummy)			0.485	0.542

6. Conclusion

The difference on average growth rates in the USA since World War II depending on the party of the president constituted an unsolved paradox. Recently, Blinder and Watson (2016) have been able to explain part of it using oil prices, Defense spending and TFP as explanatory variables. However, almost half of the gap remained a mystery. Other possible explanations like differences in economic performance were ruled out. In the present work we are able to explain most of the remainder gap with a new hypothesis, the employment cycle.

We first showed the evidence of a causality relation between the employment cycle and the electoral results in presidential elections. Through a series of connected exercises we show that it is more likely to have a Democrat in the White House when elections coincide with the lowest phase of the employment cycle. This is very likely due to the fact that more people find Democrats more appealing when they are unemployed. This hypothesis is supported by the data and also by evidences from international elections in OECD countries, where we find a correlation between the employment cycle and the left-right composition of the parliament. Once we control for the employment cycle, there is nothing particular in the economic growth under the presidency of one party or the other.

After establishing this relation, we reproduce the analysis in Blinder and Watson, where we introduce as an additional explanatory variable the employment cycle, and are able to explain almost all of the D-R GAP. To summarize: during elections in the low phase of employments, Democrats tend to be elected as presidents. This, and not different economic policies, has the consequence that Democrat presidents enjoy the increasing phase of employment and GDP more often than the Republicans.

It did not escape to our attention that the most recent election of the Republican president Trump, not included in our analysis, took place in the peak phase of the employment cycle, a comparatively more favorable scenario for Republicans.

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Appendix A

Table A.1
GDP D-R GAP by quarters within administration

QUARTERS	G-D growth Gap
1	2.1763
	(1.460)
2	3.0267**
	(2.174)
3	4.4566*
	(1.830)
4	7.1398***
	(2.842)
5	5.4013**
	(2.407)
6	3.2404
	(1.283)
7	2.9989*
	(1.771)
8	-1.3169
	(-0.757)
9	-2.1377
	(-1.529)
10	0.4123
	(0.304)
11	-0.5328
	(-0.414)
12	-0.2251
	(-0.118)
13	-1.0152
	(-0.424)
14	0.4434
	(0.416)
15	2.2665
	(0.932)
16	2.2346
	(1.089)
TOTAL	1.7856***
	(3.666)

Observations: 256

Each number represents the GDP growth D-R Gap for the respective quarter within each Administration.

z-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Appendix B. Bry-Boschan method to identify turning points in US employment cycle.

The identification of turning points in time series to identify economic cycles has a long tradition. One of the most extensively used methodologies was proposed by Bry and Boschan in 1971. The method presents an algorithm that, in successive steps, filters the series into growth rates to identify peaks and valleys to, based in objective criteria, determine which are the months where the series reaches the turning points. Next, we explain step by step its application to determine the turning points of the employment series for the American economy since 1950.

1. Determination of the extreme values and their substitution.

2. Determination of the cycles in the 12 months moving average (replaced extremes.)

   (a) Identification of the highest and lowest points 5 months in each side.
   (b) Force the alternation of peaks and valleys selecting the highest peaks and the lowest valleys.

3. Determination of the inflection points in a Spencer curve (15 months weighted moving average, replaced extremes.)

   (a) Identification of the highest and lowest values within 5 months of the peaks selected in (2.), i.e., in the 12 terms moving average.

   (b) Forcing the duration of the cycle to a minimum of 15 months, after the elimination of the lowest peaks and highest months in the shortest cycles.

4. Determination of the inflection points in the 12 months moving average.

   (a) Identification of the highest and lowest values within 5 months of the selected inflection point in the Spencer curve.

5. Determination of the inflection points of the original series.

   (a) Identification of the highest and lowest values within 4 months of the turning point selected in the moving average.

   (b) Elimination of the inflection points within 6 months of the beginning and the end of the series.

   (c) Elimination of the peaks and valleys in the extremes of the series that are lower or higher, respectively, than the values closest to the end.

   (d) Elimination of the cycles shorter than 15 months.

   (e) Elimination of phases with duration shorter than 5 months.

6. Determination of final inflection points.