Presidents and the Economy: A Forensic Investigation

Alan S. Blinder and Mark W. Watson
Woodrow Wilson School and Department of Economics
Princeton University

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ABSTRACT

The U.S. economy has performed better when the President of the United States is a Democrat rather than a Republican, almost regardless of how one measures performance. For many measures, including real GDP growth (on which we concentrate), the performance gap is both large and statistically significant, despite the fact that postwar history includes only 16 presidential terms. This paper asks why. We find that the answer is *not* found in technical time series matters (such as differential trends or mean reversion), nor in systematically more expansionary monetary or fiscal policy under Democrats. Rather, it appears that the Democratic edge stems mainly from more benign oil shocks, superior TFP performance, and more optimistic consumer expectations about the near-term future. Many other potential explanations are examined, but they fail to explain the partisan growth gap.

Alan S. Blinder
Princeton University
blinder (at) princeton (dot) edu

Mark W. Watson
Princeton University
mwatson (at) princeton (dot) edu

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An extensive and well-known body of scholarly research documents and explores the fact that macroeconomic performance is a strong predictor of U.S. presidential election outcomes. Scores of papers find that better performance boosts the vote of the incumbent's party.[1] In stark contrast, economists have paid virtually no scholarly attention to predictive power running in the opposite direction: Do election outcomes help predict subsequent macroeconomic performance? The answer, which while hardly a secret is not nearly as widely known as it should be,[2] is a resounding *yes*. Specifically, the U.S. economy performs much better when a Democrat is president than when a Republican is.

This paper begins in Section 1 by documenting this stunning fact. The fact is not "stylized." The superiority of economic performance under Democrats rather than Republicans is nearly ubiquitous; it holds almost regardless of how you define success. By many measures, the performance gap is startlingly large--so large, in fact, that it strains credulity, given how little influence over the economy most economists (or the Constitution, for that matter) assign to the President of the United States.

Most of the paper is devoted to econometric investigations of possible explanations of the stunningly-large Democrat-Republican performance gap in real GDP growth. In Section 2, we ask whether the fact is spurious in the sense that it is really either the partisan makeup of Congress or something else about presidents (other than their party affiliations) that matter for growth. The answers are no. Section 3 investigates whether pure time series explanations—such as changing trends or mean reversion—can explain what appears to be a partisan gap. They cannot.

Sections 4 and 5 comprise the heart of the paper. There we examine possible *economic* mechanisms that might explain the partisan growth gap, including factors that might be construed as "just good luck" (Section 4) and factors that might be interpreted as superior economic policy (Section 5). We find that oil shocks, productivity shocks, and shocks to consumer expectations about the future each help explain the growth gap. At least the first two of these look a lot more like good luck than good policy. It is far less clear how to categorize the

[1] The literature is large in economics and voluminous in political science. Ray Fair's (1978, 2011) work may be the best known to economists.

[2] See, for example, Bartels (2008, Chapter 2). Earlier evidence on the unemployment rate and other cyclical indicators motivated some of the literature on political business cycles; see, for example, Alesina and Roubini (1997), and Faust and Irons (1999).

third, which comes close to circular reasoning. (Consumers expect better performance when a Democrat is elected, and so economic performance improves.) In sharp contrast, neither fiscal nor monetary policy shocks seem to provide any explanatory power at all.

Section 6 looks briefly at four other advanced countries: Canada, France, Germany, and the UK. Only Canadian data display a similar partisan growth gap. Finally, Section 7 provides a brief summary of what we (think we've) learned.

1. The stark facts

1.1 Gross domestic product growth and recessions

For most of this paper, the dataset begins when U.S. quarterly NIPA accounts begin, in 1947:Q1, and extends through 2013:Q2. In many of our calculations, we group observations by four-year presidential terms; so the sample contains seven complete Democratic terms (Truman-2, Kennedy-Johnson, Johnson, Carter, Clinton-1, Clinton-2, and Obama-1) and nine complete Republican terms (Eisenhower-1, Eisenhower-2, Nixon, Nixon-Ford, Reagan-1, Reagan-2 , Bush I, Bush II-1, and Bush II-2), where the suffixes denote terms for two-term presidents.

During the 64 years that make up these 16 terms, real GDP growth averaged 3.33% at an annual rate. But the average growth rates under Democratic and Republican presidents were starkly different: 4.35% and 2.54% respectively.[3] This 1.80 percentage point gap (henceforth, the "D-R gap") is astoundingly large relative to the sample mean. It implies that over a typical four-year presidency the U.S. economy grew by 18.6% when the president was a Democrat, but only by 10.6% when he was a Republican.

Figure 1 tells the story graphically. Panel A shows average growth rates by presidential term. While there is substantial variation in growth rates (from over 6 percent for Truman-2 to under 1 percent for Bush II-2), the D-R gap is apparent. Panel B tells the same story in a slightly different way, by organizing the data by presidencies rather than by terms (with both the eight Kennedy-Johnson years and the eight Nixon-Ford years grouped together, and the data on Truman extended back to 1947:Q2). It is clear at a glance that GDP growth rises when Democrats get elected and falls when Republicans do. There are no exceptions, although the Carter-to-Reagan transition is almost a dead heat (3.6% to 3.5%).

[3] In this calculation, the first quarter of each president's term is attributed to the previous president. But we also did the calculation with zero-, two-, three-, and four-quarter lags. Results were similar, although using lags of zero, two, three, and four quarters leads to smaller estimated D-R gaps. See Table A.1 in the appendix.

Table 1 displays the same results differently, by rank-ordering the growth performances of all 16 terms in the sample. To make party affiliation stand out, Democratic administrations are shown in **bold** while Republican administrations are shown in *italics*. Six of the eight above-average presidential terms, including the top four, were Democratic; seven of the eight below-average terms were Republican.

NBER recession dating gives an even more lopsided view of the D-R difference. Over the 256 quarters in these 16 terms, Republicans occupied the White House for 144 quarters, Democrats for only 112. But of the 49 quarters classified by the NBER as in recession, only eight came under Democrats versus 41 under Republicans.[4] Thus, the U.S. economy was in recession for 1.1 quarters on average during each Democratic term, but for 4.6 quarters during each Republican term.

These results for GDP and quarters-in-recession are summarized in Panel A of Table 2. The table shows the Democratic and Republicans averages, the D-R gap (labeled "Difference"), and both standard errors and *p*-values to gauge statistical significance. Standard errors are computed in two ways. The first, shown in parentheses (), clusters observations by presidential terms, which allows arbitrary correlation within a term but no correlation between terms. The second, shown in square brackets [], uses a standard HAC formula, which allows conditional heteroskedasticity and (limited) correlation within and between terms. In both cases, statistical significance for the D-R difference can be assessed by using the usual *t*-statistic.[5] For the GDP D-R gap, the two standard errors are almost identical; each yields a *t*-statistic greater than 2.7. For quarters-in-recession, the two standard errors differ a bit; but both yield *t*-statistics with absolute values above 3. Thus, the *t*-statistics imply a statistically significant D-R gap in economic performance.

We also assessed statistical significance by using a non-parametric test that involves random assignment of a party label (D or R) to each of the sixteen 16-quarter blocks of data in the sample. Specifically, we assigned nine Republican and seven Democratic labels randomly to each four-year period (e.g., 1949:Q2-1953Q1, 1953:Q2-1957:Q1, etc.) and then computed the

[4] As before, the first quarter of each presidency is "charged" to the previous president. Thus, for example, the recession quarter 2001:1 is charged to Bill Clinton and 2009:1 is charged to George W. Bush.

[5] The effective sample size for the *t*-statistic constructed with clustered standard errors is the number of administrations ($n_{Dem} = 7$ and $n_{Rep} = 9$). Conservative inference can be carried out using the critical value from the Student's – *t* distribution with $\min[(n_{Dem}-1),(n_{Rep}-1)] = 6$ degrees of freedom. Ibragimov and Müller (2010,2011) shows that this procedure remains conservative under heteroskedacity.

difference in average growth rates under these randomly-assigned "Democratic" and "Republican" terms. Doing so enables us to construct the distribution of differences in average growth rates under the null hypothesis that political party and economic performance are independent (because party labels are randomly assigned to each term). This distribution can then be used to compute the *p*-value of the difference in the *actual* growth rates under the null. As shown in the final column of Table 2, this *p*-value is 0.01 for GDP, which corresponds to the probability of observing an absolute difference of 1.80% (the actual value) or larger under random assignment of party. The *p*-value for quarters-in-recession is also 0.01, so that the lopsided realization of recessions is similarly unlikely under the assumption that party and economic performance are independent.

1.2 Other indicators

The finding of Democratic superiority is not peculiar to the time series on real GDP growth and NBER recession dates. The other panels of Table 2 summarize results for a wide variety of other indicators of economic performance.

Panel B considers alternative measures of aggregate output. The D-R gap for the growth rate of GDP *per capita*, which corrects for any differences in population growth, is essentially the same as for GDP itself (1.76% versus 1.80%). The D-R gap is somewhat larger in the nonfarm business sector (2.15%) and much larger for industrial production (3.77%). Each of these partisan growth gaps is highly significant.

Panel C considers employment and unemployment. The D-R gap in the annual growth rate of payroll employment is 1.42 percentage points, and the gap in employee hours in nonfarm businesses is somewhat larger (1.65 points). Both are highly significant. Somewhat puzzling, given these results, the partisan gap is much smaller in the household survey—just 0.56 percentage point—and not significant at conventional levels.[6] The average unemployment rate is lower under Democrats (5.6% vs. 6.0%), but that difference is also small and not statistically significant. There is, however, a sizable and statistically significant difference in the *change* in the unemployment rate, computed as the difference between the average unemployment rate in the final year of the term minus the average value in the final year of the previous term. During Democratic presidential terms, the unemployment rate *fell* by 0.8 percentage points, on average,

[6] Closer examination of the payroll and household employment series shows two sustained episodes in which employment growth in the establishment survey exceeded employment growth in the household survey substantially and persistently; one was late in the Truman administration, the other was in the Kennedy-Johnson boom.

while it *rose* by 1.1 percentage points, on average, during Republican terms--yielding a large and statistically significant D-R gap of -1.9 percentage points.

Delving into the sectoral details (Table 3), the growth rates of *every* major component of real GDP except exports were higher under Democratic rather than Republican presidents, although the margins are small and statistically insignificant in a number of cases. Table 3 reveals that much of the Democratic growth advantage comes from higher spending on consumer durables and private investment, especially nonresidential fixed investment, where the partisan gap is 4.8 percentage points. Another large growth gap (5.1 percentage points) shows up in federal defense spending. But because defense spending is so volatile, even that large a difference is not statistically significant. We return to defense spending later.

Partisan differences extend well beyond the standard indicators of real growth and employment. For example, Panel D of Table 2 shows that stock market returns for firms in the S&P 500 are 5.4 percentage points higher when a Democrat occupies the White House than when a Republican does.[7] But given the extreme volatility of stock prices, even differences that large are statistically significant at only the 17% level. The corporate profit share of gross domestic income was also higher under Democrats: by 5.6% versus 4.7%. Though business votes Republican, it prospers more under Democrats.

Panel E shows that both real wages (compensation per hour in the nonfarm business sector) and labor productivity increased slightly faster under Democrats than Republicans, although neither D-R gap is statistically significant. Growth in total factor productivity was greater under Democrats (1.9% versus 0.9% for Republicans, with a p-value of .08), although the gap essentially disappears when TFP is adjusted for resource utilization. We discuss productivity as a potential explanation of the D-R gap in Section 4 below.

Moving yet farther afield, and now using Congressional Budget Office data which are available only from the Kennedy-Johnson term through 2012:Q3, the structural federal budget deficit has been, on average, smaller under Democratic presidents (1.5% of potential GDP) than under Republican presidents (2.2% of potential GDP), although the difference is far from statistically significant. (See Panel F.) And Bartels (2008) (not shown in the table) has

[7] The partisan gap in stock market returns seems to have attracted a lot more attention—at least from economists—than the partisan gap in GDP growth. See, for example, Santa-Clara and Valkanov (2003) and other references cited therein. For much earlier evidence, see Allvine and O'Neill (1980).

documented convincingly that income inequality rises under Republicans but falls under Democrats.

The only notable exception to the rule that Democrats outperform Republicans seems to be inflation, where the economy fares about equally well under presidents of either party. For example, the final panel of Table 2 shows that the average inflation rate was slightly lower under Democratic presidents (2.97% versus 3.32% using the PCE deflator; 2.88% versus 3.44% using the GDP deflator). But neither difference comes close to statistical significance. Inflation does show a tendency to *rise* under Democrats and to *fall* under Republicans, however. For example, using the PCE deflator, inflation rises on average by 1.05 percentage points during a Democratic presidency and falls by 0.83 percentage point during a Republican presidency. This difference is significant only at the 12% level.

Of course, weaker GDP growth and lower employment growth under Republicans could be responsible for the differential inflation performance. A simple back-of-the-envelope calculation suggests that it is. With unemployment averaging 0.4 percentage point less under Democrats, traditional estimates of the Phillips curve (e.g., Staiger, Stock, and Watson (2001)) suggest that the *change* in inflation should be roughly 0.1 percentage points more *per quarter*, or about 1.6 percentage points over a four-year presidential term—which is close to what we find.

1.3 The D-R gap over a longer historical period

Official quarterly GDP data begin only in 1947, but both the nation and the economy date back much further. What happens if we extend the data back in time? We know that the Democratic-Republican gap would widen notably if we included the long presidency of Franklin D. Roosevelt, for real GDP growth from 1933 to 1946 averaged a heady 7.4% per annum. Going back to Hoover would also boost the measured D-R gap. But what about earlier U.S. history?

Fortunately, Owang, Ramey, and Zubairy (2013) recently constructed a quarterly real GDP series that dates all the way back to 1875.[8] For the 72-year period spanning 1875:Q1 through 1947:Q1, the average GDP growth rates in their data are 5.15% when Democrats sat in the White House (119 quarters) and 3.91% when Republicans did (169 quarters).[9] That D-R growth gap of 1.24 percentage points is smaller than the postwar gap, but still noteworthy. Similarly, the NBER says the U.S. economy was in recession in 133 of those 288 historical quarters (46% of the time).

[8] For the period 1889 to 1938, they made use of quarterly date constructed by Balke and Gordon (1989).
[9] Until Eisenhower, presidents were inaugurated on March 4 instead of January 20. So, for the historical data, we attributed the first *two* quarters of the calendar year to the previous president.

But 94 of those recessionary quarters came under Republican presidents (56% of the time) versus only 39 under Democratic presidents (33% of the time). Thus our main facts seem to be far from new.

The Democratic growth edge over the 1875-1947 period is, however, entirely due to the economy's excellent performance under Franklin Roosevelt. Excluding the FDR years, growth was actually higher under Republicans. So one might say that Democratic growth superiority began with Hoover.

2. But might it actually be...?

Having established the basic fact that the U.S. economy has performed better under Democratic than Republican presidents, we ask in this short section whether the president's party affiliation might actually be standing in for something else. For example, might the key difference really be some presidential trait other than his party affiliation? Or might the partisan makeup of Congress actually be the key ingredient? The answers, as we will see next, are no.

2.1 Other presidential traits

Notice in Table 1 that the four top presidential terms, ranked by GDP growth, are all Democratic: Truman's elected term, Kennedy-Johnson, Johnson's elected term, and Clinton's second term. That is the linchpin of our basic fact. But might there be some other characteristic, shared by these presidents, that explains the growth performance better? For example, maybe younger-than-average presidents--a group that includes Kennedy, Johnson, and Clinton--do better. (They do.) Or maybe presidents who were once members of Congress--a group that includes Truman, Kennedy, and Johnson--do better. (They also do.)

Table 4 displays average GDP growth rates for presidents grouped by various attributes: political party (our focus in this paper), prior experience as either a member of Congress or as a governor, and whether the president was younger or taller than average. The first row of the table repeats our central fact. The next row contrasts growth under the seven presidents with congressional experience (3.84 percentage points) with the nine without (2.94 percentage points). The difference is sizable (0.91 percentage points), but not statistically significant. The next row compares the administrations of former governors to non-governors. Growth was marginally lower under former governors, but the difference falls way short of statistical significance. The final two rows sort presidents by age and height (top half vs. bottom half). Growth is higher

under younger and taller presidents, but again the differences are not statistically significant. Overall, the table shows systematic differences in performance associated with the party of the president, but little evidence of systematic differences associated with other presidential attributes.

2.2 Congress

We mentioned the Constitution earlier because it assigns the power of the purse—and most other powers as well—to Congress, not to the president. Could the key partisan difference really be which party controls *Congress* rather than which party controls the *White House*? The answer is no. Table 5 displays average GDP growth rates when the Democratic Party controls both houses of Congress, when control of the two houses is split (regardless of which party controls which house), and when the Republican Party controls both houses. We see that the average growth rate is highest when Democrats control Congress (3.47%), but the difference with Republican control (3.36%) is trivial. Apparently, it's the president, not Congress, who matters.

3. Trends and mean reversion

We next ask whether some technical time series issues might account for our results—specifically, could the D-R gap stem from different trend growth rates under Democratic and Republican administrations, from momentum, or from mean reversion?

3.1 Trends

First, recall that Figure 1 showed that the three presidential terms with the fastest growth rates came early in the sample while three of the terms with the slowest growth (G.W. Bush's two terms and Obama) came late. Since trend increases in the labor force and productivity were higher in the early post-WWII years than they have been since 2000, part of the difference in the average growth rates under Democrats and Republicans might be explained by the timing of these low-frequency movements.

To investigate this possibility, we computed average growth rate differences after detrending the quarterly GDP growth rates using increasingly flexible trends computed from long two-sided weighted moving averages.[10] The flexibility of the estimated trend is adjusted by varying a weighting parameter, κ. When $\kappa = \infty$, the trend corresponds to the full-sample average growth

[10] The weights are computed using a bi-weight kernel. See Stock and Watson (2012).

rate. As κ gets smaller, the weights become more concentrated around the current time period and start looking more like cycles than trends.

Figure A.1 in the appendix plots GDP growth rates and trends computed for different values of κ. The four choices produce trends that range from completely constant at the sample average ($\kappa = \infty$) to quite variable. When $\kappa = 67$, the trend growth rate is 4% through the early 1960s and falls to roughly 2% in the 2000s.

Table 6 shows the average detrended growth rates for Democratic and Republican presidents. In the benchmark specification, the trend is constant ($\kappa = \infty$), and the Democratic and Republican averages are the deviations from the full-sample average. Thus, the average value shown for Democrats is +1.06 percentage points, which is the average growth rate for Democrats (4.35% from Table 2) minus the full-sample average of 3.29%; the average value shown for Republicans is -0.74 percentage point (= 2.54% -3.29%).[11] The D-R gap is thus 1.80 points, which is, of course, the same value shown in Table 2. For the other trend specifications, the trend values are allowed to differ over time, so D-R differences need not match the 1.80 percentage point value reported in Table 2. However, the table shows that results using $\kappa = 100$ or $\kappa = 67$ hardly differ from the benchmark. Indeed, even when $\kappa = 33$, a "trend" that is so flexible that it seems to capture cyclical elements, the estimated D-R gap remains large (1.46 percentage points). In sum, low-frequency factors appear to explain little, if any, of the D-R gap.

3.2 Momentum and Mean Reversion

A rather different question of timing is to ask when, within four-year presidential terms, the Democratic advantage is the largest and when it is the smallest. Figure 2A shows that the advantage comes in the first two years, especially in the first, when the D-R growth gap is a stunning 4.1 percentage points. Regarding inherited momentum, the figure also shows (on the far left) the average growth rate in the final year of the *previous* administration. Notice that growth in Democratic terms averages 4.7% in the first year, compared to only 0.6% in the first year of a Republican term, but that Democrats inherit growth rates of 1.8% from the final year of the previous term, while Republicans inherit a growth rate of 4.1%. Given the strong positive serial correlation in GDP growth, momentum clearly helps Republicans.

[11] The 3.29% figure for the grand mean used here differs trivially from the 3.33% figure cited earlier because, here, we extend the sample all the way back to 1947:2.

But Figure 2A tacitly treats the second term of each two-term presidency (e.g., Eisenhower-2) as a transition, just the same as when a new president from one party replaces an outgoing president from the other party (e.g., Truman to Eisenhower-1). Since that may be like mixing apples and oranges, Figure 2B limits the sample to presidential terms that are preceded by a president from the opposite party. Among the incoming Democratic presidents, that means Kennedy-Johnson, Carter, Clinton-1, and Obama-1. Among Republicans, it means Eisenhower-1, Nixon, Reagan-1, and Bush II's first term. These exclusions cut the sample in half, from sixteen transitions to just eight, making statistical inference perilous. That said, Figure 2B displays an even starker result. More than 100% of the four-year advantage occurs in a new president's first year, when the D-R growth gap is a stunning 4.8 percentage points--an average of 4.2% in the first year of a new Democratic president versus *minus* 0.6% in the first year of a new Republican president. This huge gap prevails despite the fact that Democrats inherit growth rates averaging 0.6% from the final year of the previous Republican president, while Republicans inherit growth rates averaging 3.8% from outgoing Democrats. Thus the election of a Democrat seems to turn things around on a dime, while the election of a new Republican seems to signal a recession.

What about mean reversion? Stating that the economy grows faster when Democrats are in the White House than when Republicans are suggests causation running from election results to economic performance. But what if causation runs in the opposite direction? What if worse economies lead to Democratic electoral victories? In that case, the facts documented so far might just reflect mean reversion: Stagnant economies tend to speed up and booming economies tend to slow down as economies move back toward equilibrium. If Democrats inherit systematically worse economies, their measured performance in office should be better for that reason alone. Could some of the Democratic-Republican growth difference be attributable to the state of the business cycle inherited from predecessors?

The simplest way to tackle this question is to do what we have just done: Look at the state of the economy in the last year of each presidency that was followed by a president from the other party. Figure 2 shows that inherited GDP growth is far weaker for Democrats. Can recovery from this inherited weak growth explain the rapid pace of GDP growth in the early years Democratic presidencies?

This is investigated in Table 7, and the answer appears to be that little, if any, of the D-R gap can be attributed to catch up. The first panel of Table 7 shows median GDP growth forecasts from the Survey of Professional Forecasters (SPF). Because the SPF data begin only in 1968, the analysis starts with Nixon's first term. The numbers tabulated are from the surveys conducted in the first quarter of each presidential term and pertain to forecasted growth over the next four quarters. For example, the Carter results use the survey conducted in 1977:Q1 and show median growth forecasts for the four quarters from 1977:Q1 through 1978:Q1.[12]

The table also shows "actual values" for real growth. Of course, like many economic time series, real GDP is subject to substantial revisions over time, and one issue with using SPF forecasts is the vintage of data the forecasters were attempting to forecast. A standard practice is to compare the forecasts to a vintage that includes only "near term" revisions, and we follow this practice by comparing these forecasts to "actuals" from real time datasets that were available two years after the forecast date. (So for example, the "actual growth" of real output from 1977:Q1-1978:Q2 is measured using data available in 1979:Q2.)

For the presidents covered in the available sample period, real output growth averaged 3.5% over the first year for the Democratic terms versus 1.0% for Republican--leading to a large D-R growth gap of 2.5 percentage points. The SPF average growth forecasts in this restricted sample are 3.1% for Democrats and 3.2% for Republicans. Thus, Democrats beat these forecasts by 0.4 percentage points while Republicans fell short by 2.2 percentage points. The corresponding forecast-adjusted difference between Democrats and Republicans therefore averaged 2.6 percentage points, which is slightly larger than the unadjusted D-R gap.

Perhaps the SPF forecasts are not indicative of other forecasts. Panel B of Table 7 shows analogous results using the Federal Reserve's Greenbook forecasts of growth, which are available for the Nixon/Ford through Bush II-2 terms. The SPF and Greenbook forecasts match up well except for the first year of the Reagan presidency, when the SPF forecast was 3.0% but the Greenbook forecast was -0.1%. (Actual growth was far lower than both: -2.5%.)[13] This large difference means that, over the Greenbook sample period, the forecasts explain just over a third of the first-year D-R gap of 2.7 percentage points.

[12] Detailed results underlying Table 7 are provided in appendix Table A.2. That table also shows results using the SPF surveys conducted in the second quarter of each administration.

[13] Romer and Romer (2000) provide evidence that the Greenbook forecasts of real output growth were more accurate than the SPF over the 1981-1991 sample period.

Table 7 also shows results from forecasts constructed from three pure time series models (ARs and VARs) estimated over the full sample. These are not real-time forecasts because they utilize fully-revised data with models estimated over the full-sample period. But the forecasts do capture the average persistence in the data over the sample.

The time series model forecasts employ the same timing convention as in Panels A and B: forecasts are constructed in the first quarter of each presidential term and pertain to growth over the subsequent four quarters. We consider three models: an AR(4) model for real GDP growth; a VAR(4) that includes GDP growth and a yield curve spread (long-term Aaa corporate bonds minus 3-month Treasury bills[14]); and a nonlinear AR model that allows for potential rapid growth ("bounceback") following recessions. The nonlinear specification augments the AR model with lags of a binary recession indicator, R_t, and interactions of R_t and lags of GDP growth.[15] Panel C shows results for the time series models over the same sample period (Nixon through Obama-1) as the SPF forecasts. Panel D shows results for the entire sample period (Truman-2 through Obama-1).

The simple AR models forecast *lower* average GDP growth for Democrats than Republicans. This is what you would expect from positive serial correlation in GDP growth and the lower average value of GDP growth inherited by Democrats; but it suggests a D-R gap in the opposite direction from the facts. In contrast, the forecasts from the VAR model and the non-linear AR model do indicate slightly higher growth under Democrats. For example, over the full-sample period, the nonlinear AR model forecasts first-year growth that averages 3.4 percentage points for Democrats versus 3.2 percentage points for Republicans. But this difference of 0.2 percentage points is minuscule relative to the realized 4.1 percentage point D-R gap in first-year average GDP growth.

In sum, with the exception of the Greenbook forecasts for the early part of the first Reagan administration, forecasts suggest little reason to believe that Democrats inherited more favorable initial conditions (in terms of likely future growth) from Republicans than Republicans did from Democrats.

[14] We use the long-term corporate bond rate because it is available over the entire post-war sample period.
[15] See, for example, Kim and Nelson (1999) and Morley and Piger (2012).

4. Economic explanations for the D-R growth gap

Having explored, and disposed of, a variety of mechanical explanations for why economic performance was so much better when Democrats occupied the White House, we now turn our attention to economic mechanisms--starting, in this section, with mechanisms that do not seem like policy decisions, and then moving, in Section 5, to policy variables. But first, a bit of history.

4.1 A short narrative history

Our data sample spans nine presidential transitions, eight of which were from one party to the other. What do we know about these transitions that might help us explain the large growth differences under Democratic versus Republican presidents?

After the Truman prosperity, which was fueled by high spending on the Korean War, Eisenhower won the 1952 election, determined to end the war. He did so, and the sharp cutbacks in defense spending were the main reason for the 1953-1954 recession. Later, even more (albeit milder) defense cutbacks contributed to a short-but-sharp recession in1957-1958. So growth plummeted from the Truman years to the Eisenhower years and did so quickly. Defense spending seems to have been a major reason.

The third Eisenhower recession (1960-1961) paved the way for the election of President Kennedy, and subsequently for the Kennedy-Johnson tax cuts--the first example of deliberate countercyclical fiscal policy in U.S. history. Those tax cuts ushered in a long boom, raising the growth rate under Kennedy-Johnson far above Eisenhower levels. So fiscal policy, once again, seems to have played a major role—but not mainly in 1961. The 1960s boom went too far, however, under the pressure of Vietnam War spending, which helped to bring on the highest U.S. inflation rates since the 1940s. The war, the subsequent inflation, and the anti-inflationary monetary and fiscal policies promulgated in reaction to it helped Richard Nixon win the White House back for the Republicans in 1968.

The contractionary policies left over from Johnson's belated efforts to fight inflation gave Nixon—who believed that a recession had cost him the 1960 election—another recession early in his term. Politically speaking, however, that is the ideal time for a president to take a recession. By 1972, aided by both monetary and fiscal stimulus, the economy was booming again, and Nixon was reelected in a landslide. That all changed, however, and inflation rose again, after OPEC I struck in late 1973. So, when he resigned in 1974, Nixon left a troubled

economy to Gerald Ford. On balance, growth under Nixon-Ford was markedly slower than under Kennedy-Johnson, as Figure 1 showed; and the oil shock of 1973-1974 appears to have been a major reason.

The poor economy, plus the adverse popular reaction to Ford's pardon of Nixon, contributed to Ford's defeat by Jimmy Carter in the close 1976 election. While Carter is remembered for presiding over a weak economy, that is not actually true. As Figure 1 and Table 1 remind us, real GDP growth under Carter was higher than it had been under Ford and about the same as it would be under Reagan. His main problem was high inflation—brought on, in part, by OPEC II in 1979-1980. Again, we are pushed to think about oil shocks.

Ronald Reagan's presidency is remembered for large tax cuts, what we viewed then as huge budget deficits, and the long boom of the 1980s. But it began with a severe recession. Over Reagan's full eight years, GDP growth averaged just 3.5%, roughly matching the Carter performance. Thanks to the 1990-1991 recession—itself a product of tight money and a spike in oil prices—growth was substantially slower during George H. W. Bush's single term.

Bill Clinton presided over the long boom of the 1990s, which was likely started by falling interest rates—in part, a product of Clinton's deficit-reduction efforts—and helped along immensely by both permissive Federal Reserve policy and the tech boom. The latter led to surges in investment spending, stock prices, and productivity. The productivity surge, in turn, helped hold down inflation as the unemployment rate fell as low as 3.9%, a rate not seen since the late 1960s.

Unfortunately for Clinton's successor, George W. Bush, a stock market crash began in 2000 and its effects lingered into his first term, probably precipitating the 2001 recession. Although that recession was extremely mild, recovery from it was weak. Then the financial crisis struck the economy in late 2008 (although the NBER dates the Great Recession as starting in December 2007). On balance, the Bush II administration turned in the worst growth performance since Hoover. In his second term, the economy barely grew at all.

The economic catastrophe continued, of course, into the early months of the Obama administration. Recovery began, according to the NBER, after June 2009; but it proved to be extremely sluggish. As Figure 1 shows, growth during the Obama administration through 2013:2 averaged only 2%.

This brief narrative history helps us to understand the stunning first-year growth gap in favor of Democrats by pointing to at least four presidential transitions in which growth either slumped quickly under a newly-elected Republican (Eisenhower, Reagan, Bush II) or bounced back from a recession low under a newly-elected Democrat (Obama-1). It also directs our attention to fiscal policy, monetary policy, oil shocks, defense spending, productivity performance, and financial shocks as potential causal mechanisms. Let's look at these factors statistically, starting with:

4.2 Was it just luck?

Statistical significance levels are meant to answer such questions. And in this case, the verdict is clear: It is highly unlikely that the D-R growth gap was just luck, in the sense of more favorable random draws from the same distribution. But let's press further.

We can think of three *observable* elements of macroeconomic "luck" that we have not yet examined or controlled for. Maybe Democratic presidents experienced a better run of (a) oil shocks, (b) total factor productivity (TFP) shocks, or (c) wars. After all, OPEC I hit while Nixon was president; and OPEC II, while it struck under Carter, hurt growth in the early Reagan years. Furthermore, the vaunted—and still unexplained—productivity slowdown began under Nixon and extended through the presidencies of Ford, Carter, Reagan, and Bush I, ending only in the Clinton administration. And major defense buildups associated with the Korean and Vietnam wars occurred in Democratic administrations. Could these phenomena explain the weaker growth under Republican presidents?

We will discuss each in turn, but first we outline a framework for evaluating the importance of the various shocks. Let y_t denote the growth rate of real GDP. The analysis thus far has compared the *unconditional* difference in the mean of y_t for Democratic and Republican presidents, which would be given by the regression coefficient δ in the regression:

$$y_t = \alpha + \delta \times Dem_t + \text{error} \qquad (1)$$

where Dem_t is an indicator variable equal to 1 if the president at date *t-1* is a Democrat. Now, let e_t denote a time series of "shocks" (e.g., oil price shocks, TFP shocks, or defense spending shocks), and consider the regression:

$$y_t = \mu + \beta \times \text{Dem}_t + \sum_{i=0}^{p} \gamma_i e_{t-i} + \text{error} \qquad (2)$$

The coefficient β now denotes the average difference in real GDP growth rates in Democratic administrations *after controlling for e*. In our benchmark regressions, we use $p = 6$ lags of *e*.

The ratio $(\delta-\beta)/\delta$ thus quantifies the importance of the *e* shocks for explaining the D-R difference in average GDP growth rates. For example, if $\beta = 0$, so that $(\delta-\beta)/\delta = 1$, the *e* shocks explain all of the average difference between Democrats and Republicans, while if $\delta = \beta$, so that $(\delta-\beta)/\delta = 0$), the shocks explain none of the difference.

If the *e* shocks are exogenous nonpolicy variables (such as oil price shocks), their contribution to the Democratic-Republican difference is just a matter of luck in the sense that is unrelated to policy. If, on the other hand, the *e* shocks are measures of policy (such as fiscal shocks), then they capture an element of policy difference between Democrats and Republicans that is associated with differential economic performance. There are also gray areas between "luck" and "policy," as we shall see.

4.3 Oil Shocks

What do we find when we apply this methodology, first, to oil shocks?

Hamilton's (1983) classic paper makes the case that disruptions in the oil market and the associated increases in prices and quantity constraints were important causes of post-WWII recessions even before OPEC I . Hamilton (2003) measured these disruptions using a nonlinear transformation of oil prices, "net oil price increases," which measures the value of the time *t* oil price relative to its largest value over the preceding 12 quarters:

$$P_t^{Hamilton} = \max\left(0, 100 \times (O_t / O_{t-12:t-1}^{Max})\right),$$

where O_t denotes the price of oil (measured as the crude petroleum component of the producer price index) and $O_{t-12:t-1}^{Max}$ is the largest value of O_t between $t-12$ and $t-1$. Note that this measure captures only oil price *increases*, not *decreases*, so it looks for an asymmetric effect of oil prices on economic activity. By assumption, increases in oil prices effect economic activity—presumably negatively—while decreases do not.

Killian (2008) provides an alternative measure of disruptions in the oil market by computing shortfalls in OPEC production associated with wars and other "exogenous" events. Unfortunately, his measure is available only over a relatively short sample period (1971:Q1 – 2004:Q3).

Panel A of Table 8 shows the results from using, alternatively, $P_t^{Hamilton}$ and $P_t^{Killian}$ as the shock e_t in (2). Either oil-shock measure accounts for slightly more than one quarter of the Democratic-Republican difference in average GDP growth rates. But notice that the raw D-R gap

is vastly smaller over Killian's shorter period: just 0.8 percent instead of 1.8 percent over the full sample.[16]

We have used the fitted value of equation (2) to estimate the effect of Hamilton's measure of oil shocks for each presidential term. (Detailed results are shown in appendix Table A.3.) There are large negative effects in the Nixon-Ford term (OPEC I) and Carter (OPEC II), but the largest estimated negative effect is for G.W. Bush's second term. Oil prices increased three-fold during Bush II-2 and undoubtedly played an important role in the onset of the Great Recession (see Hamilton (2010)). However, most economists believe that financial factors were the major cause of the 2007-2009 recession, which leads us to suspect that the full-sample estimates of (2) may overstate the role of oil prices. Thus, the second row of Panel A in Table 8 shows results for a sample period that ends in 2007:Q4. The restricted sample suggests a much smaller role for oil prices in explaining the D-R gap: 14% instead of 28%.

Thus, oil prices appear to explain roughly between one eighth and one fourth of the Democratic-Republican difference in GDP growth rates. Is that just "the luck of the draw"? Mostly. Presumably no one would attribute either OPEC I or OPEC II to *U.S.* policy decisions. But let's not forget that the Gulf War under G.H.W Bush and, especially, the start of the Iraq War under G.W. Bush *were* U.S. policy decisions. The former was a decision to liberate Kuwait after Iraq overran it. The latter, which is the biggest oil shock in the sample by far (see the top row of Table A.3), was a *decision* to invade Iraq in the (fruitless) search for weapons of mass destruction.

4.4 Productivity

What about productivity shocks? As Table 2 showed, total factor productivity (TFP) grew faster under Democratic presidents, although the difference is not statistically significant. But *utilization-adjusted* TFP, as measured by Fernald (2012), shows essentially no difference between Democrats and Republicans. Remember that resource utilization was systematically higher under Democrats, so adjusting for resource utilization is potentially important.

Panel B of Table 8 shows results that control for productivity shocks in three different ways. The first row uses Fernald's quarterly utilization-adjusted TFP growth; it reduces the D-R gap by 23% (from 1.80 percentage points to 1.39 percentage points). Examining the term-by-term detail

[16] We also estimated equation (2) using Hamilton's measure and allowing for break in the oil price coefficients in 1985. The results for the D-R gap are similar the full-sample results reported in Table 8; the estimate of β increases from the 1.31 reported in Table 8 to 1.35.

(see the fourth row of appendix Table A.3), reveals that much of the explanatory power comes from large positive TFP shocks in the Truman and Kennedy-Johnson administrations plus a large negative shock in the Reagan's first term. Fernald's quarterly TFP growth series adjusts for utilization. But since doing so is always somewhat problematic,[17] we repeated the exercise using *annual* data from Basu, Fernald, and Kimball (2006), updated in Fernald (2013).[18] The results, shown in the next row of Table 8, are strikingly similar.[19]

Notice that the results in Table 8 attribute about a quarter of the D-R gap to TFP shocks, even though Table 2 showed a negligible difference between the average values of utilization-adjusted TFP growth under Democratic and Republican presidents. The apparent inconsistency is explained by the lagged effects of TFP growth on output. The Table 8 results control for both current *and lagged* TFP growth rates, as in equation (2), and some of the latter are inherited from the previous term. For example, using Basu *et al*.'s annual series, the average value of utilization-adjusted TFP growth during the final year of the preceding term was 2.7% for Democrats versus only 1.2% for Republicans. Thus, while Democrats inherited weaker GDP growth from the previous administration, as we saw in Figure 3, they also inherited more favorable TFP growth--which the regression uses to explain a portion of the D-R gap.

The final row of Panel B in Table 8 shows results using Gali's (1999) VAR-based measure of *long-run* shocks to labor productivity. We computed these shocks using a VAR(6) that included real GDP, payroll employment, inflation (from the GDP deflator), and the 3-month Treasury bill rate. Gali's measure suggests a smaller role for productivity shocks than the Fernald measures.[20,21]

Utilization-adjusted TFP shocks are a bit of a black box. As with oil shocks, we consider them as mainly reflecting luck. But, of course, we cannot rule out that they have a policy component as well.

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[17] Fernald (2012) himself discusses potential problems with the quarterly adjustments.

[18] The annual specification uses y_t measured as the rate of from Q2 of year t to Q2 of year t+1 and Fernald's annual utilization adjusted TFP growth series as e_t. The specification includes the current and one lag of e_t.

[19] These results depend on the number of lags included in (2). Using Fernald's utilization adjusted TFP, the estimated value of $(\delta-\beta)/\delta$ is 0.23 in the 6-lag benchmark specification shown in Table 8; this falls to 0.08 in the 4-lag specification and increases to 0.303 when 8 lags are used.

[20] Computing Gali's shocks using output and employee hours from the non-farm business sector in place of GDP and payroll employment reduces the estimated value of $(\delta-\beta)/\delta$ from 0.12 to 0.05.

[21] We have also investigated the effects of future ("news") productivity shocks using the identification scheme of Barsky and Sims (2011). Using their data and sample period (1960-2007), "news" and "surprise" components of TFP explain none of the D-R gap (indeed, the gap is larger after controlling for these shocks).

4.5 Wars

Wars are important, and arguably exogenous, fiscal shocks; and the U.S. experienced four major wars in the post-WWII period. Sharp increases in military spending tend to push economies into unsustainable growth spurts, while sharp cutbacks in military spending can cause recessions. For example, Truman presided over the Korean War boom, and Eisenhower ended it; and Johnson presided over the Vietnam buildup while Nixon, after a long delay, ended it. Could it be that much of the Democratic growth edge comes from wars? On second thought, however, the answer is probably no. After all, Reagan initiated a huge military buildup in peacetime, and both Bushes were wartime presidents.[22] So let's examine the data.

A naïve look at the historical record does show a huge partisan gap in the growth rates of federal defense spending, as mentioned earlier. Real military spending grew, on average, by 5.9% under Democrats but only by 0.8% under Republicans (Table 3). However, on average, federal defense spending accounts for just 8% of GDP over the postwar period. It would be hard for a tail that small to wag such a big dog.

One simple but crude way to take out the effect of wars on the Democratic-Republican difference in economic performance is to eliminate the following presidential terms from the analysis: Truman (1949-53) and Eisenhower 1 (1953-1957) for the Korean War, Johnson (1965-1969) and Nixon (1969-1973) for the Vietnam War, Bush I (1987-1991) for the Gulf War, and both Bush II terms for the Iraq and Afghanistan Wars. Table 9 shows the results of doing this. The largest difference by far is associated with the Korean War. In fact, essentially all of the large D-R difference in the average growth of defense spending is associated with Korea. With Truman eliminated, defense spending increased on average by 1.2% during Democratic administrations compared to 0.8% under Republicans. Eliminating the Truman and first Eisenhower terms from the analysis lowers the Democratic-Republican difference in average GDP growth from 1.80% per year to 1.42% per year, or by 21%.

Panel C in Table 8 shows results from using more refined measures of defense spending shocks. The first row is based on defense-related government expenditure shocks identified by Ramey (2010) from the legislative record.[23] The regression coefficients δ and β can be estimated over the common sample period 1949:Q2-2012:Q3, which results in an estimated δ of 1.87 (so

[22] These last three examples, and maybe even Vietnam, suggest that big bursts of military spending may be policy decisions rather than elements of luck. But it seems implausible that they are reactions to GDP growth.
[23] We use an updated version of Ramey's series from Owyang, Ramey, and Zubairy (2013).

the Democratic-Republican difference in average GDP growth is 1.87% per year) and an estimated β of 1.67 (so the Democratic-Republican difference falls to 1.67% per year after controlling for Ramey spending shocks). These defense shocks therefore explain 11% (= (1.87-1.67)/1.87)) of the Democratic-Republican growth difference. Detailed results (displayed in appendix Table A.3) show that Ramey defense spending shocks led to an increase in average GDP growth of 1% during the Truman administration, which dwarfs the Ramey shock for any other administration. It's all about Korea.

The next row of Panel C shows results using defense-related expenditure shocks measured by Fisher and Peters (2010). These shocks are constructed as excess returns for a portfolio of stocks of defense contractors, and they explain none of the Democratic-Republican difference.

On balance, there is not much to the defense-spending explanation of the D-R gap, and what little there is comes entirely from the Korean War.

4.5 The joint effect of "luck" shocks

Of course, oil shocks, productivity shocks and wars are not mutually exclusive events. For example, the high GDP growth during the Truman-2 term reflected positive productivity shocks, an extraordinary defense buildup, and better-than-average oil shocks. Furthermore, different shocks could be correlated. So the joint effects of oil, productivity and wars cannot be determined by simply adding up the shock-specific estimates.

Table 10 shows estimates of the joint effect from versions of equation (2) estimated with multiple shocks. For example, when Hamilton oil shocks, Ramey defense spending shocks, and Fernald TFP shocks are all included in equation (2), the D-R gap falls from 1.87 to 0.85 percentage points. Thus, taken together, these three "luck" shocks explain more than half of the D-R gap. Notice that the contributions of the three shocks are not additive. Moreover, unlike the results for oil shocks taken in isolation (see Panel A of Table 8), these results are not particularly sensitive to whether the Great Recession is included or excluded (compare the first and second rows of Table 10).

5. Democratic versus Republican policy differences

5.1 Was it fiscal policy?

Defense spending shocks explain very little of the D-R growth differential, and none since Korea. But what about other sorts of fiscal policy shocks or deliberate (systematic) fiscal stabilization policy?

Panel D of Table 8 includes two measures of *tax* shocks constructed from the narrative record. The first is the Romer and Romer (2010) measure. The other is personal and corporate tax shocks from Mertens and Ravn (2013) which build on the Romer and Romer series. The table shows that these shocks explain none of the Democratic-Republican difference.

Next, the table tries tax and spending shocks constructed from the fiscal policy VAR model used in Mertens and Ravn (2013). This VAR includes seven variables: real per capita GDP, government purchases, average personal and corporate tax rates and tax bases, and the level of government debt. Shocks to government spending are identified by ordering government purchases first in a Choleski ordering (motivated by the identification restriction used in Blanchard and Perotti (2002)). These identified government spending shocks explain essentially none of the Democratic-Republican difference. We found similar results when we used the Ramey defense shocks discussed earlier as an instrument to identify government spending shocks.[24]

So far, our analysis of fiscal policy has focused on *shocks* rather than on *systematic* differences between Democrats and Republicans in their policy reactions to the state of the economy. Limited data make it difficult to estimate even relatively simple policy functions, such as those used in Auerbach (2012), reliably.[25] However, we next offer a simple piece of empirical analysis that suggests little difference between Democratic and Republican presidents in their discretionary fiscal reactions to economic activity.

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[24] We also carried out the analysis using VAR-based tax shocks estimated by Mertens and Ravn (2013). These VAR shocks explain nearly half of the Democratic-Republican difference—an astonishingly high share. But examination of the shocks led us to be skeptical. The high explanatory power arises from a VAR shock that is identified using corporate tax rate shocks from the legislative record. This identified shock explains a large fraction of real GDP growth rates in (2) (the marginal R^2 is 0.40), and it explains much of the decline in real GDP during the recessions of 1957 (Eisenhower-2) and 1974 (Nixon-Ford) despite the absence of any major changes in corporate tax rates preceding these recessions. Thus, we are inclined to discount this estimate as a fluke rather than as a coherent explanation of the Democratic-Republican difference.

[25] It is interesting, however, that Auerbach and Gorodnichenko's (2012) analysis suggests stronger effects of fiscal policy during recessions, so that Republicans (who presided during more recessions) had a more powerful fiscal lever than Democrats.

Figure 3 plots the four-quarter change in the structural surplus (as a share of potential GDP) over each of the four years of each presidential term (y_t) against the four-quarter change in real GDP lagged one year (x_{t-4}). Plus signs (+) connote observations for Democratic presidents and dots (•) connote observations for Republicans. There are four observations per term, but because the structural surplus data begin only in 1959, the observations start with the Kennedy-Johnson term. The figure shows regression lines fit separately to the observations corresponding to Democratic and Republican presidents. These lines are like rump fiscal reaction functions for the two parties, and there is little in the picture to suggest any meaningful partisan difference.

5.2 Was it monetary policy?

U.S. presidents do not control monetary policy, of course. And since the famous Treasury-Fed accord occurred in 1951, pre-Accord data cannot be influencing our calculations much. Yet we know, for example, that Arthur Burns was disposed to assist Richard Nixon's reelection campaign in 1972.[26] And we know that President Reagan was eager to get rid of Paul Volcker, whom Reaganites viewed as insufficiently pliable, in 1987.[27] While these are both examples of Republican influence on monetary policy,[28] could it be that Democratic presidents have wielded their appointment powers more skillfully to obtain more growth-oriented Federal Reserve Boards? The proposition seems implausible, but let's try to test it.

We label a Fed chairman as a Democrat if he was first appointed by a Democratic president, and as a Republican if he was first appointed by a Republican president. Under this classification, Marriner Eccles, Thomas McCabe, William McChesney Martin, G. William Miller, and Paul Volcker code as Democrats while Arthur Burns, Alan Greenspan, and Ben Bernanke code as Republicans—even though Volcker was probably the most hawkish of the lot and Greenspan and Bernanke were probably the most dovish.

Did the U.S. economy grow faster under Democratic Fed chairmen than under Republican chairs? The answer is yes. Table 11 shows that average real GDP growth was 4.00% when Democrats led the Fed, but only 2.74% when Republicans did—a notable growth gap of 1.26 percentage points. The table displays average growth rate under all four possible party configurations of president and Fed chairman. We see that the economy grew fastest (5.27%)

[26] See, for example, Abrams (2006).
[27] See Silber (2012), Chapter 15.
[28] Greenspan's tight monetary policies, however, are widely (and probably correctly) blamed for costing George H.W. Bush a second term.

when Democrats held both offices (example: Truman and Martin) and slowest (2.41%) when Republicans held both (example: Bush I and Greenspan). Faster growth under Democratic rather than Republican Fed chairmen is apparent whether the president was a Democrat or a Republican, but the effects interact: The difference is minimal when a Republican occupied the Oval Office and large when a Democrat did.

Of course, Fed chairmen often outlast the presidents who appoint them; both Martin and Greenspan held the office for over 18 years, and Republican-appointed chairmen led the Fed continuously from 1987 through 2013. While we have already seen that differential trends had essentially no impact on the D-R growth gap for the president, changes in trend might be important for explaining the gap for the Fed. In particular, average GDP growth was noticeably higher in the first half of our sample than in the second half (3.77% versus 2.80%), and three quarters of the time that the FRB chair was a Democrat came in the first half. Detrending GDP growth rates (using the $\kappa = 67$ trend shown in appendix Figure A.1) significantly reduces the D-R gap for the Fed chairman, from 1.26 percentage points (using raw growth rates) to just 0.43 percentage point (using detrended growth rates).

If Federal Reserve policy has fostered faster growth under Democratic presidents, the FOMC was *not* doing it via lower interest rates. The average *levels* of both nominal and real interest rates were approximately 1 percentage lower under Democratic presidents, but these differences are not statistically significant. There is, however, a slight tendency for both the nominal and real Federal funds rate to trend *upward* during Democratic presidencies and *downward* during Republican presidencies, suggesting that the Fed normally tightens under Democrats and eases under Republicans.[29] Of course, such an empirical finding does not imply that the Fed is "playing politics" to favor Republicans. Rather, it is just what you would expect if the economy grows faster (with rising inflation) under Democrats and slower (with falling inflation) under Republicans—as it does.

Figure 4 presents two scatter plots that summarize the correlation between changes in the Federal funds rate and real growth, in much the same way as Figure 3 did for fiscal policy. Specifically, each point plots the four-quarter change in the federal funds rate on the *Y* axis and the four-quarter change in the logarithm of real GDP, lagged one year, on the *X* axis for each

[29] For these simple calculations, we use *ex post* rather than *ex ante* real rates, with inflation measured over the current and three preceding quarters.

year of each presidential term (so there are four points for each term). Democratic terms are again plotted as plus signs and Republican terms are plotted as dots. An upward slope connotes a stabilizing monetary policy: raising interest rates when the economy grows faster.

Panel A plots the change in *nominal* interest rates, and Panel B uses *real* interest rates (computed as $r_t = R_t - 100\times\ln(P_t/P_{t-4})$, where R_t is the nominal rate and P_t is the PCE price deflator). With real rates, the scatterplot shows roughly a zero slope across either Democratic or Republican presidencies, that is, virtually no monetary stabilization under either party. By contrast, nominal rates show distinctly positive slopes under both parties, with a steeper slope under Republicans. Thus, if there is any partisan tinge to monetary policy at all, it seems to favor Republican presidents.

Panel E in Table 8 considers the effect of controlling for monetary policy shocks in the same regression framework we have used to control for other shocks. The first entry uses shocks identified from the narrative record by Romer and Romer (2004); these are available for only a small portion of the sample: 1970-1996. The D-R gap is changed little by controlling for the Romer and Romer shocks over this particular subperiod, but that doesn't tell us much because the gap was exceptionally small then (just 47 basis points).

The other two monetary policy shocks are computed from SVAR models. The first are the interest rate shocks identified by Sims and Zha (2006) in their Markov-switching SVAR, and the second uses a standard Cholesky identification with the Federal funds ordered last in a VAR that also includes real GDP, inflation, and commodity prices. (The sample period is truncated at 2008:Q4 to avoid potential nonlinearities associated with the zero-lower bound for the funds rate.) Evidently, as the table indicates, controlling for monetary policy shocks using any of these measures pushes in the "wrong" direction, suggesting a policy-induced growth advantage for Republican presidents—as suggested by Figure 4.

5.3 Financial sector disruptions

Financial market disruptions are difficult to measure and doubtless contain important endogenous components, maybe even policy related. We measure such shocks in two distinct ways. The first uses the Federal Reserve's Senior Loan Officers Opinion Survey (FRB SLOOS), which provides a direct, albeit subjective, measure of credit market tightening or loosening. We use a version of the FRB SLOOS that is available from 1970.

The second method uses various interest rate spreads. We consider three. The first is the Baa-Aaa bond yield spread, a risk spread on long-term bonds; it is available over the entire postwar sample period. The second is the "excess bond premium," constructed by Gilchrist and Zakrajšek (2012), which measures the spread of corporate over riskless bonds, after controlling for the normal effect of the business cycle.[30] As discussed in Gilchrist and Zakrajšek (2012) and Gilchrist, Yankov, and Zakrajšek (2009), the GZ spread is an indicator of credit market conditions such as the price of bearing risk. It is available only from 1973. The final spread is the Eurodollar-Treasury bill spread (the "Ted" spread), which is a common indicator of liquidity problems, available from 1972.

We computed shocks to each of these four financial variables using a bivariate SVAR(4) that included the financial variable and GDP growth rates. The financial shock was identified using a Wold causal ordering with the financial variable ordered after GDP.

Panel F of Table 8 shows the results. The two risk spreads (Baa-Aaa and the GZ spread) explain 21 to 34 basis points of the D-R gap. But note that the sample periods are radically different, so that, for example, the 34 bp explained by the Gilchrist-Zakrajšek measure amounts to a whopping 51% of the entire gap over 1975-2012. Looking at the next two rows of Panel F, however, we see that *all* the explanatory power of these two spreads derives from the recent financial crisis and the recovery therefrom. When the sample ends in 2007:Q4, the fraction of the D-R gap explained by the GZ spread drops from 51% to 2%.

The Ted spread has essentially no effect on the estimated D-R gap over the full period since 1973, and actually goes the wrong way when the period is truncated after 2007:4. And adding the FRB SLOOS actually *increases* the estimated gap over either sample. So on balance, despite the eye-catching 51% explanatory power for the GZ spread over the 1975-2012 sample, we are not inclined to attribute much of the D-R gap to financial shocks—except, of course, for the improvement of Obama over Bush II.[31] Financial shocks were clearly an important factor in the Great Recession.

[30] The GZ spread also controls for maturity, callability, and default risk.
[31] Dropping the Bush II-2 and Obama administrations from the sample *raises* the D-R gap. See the final row of Table 9.

5.4 Other explanations

In this section we consider two additional factors that might (or might not) be related to economic policy: confidence and uncertainty. We also ask what two well-known DSGE models say about the causes of the D-R gap.

5.4.1 Confidence and Expectations

"Confidence," be it consumer confidence or business confidence, is a slippery concept—and would not normally be thought of as an instrument of economic policy. But the observed faster GDP growth under Democrats could have elements of a self-fulfilling prophecy if the election of a Democratic president boosts confidence (because people *believe* Democrats will do better) and that, in turn, boosts spending.

Two facts seem to point in this direction. First, two of the major sectors where the superior Democratic growth record is most pronounced are consumer durables and business investment, spending on each of which is presumably sensitive to confidence. Second, the most extreme partisan gap in growth performance occurs in the first years of a newly-elected Democratic presidents. While that is suggestive, can we find more direct evidence that confidence drives the partisan differences?

Since February 1979, the Gallup Poll has been asking Americans, "In general, are you satisfied or dissatisfied with the way things are going in the United States at this time?"[32] Looking at how the balance of "satisfied" versus "dissatisfied" Americans changed during presidential transition periods shows only small impacts of presidential elections, and a negligible difference between the two parties.[33]

Business confidence is even harder to measure. The longest consistent time series seems to be the National Federation of Independent Business's (NFIB) Small Business Optimism Index, which dates back to 1975. Those data enable us to consider five presidential transitions from one party to the other, each running from the fourth quarter of the election year to the first quarter of the following year. Three of these transitions are Republican-to-Democrat (Ford to Carter, Bush I to Clinton, and Bush II to Obama), and the average change in the NFIB index during them was just +0.2 points. (This includes the Bush II to Obama transition, during which the economy was

[32] This question preceded the now-famous "right-track/wrong track" question, which has a much shorter history.
[33] Since the precise calendar dates of the survey change over time, we could not always "bracket" the election-to-inauguration period. Furthermore, the available data cover only four transitions: Carter to Reagan, Bush I to Clinton, Clinton to Bush II, and Bush II to Obama.

collapsing.) The other two are Democrat-to-Republican transitions (Carter to Reagan, and Clinton to Bush II), where the change in the NFIB index averages -2.0 points. Surprisingly, this very pro-Republican portion of the population (proprietors of small businesses) has been a bit more optimistic about Democrats. But the differences are small.

The performance of the stock market between Election Day and Inauguration Day might be taken, in part, as a statement of investor confidence—or lack thereof—in the incoming administration. It gives a slight edge to incoming Republicans,[34] despite the fact—cited earlier--that stock prices actually rise much faster under Democratic presidents than under Republican presidents. Specifically, the S&P 500 gained a minuscule 0.15%, on average, during the four Democrat-to-Republican transitions, but lost an average of 1.38% during the four Republican-to-Democrat transitions. However, more than 100% of the average Democratic transition loss came because stock prices were crashing during the Obama transition. Since the economy was collapsing at the time, it is hard to attribute this drop to lack of confidence in Barack Obama.

The University of Michigan's Index of Consumer Sentiment (ICS) has been collected on a consistent basis since 1960. Barsky and Sims (2012) note that the ICS is based in part on answers to questions focused on evaluating the *current* (or recent past) economic situation and in part on answers to questions focused on expectations of *future* conditions. The ICS can be decomposed into an index associated with current conditions (the ICC) and another associated with expectations of future conditions (the ICE). We construct "shocks" to each of these two indices by using the same procedure as for the financial variables, that is, by ordering it last in a bivariate SVAR(4) that also includes GDP growth rates.

Results from adding each of these shocks to equation (2) are shown in the first two rows of Panel G of Table 8. Evidently, controlling for the current-conditions component of the Index of Consumer Sentiment has no effect on the D-R gap. In contrast, shocks to consumer expectations, thus measured, explain 26% of the 1.33 percentage point D-R gap over the 1962-2013 period, a notable amount.[35]

The final entries in Table 10 add shocks to ICE to the oil and TFP shocks considered previously. (In these regressions, we do not include defense shocks, because they stem primarily

[34] We measure the closing price of the S&P 500 from the day before Election Day (always a Monday) until Inauguration Day (January 20th). In one case, Inauguration Day fell on a Saturday; in that case, we used January 19th.

[35] We find similar results using the 5-year-ahead and 12-month-ahead expectations component of the ICE.

from the Korean War, and the ICE series starts only in 1960) Here the combination of three different shocks explains 62% of the D-R growth gap, but less if the financial crisis is omitted.

5.4.2 Uncertainty

Uncertainty is sometimes viewed as indicating a lack of confidence. The final entry in Panel G of Table 8 shows results using shocks to the historical news-based index of policy uncertainty developed by Baker, Bloom, and Davis (2013), where the shocks are again computed using a bivariate SVAR(4). Controlling for uncertainty, at least as measured by the BBD index, has no effect on the D-R growth gap.

5.4.3 Accounting for the D-R gap using two DSGE models

As a final exercise, we ask how three DSGE models account for the D-R gap. Notice that this methodology amounts to a "holistic" approach that takes "all" factors (that are in the model) into account, rather than a piecemeal approach that looks at one factor at a time—which is what we have done up to now.

The models were estimated over different sample periods (shown in the first row of Table 12), and use somewhat different measures of output. The well-known Smets-Wouters (2007) (SW) model uses demeaned per capita values of real GDP; the Leeper, Plante, and Traum (LPT) (2010) (LPT) model uses per capita measures, log-detrended values of consumption, investment, and government spending, with per capita GDP computed from C+I+G using a log-linear approximation; and the Schmitt-Grohé and Uribe (2012) (SGU) model use GDP growth rates. The second row of Table 12 shows the D-R gap computed using the model-specific sample periods and data. The D-R gap ranges between 1.15 and 1.53 percentage points.

The remaining rows of the table decompose each D-R gap using realizations of the shocks for the relevant models. While the list of shocks differs substantially across models, we have tried to group the shocks into familiar categories (TFP, Investment, and so forth).[36]

Neutral productivity shocks explain approximately 20 basis points of the D-R gap in each of the models. This is smaller than the 41 basis points for utilization-adjusted TFP shocks shown in Table 8, although approximately half of the difference is explained by differences in the sample periods. Both the SW and LPT models attribute much of the D-R gap to investment-specific productivity shocks, but these have little effect in the SGU model. The LPT and SGU models

[36] For the SGU model, the TFP and Investment categories include the contributions from the stationary and non-stationary shocks in the model, and each category includes both realized and anticipated shocks. Detailed results for the SGU model are presented in appendix Table A.5.

attribute much of the D-R gap to labor shocks (labor supply shocks in LPT, and wage markup shocks in SGU). Wage markup shocks are modestly important in the SW model, but labor supply shocks have huge effects in the LPT model. Intertemporal preference shocks have large, but inconsistent, effects across the models.

These models suggest (or impose) little role for policy in explaining the D-R gap. Monetary shocks in the SW model favor Republicans, which is consistent the evidence presented in Table 8. Shocks to government purchases have little effect in any of the models--although the earliest sample period begins in 1955 and thus does not the Korean War. This is also consistent with our reduced-form findings. Finally, the tax and transfer shocks in the LPT model do not explain the D-R gap.

So, where they cover the same ground as our one-variable-at-a-time methodology, the DSGE models seem to deliver roughly the same messages: Fiscal policies cannot explain the D-R growth gap, money shocks marginally favor Republicans, and productivity shocks are (perhaps) a small part of the story. Where the models differ, they seem mainly to raise questions of interpretation. For example, what does it mean to say that *private* intertemporal preferences differ between Democratic and Republican presidencies?

6. Does a partisan growth gap show up in other countries?

Finally, we ask whether other Western democracies display comparable growth differences when governed by left-leaning versus right-leaning parties. To be useful comparators, the country must (a) have a stable two-party system (that eliminated Italy); (b) change the president's or prime minister's party often enough to permit statistical analysis (that eliminated Japan); and (c) offer a reasonably long time series on real GDP (that eliminated many countries). We also wanted to stick with large countries (that eliminated The Netherlands and many others). In the end, we studied partisan differences in four other countries: the United Kingdom, Canada, France, and Germany. Results are summarized in Table 13.

6.1 The United Kingdom

We were able to trace quarterly real GDP in the UK back to 1955:Q1. Over that period, the British parliamentary system has been dominated by either the Labor or the Conservative ("Tory") party, although there have been occasional coalition governments. "Labor" and "Conservative" in the UK map very roughly into "Democratic" and "Republican" in the US,

although the ideological differences between the two British parties are historically greater than between the two American parties, and the entire political spectrum is shifted notably to the left in the UK.

Of the 229 available quarters, Labor ruled in 95, over which the average GDP growth rate was 2.47%.[37] Conservative governments ruled in 134 quarters, over which the average growth rate was 2.67%. Thus the partisan growth gap in the UK goes in the opposite direction from that in the US, but is tiny (20 basis points) and comes nowhere close to statistical significance.

6.2 Canada

Canada is like the US in many respects, and has long-lived Liberal and Conservative parties like the UK, though Canada's are probably less ideological. Canadian quarterly GDP data go back only to 1961. Thus we have 205 quarters to work with, of which 135 were under Labor governments and 70 were under Conservative governments. A partisan growth gap similar to that in the United States emerges in Canada: Growth averaged 3.89% under Labor but only 2.48% under the Conservatives.

Canadian economic performance tends to be dominated by that of its giant neighbor to the south. On a quarterly basis, the correlation between Canadian and US GDP growth rates is 0.49, which is quite high for such noisy data. Indeed, empirical macroeconomic studies of Canada often find US variables to be as important or more important as independent variables than Canadian variables.[38]

So we also compared Canadian growth rates when the *US president* was a Democrat versus a Republican. The results were striking. Canadian growth averaged 4.30% when the US had a Democratic president but only 2.67% when the US had a Republican president. That transnational partisan gap of 1.63 percentage points is actually a bit larger than the purely Canadian gap (1.41 percentage points) and almost as large as the US gap (1.80 points).[39] This could be because US booms and busts cause Canadian booms and busts, or it could be because Canada generally had Liberal prime ministers when the US had Democratic presidents and had Conservative prime ministers when the US had Republican presidents. The former seems more

[37] In parliamentary systems such as the UK's, elections come at various times. We "rounded" the election quarter according to which party ruled for the majority of that quarter. Then we counted the newly-elected party as responsible for the economy beginning in the *next* quarter. Example: The Blair (Labor) government began on May 2, 1997. We counted 1997:2 as having a Conservative prime minster, and started counting 1997:3 as under Labor.
[38] For a recent discussion, see Bank of Canada (2013).
[39] But note that the time periods do not match.

important than the latter. Both countries were led either by the more liberal or by the more conservative party 57% of the time, and by parties of different ideological stripes 43% of the time. The 57-43 split, while significantly different from 50-50 with 205 observations, is substantively close to 50-50. Canada seems more tightly linked to the US economically than politically.

6.3 France

France is trickier because the names of the left-leaning and right-leaning parties change over time. But they can readily be identified as either labor/socialist or republican/Gaullist. Quarterly GDP data allow us to trace French economic history all the way back to 1949. Of those 253 quarters, France had a "labor" government in 96,[40] with an average real GDP growth rate of 3.19%. Of the 157 quarters with a "republican" government, the growth rate averaged 3.42%. Thus, on this dimension, France resembles the UK, not the US or Canada. The right does very slightly (and insignificantly) better.

6.4 Germany

Germany, meaning *West* Germany before 1991, has had a stable two-party system at least since 1949. The Christian Democratic Union (CDU) is the center-right party, and the Social Democratic Party (SPD in German) is the center-left party. The bigger challenge in Germany is obtaining a long time series on quarterly GDP that covers *all* of Germany, including the former *East* Germany. The furthest we can go back is to 1970, so we have only 169 quarters to work with.[41] Of these, 89 quarters were under a CDU chancellor and 80 were under an SPD chancellor. Partitioning the growth data long these partisan lines, we find no CDU-SPD difference at all. Rounded to the first decimal place, Germany's annualized growth rate was 2.2% regardless of which party was dominant.

To summarize, in terms of growth differences by political party, Canada closely resembles the United States—but this may be, in part, because the giant American economy pushes the much smaller Canadian economy around. The UK, France, and Germany do not exhibit partisan

[40] In two instances between 1981 and 1995, there was "cohabitation." We code these as "labor." In addition, there were two very brief periods (between DeGaulle and Pompidou, and between Pompidou and Giscard) in which the technocrat Alain Poher served as interim president. We code those two quarters as Gaullist.

[41] These data come from the German Federal Statistical Office. The series can be found under "Long Term Series from 1970" at: https://www.destatis.de/EN/FactsFigures/NationalEconomyEnvironment/NationalAccounts/DomesticProduct/DomesticProduct.html

differences in growth rates. Further study is surely merited, but the stark left-right gap in economic performance may be largely a U.S. phenomenon.

7. Conclusions

While economists, political scientists, and even lay people have known for decades that macroeconomic variables like GDP growth and inflation influence elections, this paper makes a landing on a previously-dark intellectual continent: How, if at all, do election outcomes influence subsequent economic performance. What have we learned from this exploration?

There is a systematic and large gap between the US economy's performance when a Democrat is President of the United States versus when a Republican is. Democrats come out better on almost every criteria. Using real GDP growth over the full sample, the gap is 1.80 percentage points--which, at about 55% of the grand mean, is stunningly large. The partisan growth advantage is correlated with Democratic control of the White House, not with Democratic control of Congress. A similar partisan growth gap appears in Canada, but not in the UK, France, or Germany.

Much of the D-R growth gap in the United States comes from business fixed investment and spending on consumer durables. And it comes mostly in the first year of a presidential term. Yet the superior growth record under Democrats is not forecastable by standard techniques, which means it cannot be attributed to superior initial conditions. Nor does it stem from different trend rates of growth at different times, nor to any (measureable) boost to confidence from electing a Democratic president.

Democrats would no doubt like to attribute the large D-R growth gap to better macroeconomic policies, but the data do not support such a claim. Fiscal policy reactions seem close to "even" across the two parties, and monetary policy is, if anything, more pro-growth when a Republican is president—even though Federal Reserve chairmen appointed by Democrats outperform Federal Reserve chairmen appointed by Republicans.

It seems we must look instead to several variables that are mostly "good luck." Specifically, Democratic presidents have experienced, on average, better oil shocks than Republicans, a better legacy of (utilization-adjusted) productivity shocks, and more optimistic consumer expectations (as measured by the Michigan ICE). The latter comes tantalizingly close to a self-fulfilling prophecy in which consumers *correctly* expect the economy to do better under Democrats, and

then make that happen by purchasing more consumer durables. But direct measures showing increasing optimism after Democrats are elected are hard to find.

These three "luck" factors together (oil, productivity, and ICE) explain 46-62% of the 1.80 percentage point D-R growth gap. The rest remains, for now, a mystery of the still mostly-unexplored continent. The word "research," taken literally, means *search again*. We invite other researchers to do so.

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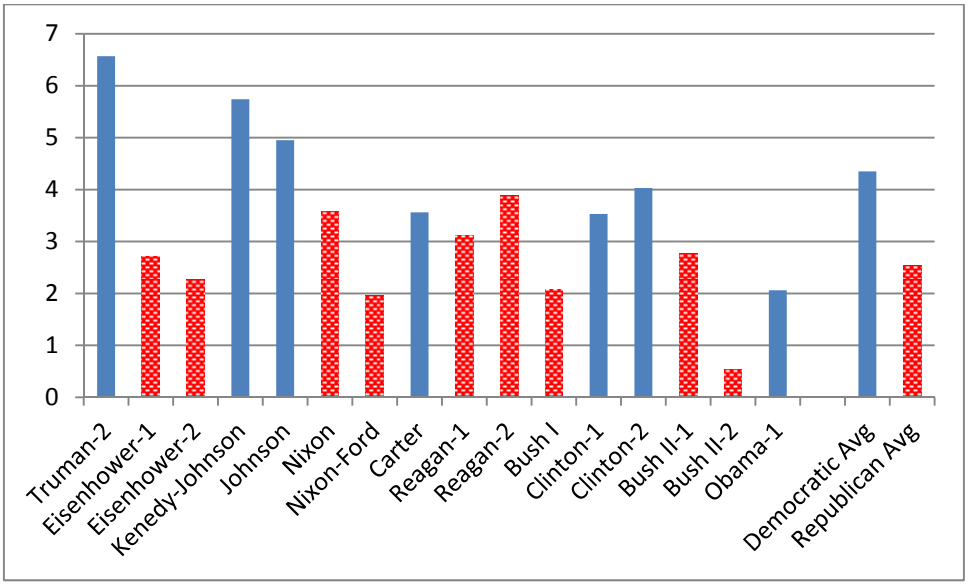
Figure 1

A. Average annualized GDP growth, by term



B. Average annualized GDP growth, by presidency

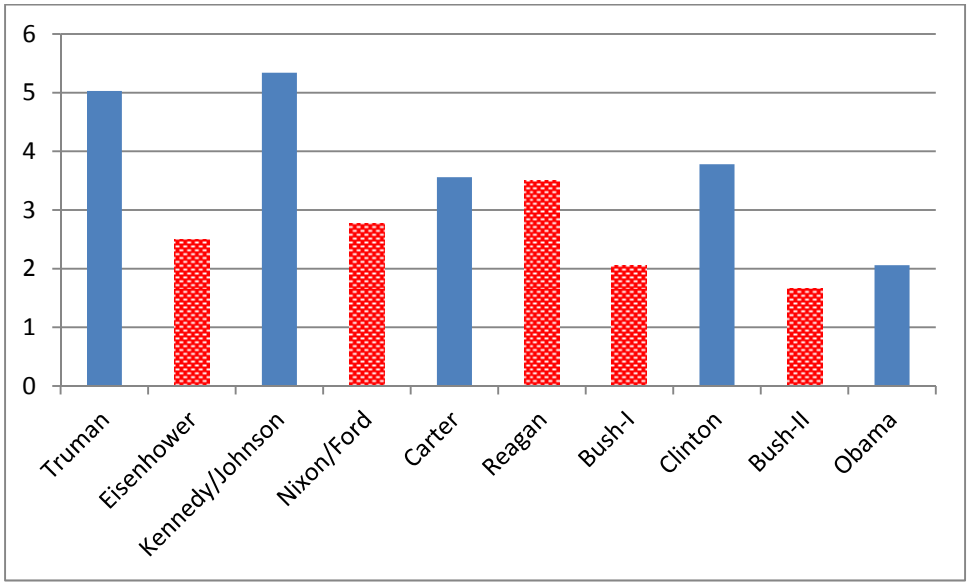
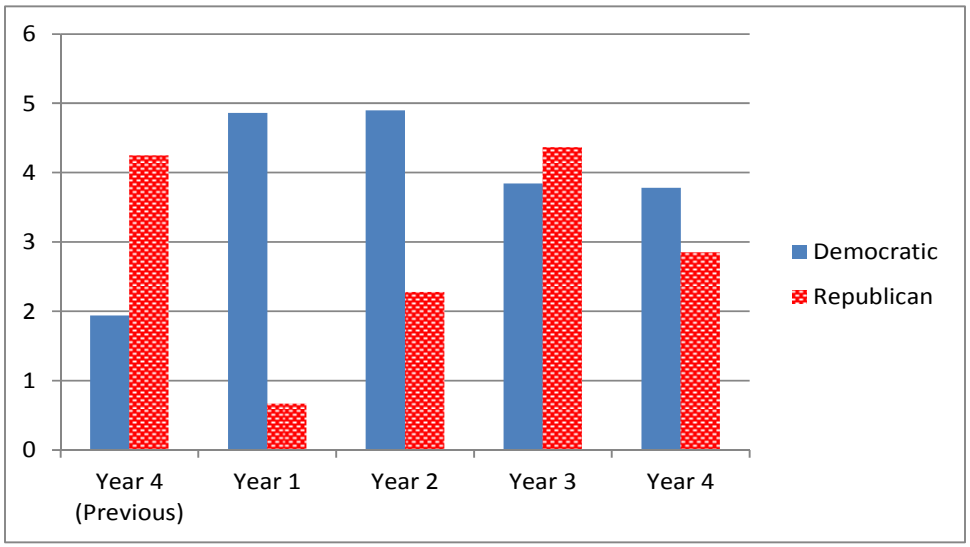
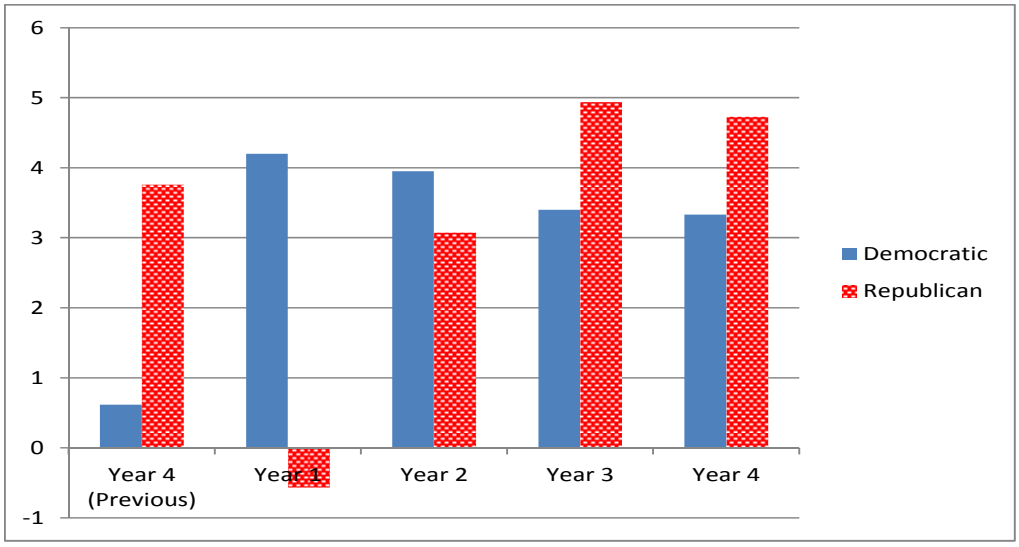


Figure 2

A. Growth rates by year, within all 16 terms



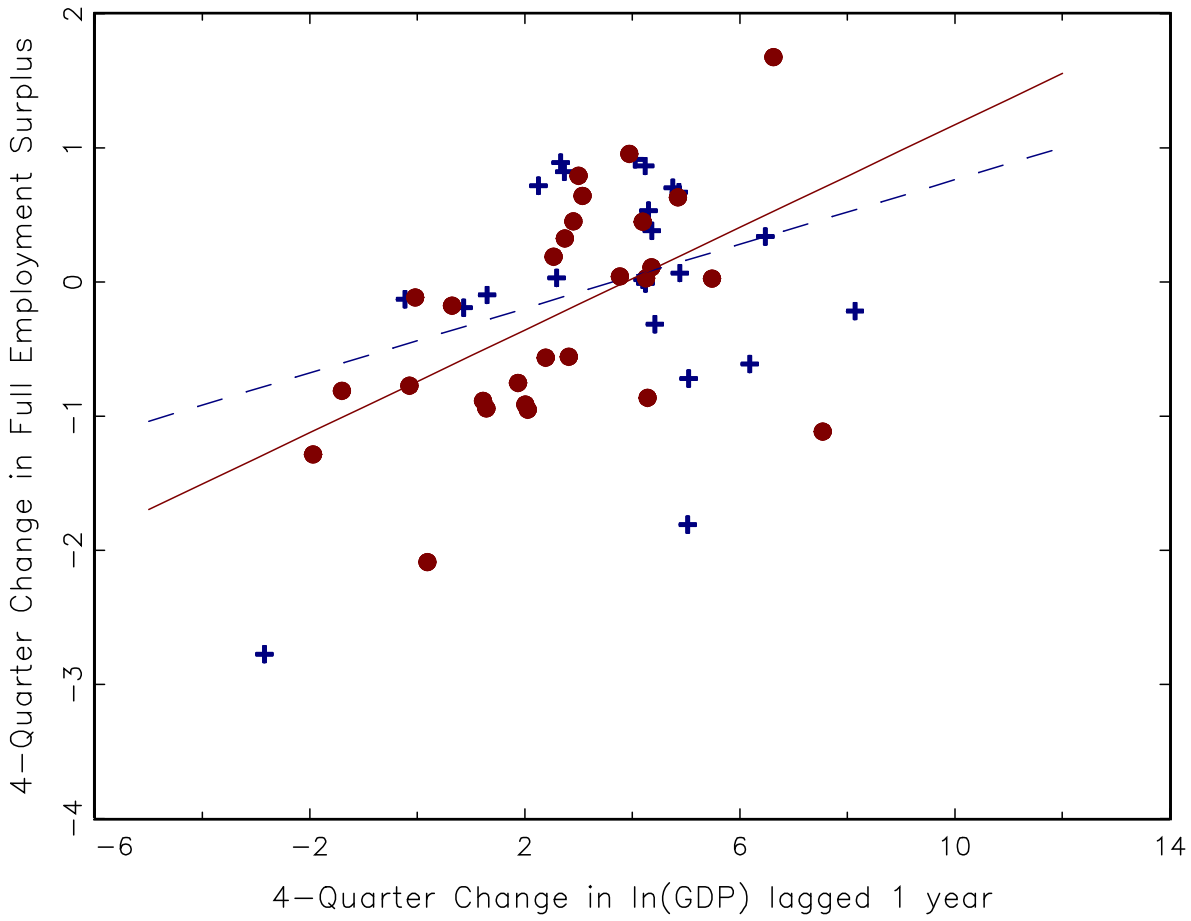
B. Growth rates by year, only for terms preceded by a president of the opposite party



Notes: Panel A shows average growth rates in each year of Democratic and Republican terms for each of the 16 terms in our sample. Panel B shows average growth rates in each year of the eight terms preceded by a president of the opposite party (Eisenhower-1, Kennedy-Johnson, Nixon, Carter, Reagan-1, Clinton-1, Bush II-1, and Obama-1).

Figure 3

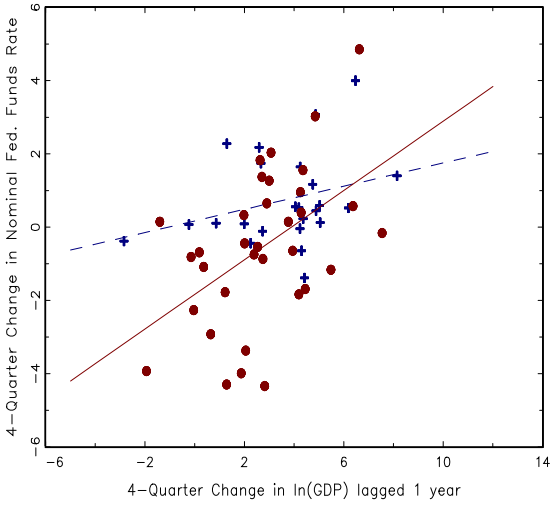
Change in full employment surplus and lagged GDP growth



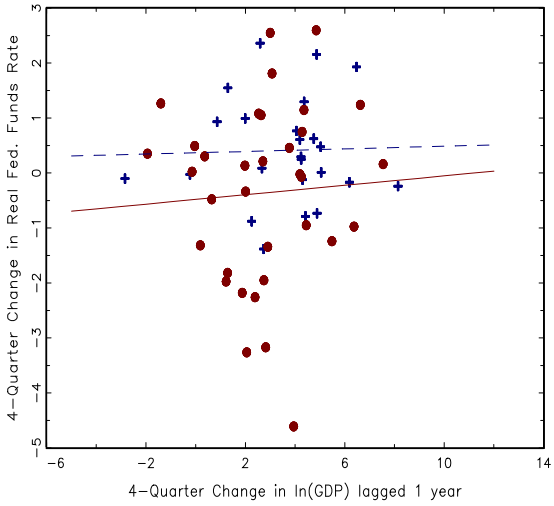
Democrats: + and dashed line
Republicans: circles and solid line

Figure 4
Change in Federal Funds rate and lagged GDP growth

A. Nominal Rates



B. Real Rates



Democrats: + and dashed line
Republicans: circles and solid line

Table 1
Average GDP growth rate by term

Rank	Term	Party	Growth Rate (%)
1	**Truman**	**D**	**6.57***
2	**Kennedy-Johnson**	**D**	**5.74**
3	**Johnson 2**	**D**	**4.95**
4	**Clinton 2**	**D**	**4.03**
5	*Reagan 2*	*R*	*3.89*
6	*Nixon 1*	*R*	*3.57*
7	**Carter**	**D**	**3.56**
8	**Clinton 1**	**D**	**3.53**
9	*Reagan 1*	*R*	*3.12*
10	*G.W. Bush 1*	*R*	*2.78*
11	*Eisenhower 1*	*R*	*2.72*
12	*Eisenhower 2*	*R*	*2.27*
13	*G.H.W. Bush*	*R*	*2.05*
14	**Obama 1**	**D**	**2.06**
15	*Nixon-Ford*	*R*	*1.97*
16	*G.W, Bush 2*	*R*	*0.54*

* The Truman figure drops to 5% if we include the balance of his unelected term: 1947:2 through 1949:1.

Table 2
Average values by party of president

Variable	Democratic	Republican	*Difference*	*p*-value
A. GDP and Recessions				
GDP (GR)	4.35 (0.57) [0.46]	2.54 (0.33) [0.45]	1.80 (0.66) [0.64]	0.01
Quarters-in-Recession	1.14 (0.51) [0.56]	4.56 (0.78) [1.03]	-3.41 (0.93) [1.13]	0.01
B. Other Output Measures				
GDP Per Capita (GR)	3.11 (0.46) [0.41]	1.35 (0.36) [0.45]	1.76 (0.58) [0.61]	0.01
Nonfarm Business Output (GR)	4.82 (0.56) [0.52]	2.67 (0.44) [0.61]	2.15 (0.71) [0.80]	0.01
Industrial Production (GR)	5.56 (0.96) [0.84]	1.79 (0.61) [0.93]	3.77 (1.14) [1.24]	0.00
C. Employment and Unemployment				
Employment (Payroll) (GR)	2.59 (0.41) [0.36]	1.17 (0.32) [0.38]	1.42 (0.52) [0.49]	0.02
Employee Hours (NFB) (GR)	2.22 (0.31) [0.39]	0.57 (0.39) [0.50]	1.65 (0.50) [0.58]	0.01
Employment (HH) (GR)	1.76 (0.28) [0.25]	1.20 (0.26) [0.31]	0.56 (0.38) [0.37]	0.17
Unemployment Rate (Level, PP)	5.64 (0.67) [0.41]	6.01 (0.41) [0.29]	-0.38 (0.78) [0.47]	0.62
Unemployment Rate (Change, PP)	-0.83 (0.42)	1.09 (0.45)	-1.91 (0.62)	0.01
D. Stock Returns and Corporate Profits				
Returns SP500 Index (PP)	8.08 (2.00) [2.57]	2.70 (2.84) [3.20]	5.39 (3.48) [4.23]	0.17
Corporate Profits (Share of GDI)	5.62 (0.32) [0.23]	4.74 (0.20) [0.16]	0.88 (0.38) [0.27]	0.03
E. Real Wages and Productivity				
Compensation/Hour (GR)	1.81 (0.54) [0.35]	1.43 (0.34) [0.27]	0.38 (0.64) [0.43]	0.54
Ouput/Hour NFB (GR)	2.55 (0.46) [0.37]	2.08 (0.31) [0.30]	0.46 (0.55) [0.49]	0.39
TFP (GR)	1.89 (0.47) [0.37]	0.86 (0.31) [0.35]	1.03 (0.56) [0.53]	0.08
TFP (Util Adj) (GR)	1.35 (0.37) [0.30]	1.16 (0.25) [0.28]	0.19 (0.45) [0.39]	0.66
F. Structural Government Surplus				
Surplus/Pot.GDP (PP)	-1.51 (0.86) [0.48]	-2.20 (0.22) [0.24]	0.69 (0.89) [0.51]	0.43

Table 2 (Continued)

Variable	Democratic	Republican	Difference	*p*-value
G. Inflation				
Inflation PCED (Level, PP)	2.97 (0.95) [0.59]	3.32 (0.63) [0.41]	-0.35 (1.14) [0.68]	0.73
Inflation GDPD (Level, PP)	2.88 (0.88) [0.55]	3.44 (0.60) [0.39]	-0.56 (1.06) [0.64]	0.59
Inflation PCED (Change, PP)	1.05 (0.67)	-0.83 (0.87)	1.88 (1.10)	0.12
Inflation GDPD (Change, PP)	0.94 (0.69)	-0.82 (0.84)	1.75 (1.09)	0.15

Notes: The units for each variable are given in parentheses in the first column: GR denotes growth rate in percentage points at an annual rate; PP denotes percentage points; Change denotes average value in last year of term minus average value in in last year of previous term. The numbers in parentheses are standard errors computed by clustering observations by term; the numbers in brackets are Newey-West standard errors computed using 6 lags. The *p*-value in the last column is for a nonparametric test of the null hypothesis of no difference between the parties.

Table 3
Average growth rates by spending component

Sector	Share	Democratic	Republican	Difference	*p*-value
GDP	1.00	4.35 (0.57) [0.46]	2.54 (0.33) [0.45]	1.80 (0.66) [0.64]	0.011
Consumption	0.63	3.93 (0.50) [0.38]	3.08 (0.35) [0.37]	0.84 (0.61) [0.52]	0.173
Goods	0.28	4.39 (0.54) [0.54]	2.84 (0.53) [0.59]	1.56 (0.76) [0.79]	0.065
Durable	0.09	8.62 (1.53) [1.51]	4.66 (1.19) [1.32]	3.96 (1.94) [2.03]	0.056
Nondurable	0.20	3.00 (0.35) [0.31]	2.21 0.30) [0.33]	0.80 (0.46) [0.45]	0.101
Services	0.35	3.72 (0.50) [0.32]	3.42 (0.33) [0.25]	0.30 (0.60) [0.39]	0.606
Investment	0.17	8.96 (1.25) [2.01]	3.05 (1.36) [1.89]	5.91 (1.85) [2.75]	0.001
Fixed	0.17	6.51 (0.64) [1.04]	2.33 (1.06) [1.29]	4.18 (1.24) [1.55]	0.005
Nonresidential	0.12	7.46 (0.78) [1.04]	2.69 (0.67) [1.16]	4.77 1.03) [1.47]	0.001
Residential	0.05	5.19 (1.16) [2.14]	2.82 (2.74) [2.90]	2.37 (2.97) [3.53]	0.570
Exports	0.08	6.28 (1.25) [1.53]	7.05 (1.78) [1.58]	-0.77 (2.18) [2.29]	0.743
Imports	−0.09	8.49 (1.46) [1.41]	6.10 (1.46) [1.47]	2.39 (2.07) [2.10]	0.268
Government	0.21	4.49 (2.33) [1.78]	1.65 (0.56) [0.51]	2.84 (2.39) [1.85]	0.192
Federal	0.10	5.41 (3.65) [3.07]	1.17 (1.19) [0.93]	4.23 (3.84) [3.20]	0.255
Defense	0.08	5.85 (4.85) [4.04]	0.79 (1.60) [1.18]	5.06 (5.11) [4.20]	0.336
Nondefense	0.03	4.80 (1.75) [1.49]	5.13 (1.30) [1.61]	-0.33 (2.18) [2.16]	0.845
State and local	0.10	3.14 (1.01) [0.73]	3.07 (0.65) [0.49]	0.06 (1.21) [0.86]	0.959

Notes: The second column shows the average nominal GDP share of the component over the 1947:Q1-2013:Q1 sample period. Standard errors shown in parentheses and brackets and *p*-value shown in the final column are computed as in Table 2.

Table 4
Average GDP growth by presidential attribute

Attribute	*terms*	With	Without	Difference	*p-value*
Political Party					
Democrat	7	4.35 (0.57) [0.46]	2.54 (0.33) [0.45]	1.80 (0.66) [0.64]	0.01
Other Attributes					
Congressional Experience	7	3.84 (0.73) [0.56]	2.94 (0.36) [0.43]	0.91 (0.81) [0.70]	0.25
Gubernatorial Experience	7	3.06 (0.45) [0.47]	3.54 (0.59) [0.47]	-0.48 (0.74) [0.65]	0.55
Youngest half	8	3.78 (0.41) [0.38]	2.89 (0.63) [0.57]	0.89 (0.75) [0.68]	0.26
Tallest half	8	3.67 (0.46) [0.40]	2.99 (0.61) [0.55]	0.67 (0.77) [0.68]	0.39

Notes: The table shows average GDP growth rates for presidents with and without the attribute shown in the first column, where the value of *terms* denotes the number of administration whose presidents have the attribute. (The total number of administrations is 16.) Standard errors shown in parentheses and brackets and *p*-value shown in the final column are computed as in Table 2.

Table 5
Average GDP Growth by Congressional Control

Partisan control of Congress	Average GDP Growth	Difference from Democrats control both
Democrats control both (n=168)	3.47 (0.47)	--
Divided Congress (n=40)	2.70 (0.87)	-0.77 (0.99)
Republicans control both (n=48)	3.36 (0.53)	-0.11 (0.72)

Notes: Values are in percentage points at an annual rate. Standard errors (Newey-West with 6 lags) are shown in parentheses.

Table 6
Growth rates of real GDP: deviations from trends

Trend Specification	Averages			
	Democratic	Republican	Difference	*p*-value
Benchmark value of κ				
$\kappa = \infty$	1.06 (0.57) [0.46]	-0.74 (0.33) [0.45]	1.80 (0.66) [0.64]	0.01
Alternative values of κ				
$\kappa = 100$	1.05 (0.37) [0.39]	-0.77 (0.31) [0.45]	1.82 (0.48) [0.59]	0.00
$\kappa = 67$	1.06 (0.34) [0.38]	-0.75 (0.31) [0.45]	1.81 (0.45) [0.59]	0.00
$\kappa = 33$	0.89 (0.26) [0.35]	-0.57 (0.24) [0.44]	1.46 (0.36) [0.57]	0.00

Notes: Values are in percentage points at an annual rate. The trends corresponding to these κ values are plotted in Figure A.1 in the appendix. See notes to Table 2.

Table 7
GDP growth rate forecasts

	Democratic	**Republican**	**Difference**
A. SPF Forecasts: average growth rate in first year of term (Nixon – Obama-1)			
Actual	3.5	1.0	2.5
Forecast	3.1	3.2	-0.1
B. Greenbook Forecasts: average growth in first year of term (Nixon/Ford – Bush-II-2)			
Actual	3.8	1.1	2.7
Forecast	3.8	2.8	1.0
C. Time Series Model Forecasts: average growth rate in first year of term (Nixon – Obama-1)			
Actual	3.4	1.4	2.0
AR Forecast	2.2	3.1	-0.9
VAR Forecast	3.0	2.5	0.5
AR-NL Forecast	2.9	3.0	-0.1
D. Time Series Model Forecasts: average growth rate in first year of term (Truman-2 – Obama-1)			
Actual	4.7	0.6	4.1
AR	2.9	3.5	-0.6
VAR	3.2	3.2	0.0
AR-NL Forecast	3.4	3.2	0.2

Notes: Detailed results are presented in appendix Table A.2. Forecasts for the AR model are fitted values from regressions of $\ln(GDP_{t+4}/GDP_t)$ onto current and four lags of $\ln(GDP_t/GDP_{t-1})$; the VAR model additionally includes current and 4 lags of the Aaa-3MonthTbill spread. The AR-NL model augments the AR specification with current and 4 lags of an indicator variable for a recession at time t, R_t, and interactions of R_t and $\ln(GDP_t/GDP_{t-1})$.

Table 8
The D-R gap after controlling for shocks

Shock	Sample Period	δ	β	$(\delta-\beta)/\delta$
A. Oil Shocks				
Oil Price Shocks (Hamilton)	1949:Q2 - 2013:Q1	1.80 (0.64)	1.31 (0.57)	0.28 (0.16)
Oil Price Shocks (Hamilton)	1949:Q2 - 2007:Q4	1.97 (0.65)	1.70 (0.58)	0.14 (0.14)
Oil Supply Shocks (Killian)	1972:Q3 - 2004:Q3	0.82 (0.76)	0.61 (0.72)	0.26 (0.29)
B. Productivity Shocks				
TFP Util Adj (Fernald)	1949:Q2 - 2013:Q1	1.80 (0.64)	1.39 (0.56)	0.23 (0.12)
TFP Util Adj (Annual, Basu et al.)	1949 – 2012	1.79 (0.58)	1.33 (0.46)	0.25 (0.14)
LR Labor Prod (SVAR, Gali)	1950:Q3 – 2013:Q1	1.73 (0.61)	1.52 (0.56)	0.12 (0.10)
C. Defense Spending Shocks				
Defense Spending (Ramey)	1949:Q2 - 2012.Q3	1.87 (0.64)	1.67 (0.62)	0.11 (0.09)
Defense Spending (Fisher-Peters)	1949:Q2 - 2008:Q4	2.13 (0.66)	2.11 (0.67)	0.01 (0.06)
D. Other Fiscal Shocks				
Taxes (Romer and Romer)	1949:Q2 - 2007:Q4	1.97 (0.65)	1.97 (0.63)	0.00 (0.06)
Taxes (Mertens and Ravn)	1951:Q3 - 2006:Q4	1.68 (0.62)	1.71 (0.63)	-0.02 (0.08)
Gov. Spend. (SVAR, Mertens-Ravn)	1952:Q3 - 2006:Q4	1.72 (0.63)	1.66 (0.61)	0.04 (0.07)
E. Monetary Policy Interest Rate Shocks				
Romer and Romer	1970:Q3 - 1996:Q4	0.47 (0.96)	0.57 (0.91)	-0.20 (1.50)
SVAR (Sims and Zha)	1961:Q4 - 2003:Q1	1.50 (0.69)	1.45 (0.56)	0.03 (0.25)
SVAR (Cholesky)	1957:Q2 - 2008.Q4	1.78 (0.64)	2.00 (0.55)	-0.13 (0.18)
G. Financial Stress Indicators				
Baa-Aaa Spread	1949:Q4 – 2013:Q1	1.85 (0.64)	1.64 (0.64)	0.11 (0.11)
EBP Spread (Gilchrist-Zakrajšek)	1975:Q3 – 2012:Q4	0.66 (0.68)	0.32 (0.65)	0.51 (0.61)
Baa-Aaa Spread	1949:Q4 – 2007:Q4	2.04 (0.66)	2.04 (0.63)	0.00 (0.08)
EBP Spread (Gilchrist-Zakrajšek)	1975:Q3 – 2007:Q4	0.67 (0.70)	0.66 (0.67)	0.02 (0.26)
Ted Spread	1973:Q3 – 2013:Q1	0.93 (0.67)	0.95 (0.58)	-0.02 (0.42)
Ted Spread	1973:Q3 – 2007:Q4	1.03 (0.72)	1.39 (0.57)	-0.36 (0.56)
FRB SLOOS	1972:Q3 – 2013:Q1	0.77 (0.66)	1.00 (0.61)	-0.31 (0.69)
FRB SLOOS	1972:Q3 – 2007:Q4	0.87 (0.71)	1.39 (0.60)	-0.60 (0.91)
F. Sentiment and Uncertainty				
Ind. of Cons. Sen Current (ICC)	1962:Q3 – 2013:Q1	1.26 (0.62)	1.23 (0.59)	0.02 (0.21)
Index of Consumer Expectations	1962:Q3 – 2013:Q1	1.26 (0.62)	0.93 (0.55)	0.26 (0.27)
Uncertainty Index (BBD)	1949:Q4 - 2012:Q4	1.88 (0.64)	2.06 (0.63)	-0.09 (0.12)

Notes: See equations (1) and (2) for the definitions of δ and β. β is estimated using the current value and 6 lags of the shock, so that $p = 6$ in (2). Newey-West (4 lags) standard errors shown in parentheses, and the standard error for $(\beta-\delta)/\beta$ is computed using delta-method.

Table 9
Average GDP growth rates excluding selected terms

	Democratic	Republican	Difference	*p*-value
Benchmark (all administrations)	4.35 (0.57) [0.46]	2.54 (0.33) [0.45]	1.80 (0.66) [0.64]	0.01
Excluding				
Truman-2, Eisenhower-1	3.98 (0.52) [0.42]	2.56 (0.43) [0.51]	1.42 (0.68) [0.63]	0.06
Johnson, Nixon	4.25 (0.67) [0.51]	2.42 (0.35) [0.48]	1.83 (0.75) [0.69]	0.02
Bush-I, Bush-II-1	4.35 (0.57) [0.46]	2.58 (0.43) [0.56]	1.77 (0.72) [0.72]	0.03
Truman-2, Eisenhower-1 Johnson, Nixon	3.78 (0.59) [0.44]	2.39 (0.47) [0.55]	1.39 (0.76) [0.68]	0.09
Truman-2, Eisenhower-1 Johnson, Nixon Bush-I, Bush-II-1	3.78 (0.59) [0.44]	2.35 (0.57) [0.69]	1.43 (0.82) [0.81]	0.11
Bush-II-2, Obama	4.73 (0.51) [0.48]	2.79 (0.25) [0.45]	1.93 (0.57) [0.67]	0.00

Notes: See notes to Table 2.

Table 10
The D-R gap after controlling for multiple shocks

Shocks	Sample Period	δ	β	$(\delta-\beta)/\delta$
Oil (Hamilton), Defense (Ramey), TFP (Fernald)	1949:Q2 - 2012.Q3	1.87 (0.64)	0.85 (0.48)	0.54 (0.18)
Oil (Hamilton), Defense (Ramey), TFP (Fernald)	1949:Q2 - 2007.Q4	1.97 (0.65)	1.09 (0.49)	0.45 (0.17)
Oil (Hamilton), TFP (Fernald), Index of Consumer Expectations	1962:Q3 – 2013:Q1	1.26 (0.62)	0.47 (0.49)	0.62 (0.32)
Oil (Hamilton), TFP (Fernald) Index of Consumer Expectations	1962:Q3 – 2007:Q4	1.36 (0.63)	0.73 (0.50)	0.46 (0.28)

Notes: See notes to Table 8.

Table 11
Growth under presidents and FRB chairs

		President's Party			All
		Democratic	Republican		
FRB Chair's Party	Democratic	5.27 (60)	2.73 (60)		4.00 (120)
	Republican	3.28 (52)	2.41 (84)		2.74 (136)
	All	4.35 (112)	2.54 (144)		3.33 (256)

Notes: Entries are average growth rates in real GDP (in percentage points at an annual rate) by party of the President and FRB Chair. (The party of the FRB Chair corresponds to the party of the President who first appointed the Chair.) The numbers in brackets are the number of quarters.

Table 12
Structural shock decompositions of the D-R gap

	A. Smets and Wouters	B. Leeper, Plante and Traum	C. Schmitt-Grohé and Uribe
Sample Period	1960:Q1 – 2004:Q4	1961:Q2 – 2008:Q1	1955:Q2 – 2006:Q4
Total D-R Gap	1.53	1.15	1.44
Structural Shock			
TFP	0.17	0.16	0.23
Investment	0.60	1.42	0.09
Preference (Intertemporal)	0.71	-1.19	-0.16
Gov. Purchases	0.14	0.04	0.04
Wage Markup	0.20		1.18
Price Markup	-0.03		
Mon. Policy	-0.26		
Preference (Intratemporal)		0.75	
Transfers		0.04	
Tax – capital		-0.04	
Tax – labor		-0.08	
Tax – cons.		0.00	

Notes: The Schmitt-Grohé Uribe model includes 21 structural shocks, and the table shows results from grouping the shocks in the categories shown in column 1. Appendix Table A.4 contains detailed results.

Table 13
Average GDP growth rates for different countries

Country	Sample Period	Political Party		Difference
		Left	Right	
United States	1949:Q2 – 2013:Q1	4.35 (0.46)	2.54 (0.45)	1.80 (0.64)
Canada	1961:Q2 – 2012:Q2	3.89 (0.38)	2.48 (0.71)	1.41 (0.80)
France	1949:Q2 – 2012:Q2	3.19 (0.51)	3.42 (0.50)	-0.23 (0.72)
Germany	1970:Q2 -2012:Q2	2.18 (0.55)	2.17 (0.51)	0.02 (0.75)
United Kingdom	1955:Q2 – 2012:Q2	2.47 (0.47)	2.67 (0.49)	-0.20 (0.70)

Notes: Standard errors (Newey-West 6 lags) are shown in parentheses.

Appendix

Figure A.1
GDP growth rates and different trends

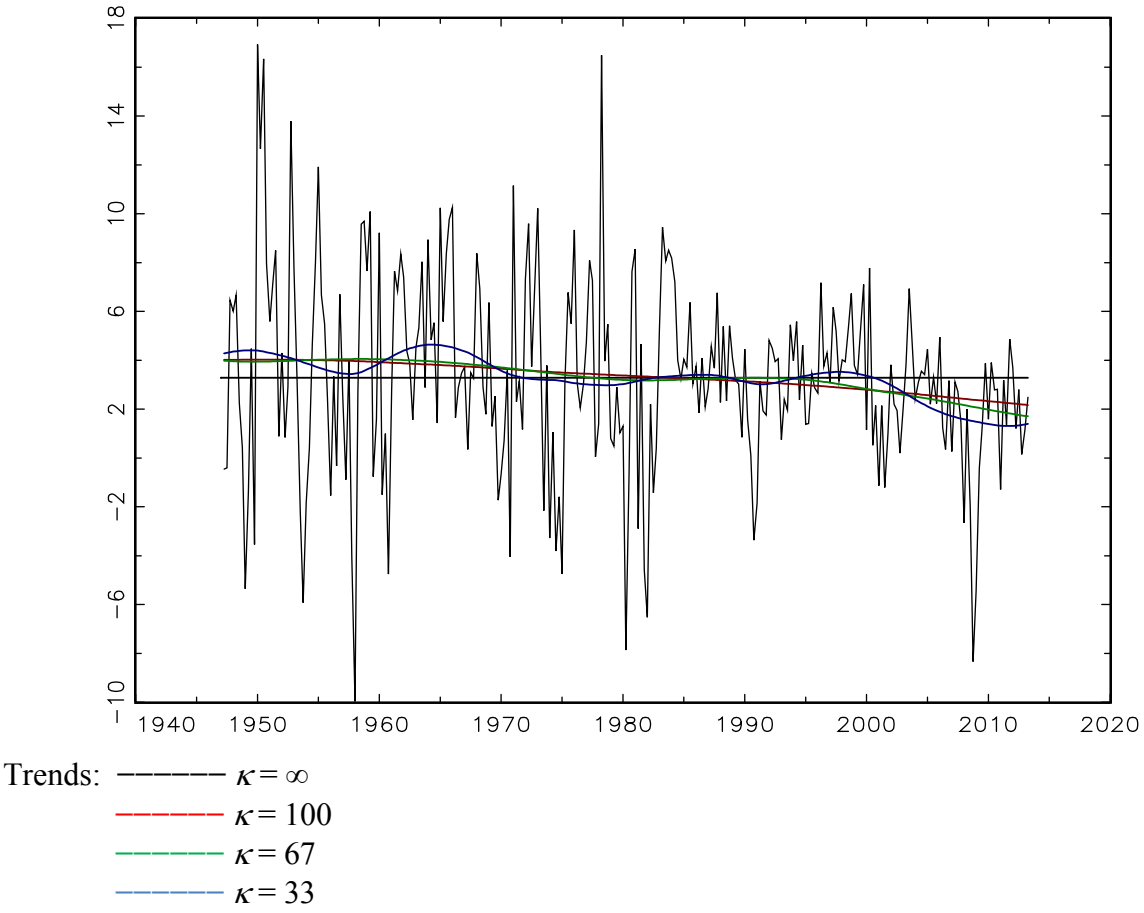


Table A.1
The D-R gap over alternative quarters

Quarters Used to Compute Average	Democratic	Republican	Difference	*p*-value
Year1:Q2 through Year5:Q1 (Benchmark)	4.35 (0.57) [0.46]	2.54 (0.33) [0.45]	1.80 (0.66) [0.64]	0.01
Year1:Q1 through Year4:Q4	4.12 (0.54) [0.48]	2.67 (0.27) [0.42]	1.45 (0.61) [0.62]	0.03
Year1:Q3 through Year5:Q2	4.26 (0.60) [0.47]	2.64 (0.36) [0.45]	1.61 (0.70) [0.63]	0.03
Year1:Q4 through Year5:Q3	4.13 (0.57) [0.47]	2.73 (0.36) [0.45]	1.40 (0.67) [0.64]	0.05

Notes: See notes to Table 2.

Table A.2
Detailed forecasting results

A. Results for the SPF

	Ca	Cl1	Cl2	Ob1		Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	3.6	3.7	4.2	2.4		0.2	-0.3	-2.5	3.1	1.3	1.4	3.7		3.5	1.0
Forecast (SPF Dated Q1)	6.1	3.1	2.2	0.9		3.3*	4.3	3.0	3.7	1.6	3.2	3.5		3.1	3.2
Forecast (SPF Dated Q2)	5.8	3.1	2.4	0.7		2.5	4.0	2.5	3.3	1.6	2.2	3.3		3.0	2.8

B. Results for the Greenbook

	Ca	Cl1	Cl2		Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	3.6	3.7	4.2		0.2	-0.3	-2.5	3.1	1.3	1.4	3.7		3.8	1.0
Forecast	6.3	2.9	2.4			4.9	-0.1	3.3	2.0	2.8	3.9		3.8	2.8
Greenbook Date	2/9/77	1/29/93	1/29/97			2/7/73	1/28/81	2/6/85	2/1/89	1/25/01	1/26/05			
Forecast	6.2	2.5	2.2		1.7*	4.9	0.8	2.9	1.8	2.2	3.7		3.6	2.6
Greenbook Date	5/11/77	5/14/77	5/15/97		5/21/69	5/9/73	5/13/81	5/15/85	5/10/89	5/9/01	4/28/05			

C. Results for the Time Series Models (Nixon – Obama-1)

	Ca	Cl1	Cl2	Ob1		Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	4.1	3.4	4.5	1.6		0.3	0.7	-2.5	4.1	2.8	1.4	3.1		3.4	1.4
AR	2.5	2.2	2.8	1.1		2.7	3.7	4.4	2.4	3.1	2.1	3.1		2.2	3.1
VAR	3.0	3.6	2.9	2.6		1.8	3.3	1.5	3.8	2.1	1.7	3.2		3.0	2.5
AR-NL	2.5	2.5	3.1	3.7		2.9	4.0	4.6	2.8	3.2	0.4	3.0		2.9	3.0

D. Results for the Time Series Models (Truman-2 – Obama-1)

	Tr	KJ	Jo	Ca	Cl1	Cl2	Ob1		Ei1	Ei2	Ni	NF	Re1	Re2	BI	BII1	BII2		D	R
Actual	3.8	7.3	8.1	4.1	3.4	4.5	1.6		-1.8	-2.9	0.3	0.7	-2.5	4.1	2.8	1.4	3.1		4.7	0.6
AR	1.7	3.4	4.0	3.4	2.7	3.0	2.3		3.9	3.4	3.5	3.9	4.7	3.0	3.3	2.5	3.4		2.9	3.5
VAR	1.5	3.6	3.8	3.7	3.4	3.2	3.4		3.6	2.7	3.1	3.7	3.5	4.1	2.5	2.3	3.4		3.2	3.2
AR-NL	2.2	3.9	4.0	3.2	2.6	2.9	5.3		3.7	2.4	3.5	4.3	5.4	3.3	3.0	0.5	2.8		3.4	3.2

Notes: Values are averages of GDP growth rates from Q2 of the inaugural year to Q1 of the following year. The SPF forecasts shown in panel A are from surveys dated Q1 and Q2 of the inaugural year. The actual values shown panels A and B are are from the FRB Philadelphia real time data sets dated Q2 in year 3 of the administration. *Forecasts are for average growth rate in 1969:Q2- 1969:Q4 because of missing data.

Table A.3
The effect of shocks on GDP growth rates by Presidential term

Shock	Sample Period	Democratic								Republican								
		Tr	KJ	Jo	Ca	Cl1	Cl2	Ob1		Ei1	Ei2	Ni	NF	Re1	Re2	BI	BII1	BII2
Oil Shocks (Hamilton)	1949:Q2-2013:Q1	0.89	0.87	0.81	-1.31	0.68	-0.22	0.42		0.55	0.61	0.51	-1.51	-0.26	0.87	-0.42	0.35	-2.42
Oil Shocks (Hamilton)	1949:Q2-2007:Q4	0.77	0.73	0.67	-1.39	0.50	-0.30	.		0.42	0.50	0.40	-1.48	-0.22	0.73	-0.47	0.24	-1.57
Oil Shocks (Killian)	1972:Q3-2004:Q3	.	.	.	-0.24	0.34	0.30	.		.	.	.	0.08	0.01	0.19	-0.55	-0.16	.
TFP Util Adj (Fernald)	1949:Q2-2013:Q1	1.12	1.18	0.14	-0.37	-0.19	0.13	-0.29		0.08	-0.26	0.10	-0.04	-0.78	0.08	-0.60	0.53	-0.65
TFP Util Adj (Annual, Basu et al.)	1949-2012	1.09	1.31	0.46	-0.34	-0.31	0.08	-0.48		0.60	-0.48	-0.10	-0.06	-1.21	0.27	-0.67	0.39	-0.54
LR LabProd (SVAR, Gali)	1950:Q3–2013:Q1	0.70	0.41	0.02	-0.06	-0.13	0.01	0.08		0.13	-0.33	-0.13	-0.30	-0.31	0.10	-0.18	0.37	-0.15
Def Spending (Ramey)	1949:Q2 -2012.Q3	1.06	-0.03	0.02	0.05	-0.08	-0.08	-0.15		-0.11	-0.02	-0.09	-0.08	-0.11	-0.19	-0.17	0.01	-0.02
DefSpending (Fisher-Peters)	1949:Q2 -2008:Q4	-0.06	-0.09	0.17	0.23	0.17	-0.41	.		0.19	-0.10	-0.23	-0.05	-0.12	-0.10	-0.13	0.32	0.07
Taxes (Romer and Romer)	1949:Q2-2007:Q4	-0.04	0.14	0.37	-0.07	-0.36	-0.15	.		-0.02	-0.25	0.07	-0.11	0.63	-0.34	-0.44	0.50	-0.40
Taxes (Mertens and Ravn)	1951:Q3-2006:Q4	.	0.02	-0.02	0.06	-0.17	0.00	.		-0.05	0.00	-0.15	-0.07	-0.13	0.49	-0.02	0.05	.
Gov. Spend. (SVAR)	1952:Q3 -2006:Q4	.	-0.06	-0.08	-0.12	0.02	0.10	.		-0.17	0.19	-0.12	0.21	0.07	-0.19	-0.17	-0.03	.
Taxes (SVAR, Mertens-Ravn)	1952:Q3 -2006:Q4	.	1.60	0.12	0.52	0.20	-0.15	.		-0.55	-1.25	0.64	-1.16	-0.17	-0.35	-0.22	0.54	.
MP Romer and Romer	1970:Q3 -1996:Q5	.	.	.	0.75	-0.94	.	.		.	.	1.89	0.34	-1.10	0.10	-0.50	.	.
MP SVAR (Sims and Zha)	1961:Q4 -2003:Q1	.	-0.27	0.39	0.06	0.02	-0.11	.		.	.	0.19	0.19	-1.73	0.92	-0.13	0.86	.
MP SVAR (Cholesky)	1957:Q2 -2008.Q4	.	0.16	0.29	-0.67	-0.30	-0.18	.		.	-0.79	0.34	0.42	-0.73	0.71	0.06	0.93	-0.26
Baa-Aaa Spread	1949:Q4–2013:Q1	0.05	0.32	-0.05	-0.43	0.38	0.06	0.46		0.47	0.17	-0.03	-0.29	-0.66	-0.24	0.27	0.14	-0.67
Baa-Aaa Spread	1949:Q4–2007:Q4	0.01	0.22	-0.10	-0.35	0.22	0.02	.		0.30	0.04	0.00	-0.18	-0.41	-0.05	0.17	0.13	-0.03
EBP Spread (Gilchrist-Zakrajšek)	1975:Q3–2012:Q4	.	.	.	0.26	0.38	-0.17	0.31		.	.	.	.	-0.35	-0.35	-0.08	0.05	-0.05
EBP Spread (Gilchrist-Zakrajšek)	1975:Q3–2007:Q4	.	.	.	0.09	-0.04	-0.02	.		.	.	.	.	-0.17	0.02	-0.08	-0.08	0.26
Ted Spread	1973:Q3–2013:Q1	.	.	.	-1.29	0.33	0.26	0.62		.	.	.	-0.25	-0.18	0.11	0.61	0.64	-0.93
Ted Spread	1973:Q3–2007:Q4	.	.	.	-1.21	0.27	0.21	.		.	.	.	-0.25	-0.17	0.09	0.52	0.55	-0.06
FRB SLOOS	1972:Q3–2013:Q1	.	.	.	-1.12	0.04	0.15	0.36		.	.	.	0.05	1.01	0.72	-0.13	-0.11	-0.95
FRB SLOOS	1972:Q3–2007:Q4	.	.	.	-1.10	-0.02	0.09	.		.	.	.	0.00	0.88	0.62	-0.17	-0.16	-0.17
Ind. of Cons Sent. Current (ICC)	1962:Q3–2013:Q1	.	-0.32	-0.58	-0.86	1.07	0.99	-0.32		.	.	-0.38	-0.66	0.17	0.58	-0.16	0.47	-0.10
Index of Cons Expectations	1962:Q3–2013:Q1	.	0.83	0.68	-1.65	0.56	1.43	-0.59		.	.	0.10	-0.77	0.71	0.20	-0.55	0.16	-0.91
Uncertainty Index (BBD)	1949:Q4- 012:Q4	0.44	0.00	-0.44	-0.36	0.08	0.20	-0.61		0.67	0.66	0.12	-0.34	0.15	-0.33	0.08	-0.31	0.00

Notes: See notes to Table 8.

Table A.4
The effect of multiple shocks on GDP growth rates by presidential term

Shock	Sample Period	Democratic								Republican								
		Tr	KJ	Jo	Ca	Cl1	Cl2	Ob1		Ei1	Ei2	Ni	NF	Re1	Re2	BI	BII1	BII2
Oil (Hamilton) Defense (Ramey) TFP (Fernald)	1949:Q2 - 2012.Q3	2.80	1.57	0.74	-1.35	0.44	-0.15	-0.12		0.32	0.20	0.54	-1.60	-0.93	0.63	-1.06	0.59	-2.65
Oil (Hamilton) Defense (Ramey) TFP (Fernald)	1949:Q2 - 2007.Q4	2.50	1.29	0.52	-1.30	0.34	-0.22	.		0.15	0.03	0.48	-1.61	-0.83	0.48	-1.04	0.38	-1.70
Oil (Hamilton) TFP (Fernald), Index of Cons Exp	1962:Q3– 2013:Q1	.	2.09	1.24	-1.82	0.83	0.97	-0.20		.	.	0.72	-1.27	-0.35	0.87	-0.90	1.02	-2.54
Oil (Hamilton) TFP (Fernald) Index of Cons Exp	1962:Q3 2007:Q4	.	1.77	0.94	-1.71	0.60	0.70	.		.	.	0.62	-1.23	-0.45	0.66	-0.94	0.81	-1.75

Notes: See notes to Table 10.

Table A.5
Detailed decomposition for the Schmidt-Grohe Uribe (2012) Model

Total D-R Gap	1.44
Decomposition	
Stationary Neutral Tech.	-0.06 (-0.05, -0.01, -0.01)
Non. Stat. Neutral Tech.	0.29 (0.23, 0.02, 0.05)
Stat. Investment	0.13 (0.04, 0.02, 0.07)
Non.Stat. Investment	-0.04 (-0.02, -0.01, 0.00)
Preference	-0.16 (-0.13, -0.01, -0.02)
Gov. Purchases	0.04 (0.02, 0.02, 0.01)
Wage Markup	1.18 (0.02, 1.15, 0.01)
Measurement Error	0.17
Initial Conditions	-0.11

Notes: The numbers in parentheses show the components associated with the three shocks (ε^0, ε^4, ε^8) in each category.