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Political Regime Change and the Real Interest Rate

The effect of policy regime changes on real interest rates has important implications for financial and economic theory. However, there is little current evidence that such changes have any impact on the level of real interest rates. In this paper, we estimate both the number and location of structural breaks in the three-month U.S. real interest rate using a global optimization technique developed by Bai and Perron (1998). We compare the timing of large political changes to the dating of these structural breaks. We find that changes in party control of either a branch of Congress or the presidency are largely consistent with the timing of real rate shifts, while changes in the Federal Reserve chair are generally inconsistent with real rate regime shifts.

THOUGH THE DETERMINATION of real interest rates has important implications for macroeconomic and financial models, there is little professional consensus about what factors significantly influence real rates. The empirical literature has evolved from Fama's famous (1975) claim that the real rate is constant to a debate about whether policies or policy regimes affect real rates and a related debate about whether real rates are stationary or contain a unit root. Huizinga and Mishkin (HM, 1986) and Bonser-Neal (1990) assume real rates are stationary and argue that changes in policy regimes are associated with changes in the stochastic process driving real rates. In contrast, Schwert (1986), Antoncic (1988), and Rose (1988) all argue that real rates have a unit root, and both Schwert and Antoncic show that Huizinga and Mishkin's results are weakened when the real rate is treated as a nonstationary series. Recently Perron (1990), Garcia and Perron (GP 1996), and Bai and Perron (BP 1998a, 1998b) argue that the real rate of interest is best described as a stationary series with infrequent breaks or shifts in the mean and develop a number of statistical methods to estimate the shift points.

In this paper, we examine whether changes in party control of the presidency or Congress, or changes in the Federal Reserve chair, are associated with major shifts in

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real interest rates. While there is a large empirical literature on interest rates and politics in economics and political science, it suffers from two basic weaknesses. First, the literature generally only considers nominal interest rates, when real rates are what matter economically. Second, the alternative hypothesis to political influence is frequently ill specified. If political dummy variables are significant, the common interpretation is that politics matters. However, there could be other, statistically better, breakpoints that are not examined.¹

In our empirical work, we use statistical methods developed by Bai and Perron (BP) to estimate both the number and location of structural breaks in our real rate series and compare these breakpoints to dates of major political or bureaucratic change. In the 1961–1986 sample originally studied by GP and BP we find three significant breakpoints, two of which match up very closely to presidential regime changes. In contrast, none of the Fed chair changes are aligned with the statistically determined breakpoints.

Our party change model predicts a further breakpoint at the end of 1986 when the Democratic party recaptures the senate. We therefore extend our sample through 1992, and using BP methods, find one additional break in the data that corresponds almost exactly to this political event. We conclude our empirical work by estimating a more traditional reduced-form real rate equation and showing that our political dummy variables continue to be significant when controlling for a host of macroeconomic factors.

BP methods provide discipline for studies claiming specific causes of regime shifts because, for a given number of breaks, they find the sample breakpoints that maximize the fit of the statistical model. Variables representing exogenous events can be significant in a regression but still not provide the best characterization of the data and thus not really represent the actual regime shifts that occur. However, even under the discipline of BP methods, we find that political regime changes as measured by changes in party control of the presidency or a branch of Congress are significantly related to real rate regime shifts. In contrast, changes in the identity of the Fed chair, while significant in isolation, are not at all aligned with the statistically derived breakpoints.

In what follows below we outline the substantive issues in the debate over the policy invariance of the real rate in section 1 and review some recent empirical work in section 2. In section 3 we discuss our use of political changes as policy regime change. Section 4 contains our results, and section 5 is a brief conclusion.

1. THE PROBLEM

The relation between policy regime change and real interest rates is important for theoretical macroeconomic and financial models. Many macro models assume a policy–real rate link so that a finding of policy-invariant real rates would be problematic

1. For several examples, see the articles in Mayer (1993), especially Khoury.

for them. Many influential finance models assume a constant or policy-invariant real rate; finding that policy regime changes produce changes in real interest rates would be problematic for them.

In virtually all macro models where money matters, the primary real effect of monetary policy operates through real interest rates. Keynesian, monetarist, and cash-in-advance models all contain a policy–real rate link.² If the real rate is truly policy invariant, then these models would be in direct conflict with the empirical facts. Further, in macro models where deficits have real effects, fiscal expansions raise real rates and “crowd out” private spending. If it is an empirical regularity that the real rate is policy invariant, the credibility of these macro models is questionable.³

On the other hand, many financial models assume that real rates are determined by real factors and policy variables are not included in the models. Cox, Ingersoll, and Ross (1985a, b), Breeden (1986), and Longstaff and Schwartz (1992) are all examples of models that preclude political or policy effects on real rates. If the real rate changes systematically with political regime changes, then these finance models would be at variance with the empirical evidence. Further, as pointed out by Garcia and Perron, Ahn and Thompson (1988) show that real rate jumps would be evidence against the validity of typical asset pricing models.

In the literature we review below, evidence for the policy invariance of the real rate is mixed. In our results we find significant real rate jumps that coincide with changes in party control of the presidency or Congress. Thus we will argue that the real interest rate is neither constant nor policy invariant.

2. THE LITERATURE

Fama (1975) argues that over his 1953–1971 sample, the real interest rate is essentially constant. His results created an immediate controversy.⁴ Mishkin (1981) shows that for almost any other sample period, the hypothesis of a constant real rate can be decisively rejected. However, there is still little evidence of the effect of policy on real rates. Huizinga and Mishkin (1986) and Bonser-Neal (1990) investigate whether the stochastic process driving real rates changes when policy regimes change. Their technique is to estimate a simple equation for the ex post real rate using current and lagged nominal rates, lagged inflation, and lagged energy prices and then test for coefficient instability in their equation. Huizinga and Mishkin search for the break-points around October 1979 and October 1982, while Bonser-Neal takes potential regime changes in four countries and tests for structural breaks at those points.

2. Taylor (1995) and Mishkin (1996) provide reviews of the channels of monetary policy. Mishkin emphasizes the importance of real rate changes for monetary policy to be effective. Grier and Perry (1993) provide a survey and new evidence on the existence of a liquidity effect from money shocks to short-term nominal interest rates.

3. Of course, one could argue that the models are correct, that is, real rates are not truly policy invariant, but rather there is a problem with the empirical studies showing this effect. We will take such a position in the conclusion after showing that political regime changes predict real rate changes.

4. See, for example, Nelson and Schwert (1977).

Huizinga and Mishkin claim that October 1979 and October 1982 capture the beginning and end of the Fed's monetarist experiment. They conclude that policy regime change does affect the real interest rate process. However, they do not show (or claim to show) that policy regime change affects the level of the real rate. Bonser-Neal (1990) also looks for the effect of policy regime shifts on real rates by testing for structural change in a simple real rate equation. Bonser-Neal identifies likely regime changes in advance and tests for structural break at those points only. She examines four countries and finds significant coefficient instability for eleven of the fourteen regime changes she considers.⁵

Schwert (1986) and Antoncic (1986) both criticize Huizinga and Mishkin for modeling the real rate as an $I(0)$ or stationary process and show that the Huizinga and Mishkin results are not nearly as strong in models assuming the real rate is $I(1)$. Rose (1988) also argues that real interest rates are difference stationary. Walsh (1988) shows that the current nominal interest rate is an inappropriate variable to include in the real rate equation if one wishes to attribute coefficient instability to changes in monetary regimes. He shows that dropping the nominal rate from the real rate equation at least partly changes the Huizinga and Mishkin results.

Garcia and Perron (GP) and Bai and Perron (BP) build on Perron's earlier work showing series that are stationary around an infrequently shifting mean will often incorrectly fail standard stationarity tests that ignore the mean shift. They argue that the real interest rate is such a series and empirically determine two breakpoints in the series. GP use a version of Hamilton's (1989) Markov switching model and identify "the beginning of 1973 and the middle of 1981" as the shift points using quarterly data from 1961.1 through 1986.3 They point out that these dates are not obviously related to monetary policy regime shifts, but do note that the second shift is related to increased budget deficits. BP (1998a) use a simpler, intercept-shift-only model, and find basically the same real interest rate breakpoints as do GP. The most recent BP paper (1998b) develops a global optimization technique for determining breaks and finds a third breakpoint in the interest rate series over the same 1961–1986 sample.

Thus, the empirical literature has come almost full circle back to Fama; GP and BP argue that the real rate is essentially constant over long periods of time but subject to infrequent mean shifts that are not related to policy regime changes.

3. POLITICS AND POLICY REGIME CHANGE

The question we pose in our work is whether fundamental political or bureaucratic changes are associated with shifts in the real interest rate. This question is as yet unaddressed in the literature. The question is reasonable to ask, because, in the United States, politicians appoint and approve members of the Federal Reserve's Board of Governors and oversee Fed operations. Politicians also enact the laws determining

5. When Bonser-Neal searches directly for the sample break points that minimize a squared error criterion, the points match up relatively well with the prechosen shift points, at least for the United States.

spending and taxation. Given the fact that politicians either directly choose economic policies or appoint the policymakers, it seems unwise to dismiss ex ante the possibility that political change is tantamount to policy change and may have a significant effect on the real interest rate. Further, given the widespread popular belief in the power and independence of the Federal Reserve chairman, it is equally unwise to ignore the potential effects of changing Fed chairs on the real interest rate. Here we correct this lacuna by developing and implementing empirical tests of the null hypothesis that political or bureaucratic regime changes do not matter for real rates.

Over the 1961–1992 period we study below, there have been four presidential administrations (Kennedy-Johnson, Nixon-Ford, Carter, Reagan-Bush) and five different chairmen of the Federal Reserve (Martin, Burns, Miller, Volcker, and Greenspan). Congressional regime change is harder to quantify, but at least the 1981–1986 Republican Senate era represents one such event.

It is tempting to label switches in Fed chairs as potential monetary regime shifts and changes in presidential administrations and Congress as potential fiscal regime shifts, but such temptation should be resisted. There is a substantial literature indicating that political changes and events systematically affect monetary policy.⁶ Further, the famous unpleasant monetarist arithmetic paper (Sargent and Wallace 1981) shows that over time, monetary and fiscal decisions are not independent. We view these shifts as alternative models of policy regime changes and see which fits the data best.

4. METHOD, DATA, RESULTS

We consider first a quarterly 1961.1 through 1986.3 sample that corresponds to the GP and BP sample period. In this period there are four presidential administrations, four Federal Reserve chairs, and one congressional party switch. However, that switch is observationally equivalent to the Reagan-Bush administration in this sample. We cannot separate these two phenomena until we expand the sample below. As in Huizinga and Mishkin, Bonser-Neal, GP, and BP, the dependent variable is the ex post real interest rate.⁷ Our interest rate data is from Salomon Brothers and is measured at the end of the quarter. We calculate the inflation rate from the CPI.

A. Alternative Infrequent Mean-Shifting Models

Our Fed chair change model predicts three breaks in the 1961.1–1986.3 sample dated 1969.4, 1977.4, and 1979.3. The presidential party change model also predicts three breaks dated 1968.4, 1976.4, and 1980.4. With the exception of Burns as Fed

6. For a model of presidential influence on monetary policy, see Alesina and Sachs (1988); for congressional influence, see Grier (1991, 1996).

7. Mishkin (1981) shows if the ex ante expected real rate is a linear function of a set of regressors such that $EARR_t = X_t B + e_t$, then replacing the unobservable ex ante real rate with the ex post real rate produces consistent OLS estimates of B . Singleton (1981) argues that the OLS variance-covariance matrix is inconsistent. We deal with this problem by using a heteroskedasticity and autocorrelation consistent covariance matrix. One can thus view our results as estimates of the expected real rate or of significant partial correlations with the ex post real rate.

chair (1970–77) and the Nixon-Ford (1969–76) administration, there is not a lot of similarity in the dated regimes.

Table 1 presents our estimates of these alternative intercept shift models. Column 1 of Table 1 is a least squares regression of the ex post real rate on a constant and three dummy variables designed to capture the four presidential administrations that occurred in the sample. The three regime shift coefficients are all significant at the 0.01 level. Column 2 is a least squares regression of the ex post real rate on a constant and three dummy variables representing the four Fed chairs that served in the sample. Again, all three regime shift coefficients are all significant at the 0.01 level. The adjusted R^2 s for each equation are .630 and .477, respectively.

We might be tempted to conclude that political change does determine real rate changes; however, we are comparing political change to no change. There may be other breakpoints that fit the data better and dominate the politically determined breaks.

For a purely statistical estimate of the number and location of the breakpoints in our data, we use the global optimization method developed by BF.⁸ With our interest

TABLE 1
ALTERNATIVE MEAN-SHIFTING MODELS OF THE REAL INTEREST RATE, 1961–86

| | Presidential Administration Model | Federal Reserve Chair Model | Three-Break Time Series Model |
|----------------|--------------------------------------|--------------------------------|----------------------------------|
| Constant | 1.59 (8.02) | 1.52 (7.55) | 1.82 (10.76) |
| Reagan | 3.66 (10.56) | — | — |
| Carter | -2.81 (5.37) | — | — |
| Nixon-Ford | -1.89 (3.26) | — | — |
| Burns | — | -2.08 (3.84) | — |
| Miller | — | -3.33 (9.07) | — |
| Volcker | — | 2.71 (3.05) | — |
| 1967.1–1986.3 | — | — | -0.92 (4.67) |
| 1972.4–1986.3 | — | — | -2.46 (7.17) |
| 1980.2–1986.3 | — | — | 6.27 (10.27) |
| Adjusted R^2 | .630 | .476 | .632 |

NOTES: The sample is quarterly from 1961.1–1986.3. The numbers in parentheses are the absolute values of T -statistics constructed using heteroskedastic and autocorrelation-consistent standard errors as developed by Newey and West.

8. We set the minimum segment length to fifteen observations, allow the residuals to be correlated, the regressors to have heterogeneous distributions over the different segments, and the residuals to have heterogeneous variances over the different segments. These settings, ($e=.15$, $cor_u=1$, $het_z=1$, $het_u=1$) are the same ones used by Bai and Perron (1998b).

rate data, we find that there are three significant breaks in the data which occur in 1967.1, 1972.4, and 1980.2.⁹ Column 3 of Table 1 shows the OLS equation for the real rate using these breakpoints.

We compare our political models to the statistically derived breakpoints in two ways. First, we consider whether the timing of presidential or Fed chair changes are consistent with the statistical breaks, and second we compare the predictive power of each model with J-tests.

The 95 percent confidence interval for the first breakpoint is 66.1–68.4 which includes the presidential regime shift of 1968, but not the Fed chair switch of 1969. The 95 percent confidence interval for the second statistical break is 1971.3–1973.1 which does not include any political or Fed chair change. The 95 percent confidence interval for the third statistical break is 1979.4–1980.4 which includes the presidential party change in 1980, but not the Fed chair change in 1979.3. Thus, the Fed chair change model is not consistent with any of the three breaks uncovered using BP methods, while the party change model is consistent in two of the three cases. Further, if we let the BP method pick a fourth break in the data, it chooses 1976.3 which is the quarter before the presidential party change in 1976.4.¹⁰

Next we consider pairwise comparisons of the models using J-tests.¹¹ We test the hypothesis that model X is correct against the alternative hypothesis that model Y is correct by putting the predicted values of model Y into a regression estimating model X. If model Y's predicted values are insignificant in the model X equation, the validity of model X is not rejected. If model Y's predicted values are significant in the model X equation, then model X is rejected in favor of model Y.

We undertake all six pairwise comparisons that are possible with the three models reported in Table 1 and the test results are summarized in Table 2. The results here show that both the presidential party change and BP method breaks dominate

TABLE 2
PAIRWISE NON-NESTED HYPOTHESIS TESTS

| | Time Series Three-Break Model | Presidents | Fed Chairs |
|-------------------------------|-------------------------------|-----------------|----------------|
| Time Series Three-Break Model | — | 3.34 (.001) | -0.47 (.64) |
| Presidents | 3.29 | — (.001) | 1.62 (.11) |
| Fed Chairs | 12.52 (.0001) | 5.09 (.0001) | — |

NOTES: The entries in parentheses are significance levels of J-tests. The corresponding *T*-statistics are reported above the significance levels. A significant entry in the matrix means the series of predicted values from the model in the column heading is a significant regressor when added to the model given in the row heading.

9. We thank Pierre Perron for providing us with his software and generous advice on its use. The breakpoints reported are derived using the global optimization algorithm described in BP (1998b). SupF tests reject two breaks in favor of three, but fail to reject three in favor of four, leading us to conclude that the optimal number of breaks is three. Our breakpoints are virtually identical to those reported by BP (1998b) where a different real rate series is used.

10. However, this breakpoint has a large confidence interval.

11. This test was developed in Davidson and MacKinnon (1981).

the Fed chair change breakpoints as explanations of the real interest rate. However, neither the presidential party switch or BP method dates dominate each other in the J-tests.

Presidential party turnover is highly correlated with real rate shifts and is largely consistent with the breakpoints found with BP statistical methods. Further, our J-test results show that both the political change dates and the BP dates contain unique important information beyond what is contained in the other model. On the other hand, changes in Fed Chairs are dominated by changes in elected officials (and by the BP dates) as an explanation of real rate changes. Figure 1 presents the estimated relationship between presidential administration change and the real interest rate.

B. Predicting Real Rate Shifts

While BP methods are powerful techniques for discovering breakpoints *ex post*, they do not make *ex ante* predictions about future regime shifts. However, political change models do make such predictions. For example, the next large political change that occurs in the data is the 1986.4 loss of the Senate by the Republicans. The party change model thus predicts that in an expanded sample, there should be another breakpoint on or around 1986.4.

We expand our sample to 1961.1–1992.4 and use the BP global optimization method to determine the number and location of the breakpoints in this larger real rate time series. The model determines the number of breaks to be four, and the dates to be the same three as in the shorter sample plus 1986.2.¹² The 95 percent confi-

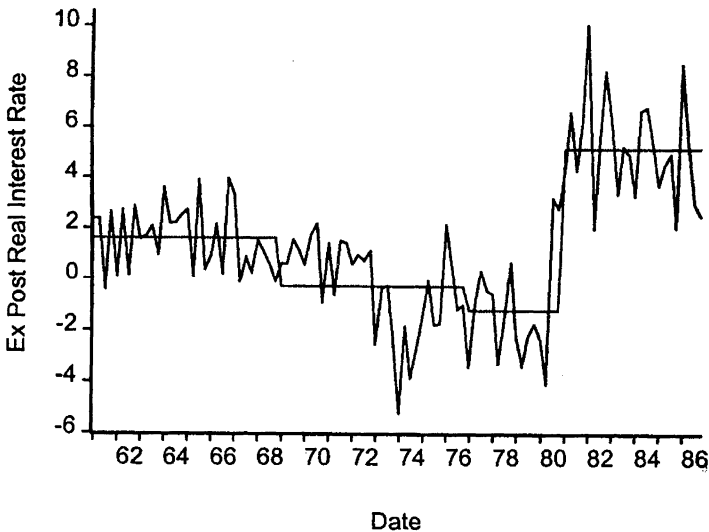


FIG. 1. Political Regimes and the Real Interest Rate, 1961–1986

12. The supF tests reject three breaks in favor of four. Given those four breaks and the minimum length requirement of the algorithm, it was not possible to add a fifth break to these dates. Directly estimating a five-break model actually raises the SSE compared to the optimal four-break model.

dence interval for this fourth break is from 1985.1–1987.1 and includes the 1986.4 Senate party switch.¹³

Once again the political change model predicts the same number of breaks as found by the BP method and the dating of three of those four breaks match up. The statistical model continues to place the second break in the 1971.3–1973.1 interval, while the political change model indicates 1976.4. We conduct another set of J-tests over this longer sample, again finding that the statistical breakpoints and party change model both dominate the Fed chair change model, but that neither the party change or statistically derived breaks dominate each other. These results are shown in Table 3.

Overall, we consider these results to be impressive evidence in favor of the proposition that large political changes, specifically switches in party control of the presidency or Congress, are significant predictors of real rate shifts.¹⁴

C. Controlling for Macroeconomic Variables

We have seen that changes in party control of a branch of the federal government are significantly correlated with shifts in real interest rates and generally closely aligned with the statistically determined optimal breakpoints in the real interest rate series. An interesting remaining question is whether the significance of these political change dummies would obtain in a reduced-form equation for the real rate. We address this issue by estimating such a reduced-form model and including our political change variables.

The regressors are adapted from Barro and Sala-i-Martin's (BSIM 1990) work on the determinants of real rates. BSIM construct an economic model and then estimate both the full model and reduced-form equations for some of the endogenous variables, including real interest rates. We use their regressors or variations on them

TABLE 3
ADDITIONAL PAIRWISE NON-NESTED HYPOTHESIS TESTS, 1961–92

| | Time Series Four-Break Model | Political Four- Break Model | Fed Chairs Four-Break Model |
|------------------------------|---------------------------------|--------------------------------|--------------------------------|
| Time Series Four-Break Model | — | 3.20 (.001) | -0.72 (.47) |
| Political Four-Break Model- | 3.53 | — (.001) | 1.42 (.16) |
| Fed Chairs Four-Break Model | 10.92 (.0001) | 5.80 (.0001) | — |

NOTES: The entries in parentheses are significance levels of J-tests. The corresponding *T*-statistics are reported above the significance levels. A significant entry in the matrix means the series of predicted values from the model in the column heading is a significant regressor when added to the model given in the row heading.

13. There is also another Fed chair switch in this new period. In 1987.4 Alan Greenspan replaced Paul Volcker. Consistent with our earlier findings that Fed chair changes do not matter much for real rate shifts, this bureaucratic change is outside of the 95 percent confidence interval for the new breakpoint.

14. For a brief analysis of the data through 1998, see the appendix.

without going through the process of building a macro model (which would be beyond the scope of this paper).¹⁵

In BSIM, the real rate is determined by the interaction of aggregate investment demand and the supply of desired national saving. We include the lagged real growth rate of the Dow Jones Industrial Index (GRST), lagged monetary base growth (GMB), the lagged ratio of real gross private domestic investment to real GNP (INV), the lagged ratio of federal, state, and local spending on goods and services to GNP (GOV), and an oil shock dummy variable (OIL).¹⁶

Column 1 of Table 4 is our party change model of the real rate. There are four presidential administrations (Kennedy-Johnson, Nixon-Ford, Carter, Reagan-Bush) represented by the intercept and three party change dummy variables along with another party change dummy variable to account for the 1981–86 control of the Senate by the Republican Party.

The party change dummies are jointly significant at the 0.001 level, with only the Reagan-Bush coefficient individually insignificant. The adjusted R^2 of the equation is around 0.58. Figure 2 presents the estimated relationship between political change and the real interest rate in this longer sample period.

Column 2 of Table 4 adds our macroeconomic indicators to the regression. The new variables raise the adjusted R^2 of the model by about 14 percent, to 0.66, and are significant as a group at the 0.01 level. Specifically, money growth and oil shock significantly lower the real rate while higher stock returns raise it. Deficits and the investment share of GNP have no significant effect on real rates in this model.

Our primary interest here is what happens to the coefficients representing changes in party control of the presidency or Congress. A comparison of the two regressions indicates that, if anything, controlling for macro variables strengthens the importance of political change for explaining real rates. All the political dummy variables keep the same sign and now all are individually significant at least at the 0.05 level.

15. The observant reader will note that Barro and Sala-i-Martin's paper is entitled "World Real Interest Rates," while our paper, along with all the others we discuss view the U.S. real rate as a domestic process. Thus when Barro and Sala-i-Martin use lagged money growth, they are using a world average while we are simply using U.S. money growth. There are several papers indicating that world financial markets are not sufficiently integrated to make the world interest rate a very relevant concept. Mishkin (1984), Mark (1985), and Cumby and Mishkin (1986) all reject the hypothesis of real rate equality across developed countries. Gagnon and Unferth (1995) show that the U.S. real rate shows large and persistent deviations from the world average real rate. Knot (1995) uses almost the same regressors as Barro and Sala-i-Martin to investigate real interest rates in the United Kingdom, Germany, France, and the Netherlands. He rejects the hypothesis of equal real rates in these countries and the United States and cannot reject the hypothesis that "the European Community can be regarded as a completely closed economy for the purpose of (his) paper." Both Barro and Sala-i-Martin and Knot provide detailed rationales for the regressors we use. Stock returns, money growth, and the investment ratio are directly from BSIM. We use a dummy variable for oil shocks while BSIM use the rate of growth of real oil prices. In our sample, the dummy variable fits better. We use government spending where BSIM use the deficit. Romer (1996, pp. 60–63) explains that temporary changes in government spending raises real interest rates in an equilibrium representative agent model. Barro (1987) uncovered a positive relationship between temporary U.K. military spending and the U.K. real long-term interest rate for the period 1729–1918. Although we present results using the actual spending/GNP ratio, our results are found when various measures of temporary spending are constructed.

16. Our Data Appendix gives a more detailed description of the data.

TABLE 4

POLITICAL REGIMES, MACRO VARIABLES, AND REAL INTEREST RATES, 1961–1992

| | Political Regimes | Political Regimes and Macro Variables |
|----------------------------|-------------------|---------------------------------------|
| Constant | 1.59 (8.02) | 2.13 (0.72) |
| Nixon-Ford | -1.89 (3.25) | -1.07 (2.21) |
| Carter | -2.81 (5.37) | -1.62 (2.39) |
| Reagan-Bush | 0.42 (1.00) | 1.35 (2.32) |
| Republican Senate | 3.11 (6.67) | 2.92 (4.71) |
| Real Stock Returns | — | 0.002 (1.32) |
| Monetary Base Growth | — | -0.31 (3.86) |
| Oil Shock Dummy | — | -1.69 (2.33) |
| Government Share of Output | — | 2.46 (0.20) |
| Investment Ratio | — | 5.39 (0.32) |
| Adjusted R^2 | .584 | .655 |

NOTES: The sample is quarterly from 1961.1 through 1992.4. The numbers in parentheses are the absolute values of T -statistics constructed using heteroskedastic and autocorrelation-consistent standard errors as developed by Newey and West.

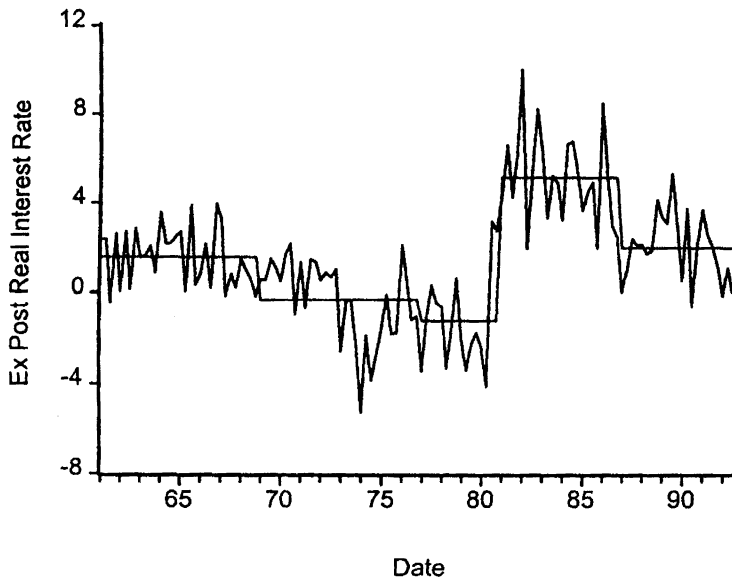


FIG. 2. Political Regimes and the Real Interest Rate, 1961–1992

Thus, the significant effect of changes in party control of the federal government on the real interest rate persists in this augmented regression.¹⁷

5. CONCLUSION

From Fama’s finding of a constant real rate to the GP and BP models of an infrequently shifting real rate, there is little or no empirical evidence that policy regime shifts affect real interest rate levels. We agree that the real rate is stationary but subject to infrequent shifts. However, we show that changes in the political party controlling the presidency or Congress match up very closely to the shift dates estimated in the data using statistical methods, explain a large amount of the variation in the real rate, and are robust to the inclusion of a variety of macro variables. Conversely we find little to no evidence that changes in the Federal Reserve chairmanship are robustly related in real rate shifts.

There are three main implications of our results. First, theoretical models assuming a constant or policy regime invariant real rate are at variance with the empirical evidence. Second, large political changes are good proxies for policy regime shifts in that they correlate well with real rate shifts. Third, models of political influence on macroeconomic policies and outcomes should concentrate more on turnover of elected officials and less on turnover of appointed bureaucrats.

APPENDIX: POLITICAL REGIMES AND REAL INTEREST RATES, 1993–1998

During the editorial process of the paper, a referee inquired whether there was a “Clinton effect” in the data. To answer this question, we have to change the interest rate series we are using. The analysis in the text uses end-of-quarter data on treasury bills from Salomon Brothers. We have this data through 1994, but it has since become prohibitively expensive. In this appendix, we reproduce our results using last month of the quarter three-month Treasury bill data from the St. Louis Fed website (FRED) and extend the analysis through 1998.

17. We also experimented with adding the regressors Huizinga and Mishkin and Bonser-Neale use to our political variables. These variables are the current and once-lagged nominal interest rate, two lags of inflation, and oil price variable. The resulting equation is

$$\begin{aligned}
 \text{Real } R_t = & .039 + .59(\text{Nominal } R)_t + .094(\text{Nominal } R)_{t-1} - .365(\text{Inflation})_{t-1} - .057(\text{Inflation})_{t-2} \\
 & (1.1) \quad (7.3) \quad (0.8) \quad (5.3) \quad (0.4) \\
 & - 1.52(\text{Oil}) - 1.65(\text{NF}) - 2.87(\text{Carter}) - .179(\text{RB}) + 1.53(\text{Rep. Senate}) \\
 & (2.4) \quad (3.2) \quad (3.6) \quad (0.5) \quad (2.7)
 \end{aligned}$$

$R^2 = .727$ (HAC *t*-statistics in parentheses)

As is the case in Table 4, the new variables do not eliminate the significance of the political regime dummies though they themselves are significant as a group.

In the 1961–92 sample we study in the text, we find the same four break points using the FRED data as we did with the Salomon Brothers data. When we extend the sample through 1998 and look for a fifth break, the SupF test of five breaks versus four breaks is insignificant (a fifth break is estimated to occur at the end of 1993, but the confidence interval is huge). Thus the Bai-Perron method does not find a structural break for the Clinton Administration.

However, this nonresult may not be surprising because there are only eight quarters of pure Clinton in the data. In November 1994, the Republicans recaptured the Senate and also gained control of the House. We have already seen that changes in party control of Congress are important for real rates, so that what we might have is a Clinton effect starting in 1992 that is offset by a congressional effect starting in 1994. When we estimate a simple dummy variable regression of the real rates on presidential administrations and congressional party change from 1961.1 through 1998.4 the results are as follows.

$$\begin{aligned} \text{Real Rate} = & 1.63 - 1.91 (\text{Nixon-Ford}) - 2.76 (\text{Carter}) + 0.53 (\text{Reagan-Bush}) \\ & (9.22) (3.26) \qquad\qquad (6.13) \qquad\qquad (1.38) \\ & - 1.24(\text{Clinton}) + 2.74 (\text{Republican Congress}) \\ & (2.88) \qquad\qquad (6.90) \end{aligned}$$

The R^2 of the equation is .64 (numbers in parentheses are Newey-West t -statistics), the Clinton dummy is negative and significant, but is more than offset by the positive and significant Republican Congress dummy.

DATA APPENDIX: VARIABLE DEFINITIONS AND DATA SOURCES

| | |
|-----------------------------|--|
| Real rate (1961–98) | The ex post real three-month T-bill rate. Data on the end of the month nominal T-bill rate was obtained from the Federal Reserve Bank of St. Louis (FRED) database. Inflation was calculated from the last-of-month quarter value of the CPI taken from Citibase (PZUNEW). |
| Real rate (1961-92) | The ex post real three-month T-bill rate. Data on the end-of-month T-bill rate was (1961–92)taken from Salomon Brothers. Inflation was calculated using the last-month-of-the-quarter value of the CPI taken from Citibase (PZUNEW). |
| Energy price variable | The annualized growth rate of the relative price of petroleum. The relative price of petroleum was obtained by dividing the PPI for energy obtained from citibase (PW561) by the general consumer price index (PZUNEW). We use last-month-of-the-quarter data. Our oil shock dummy equals 1.0 in quarters where the relative price of petroleum growth rate was three standard deviations or more above the mean and –1.0 when it is three standard deviations or more below the mean. |

| | |
|----------------------|--|
| Monetary base growth | The annualized growth rate in the monetary base taken from Citibase (FMBASE). |
| Real stock returns | The annualized growth rate of the real Dow-Jones stock price index. The nominal index was obtained from Citibase (FSDOW). It was then deflated by the CPI (PZNEW). |
| Investment ratio | Gross investment as a percentage of GNP. The ratio of the CITIBASE variables GI to GNP multiplied by 100. |
| Government spending | Government spending on goods and services as a percentage of GNP. The ratio of the CITIBASE variables ($GGFE + GGSE$) to GNP multiplied by 100. |

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