Taxing, Spending, and the Budget Process: The Role of Budget Regimes in the Intertemporal Budget Constraint

WM. STEWART MOUNTS, Jr. * and CLIFFORD SOWELL**

"The tendencies towards permanent deficit finance and inflation that have emerged in our economy in the last fifteen years have much deeper roots than a succession of transient external shocks and internal mistakes. They arose, I believe, because the implicit rules under which monetary and fiscal policy is conducted have undergone a gradual but fundamental change."¹

ROBERT LUCAS (1986)

1. INTRODUCTION

Given the redistributive nature of the United States federal government budget, and more importantly, the long-run persistence of large budget deficits, control over the budget process has become an important policy issue. In attempting to identify avenues of budget and deficit control, researchers have addressed the causal relationship between taxing and spending. A literature review that includes HOOVER and SHEFFRIN (1992), BOHN (1991), BAGHESTANI and MC NOWN (1994), VON FURSTENBERG, et. al. (1986), MILLER and RUSSEK (1990), and then continues into their respective bibliographies, reveals much of the work in this area. While the tax and spend relationship is the common theme, it becomes apparent that a consensus concerning causality has not been reached. At times, taxing appears to cause spending, but over other periods spending seems to drive taxing, while in others taxing and spending simply appear autoregressive. In such an empirical setting a point of policy control remains an open question.

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¹ See LUCAS (1986). This quote was taken from HOOVER and SHEFFRIN (1992). Emphasis added by the authors.
Related to this research is the extent to which the federal government can run continuous budget deficits and the attendant implications for debt management. An interesting and controversial view in this area is the rational expectations model presented in BARRO (1974, 1979, 1986, 1989). Here, current budget deficits must be followed by some combination of higher taxes and/or lower spending. An intertemporal budget constraint requires that the net present value of the budget must be balanced. HAMILTON and FLAVIN (1986) and TREHAN and WALSH (1988) find this perspective consistent with the behavior of annual budget and debt data from 1960 to 1984, and from 1890 to 1986, respectively. ROBERDS (1991), however, does not find support for the rational expectations view.

The purpose of this paper is to introduce the role of the underlying budget regime into the empirical literature addressing tax and spend relationships, deficit financing and, accordingly, debt management. In this regard, MOUNTS and SOWELL (1995) identified parameter instability in several representations of fiscal policy at 1975:1. This date marks the beginning of federal government budgeting under the CONGRESSIONAL BUDGET IMPOUNDMENT and CONTROL ACT of 1974 (hereafter, CBICA). While several researchers have acknowledged this Act as a piece of expenditure legislation, they did not recognize that it also significantly altered the way (the rules) Congress and the Executive branch of government produce a budget. In fact, except for BARRO (1986) and BAGHESTANI and MC NOWN (1994), consideration of changes in institutional fiscal relationships (the budget regime or process) has been largely absent in the budget and debt literature.

It appears that the literature cited above implicitly treats the fiscal regime as constant. It will be argued that recognizing the effects of the CBICA as a regime break helps correctly identify the appropriate behavioral relationship between taxing and spending and aids in testing the rational expectations view of debt management. Failure to do this may result in model misspecification.

Recursively estimated likelihood ratio tests indicate parameter instability at this time in statistical models that impose restrictions associated with the intertemporal budget constraint. Finding changes in the fiscal regime at the time of the CBICA, for example, suggests that control over fiscal policy may be found in the rules underlying the building

3. This perspective was employed by BOHN (1991). It should be noted that TREHAN and WALSH (1988) question the tax-smoothing hypothesis.
4. It should be noted that ROBERDS did find empirical support for the net present value budget balance model when the sample period was restricted to 1946–1973.
5. This was even the case holding supply shocks constant. This regime shift has been linked to monetary policy in BOYES, MOUNTS, SOWELL, and PAYNE (1996).
7. These will be discussed later in the paper. BARRO employed «reasoned» inference using a structural model while BAGHESTANI and MC NOWN employed recursive residuals. In both, the search for statistical breaks in fiscal policy was only incidental to other areas of interest. We employ alternative, and possibly more appropriate, methodology.
of the budget. Furthermore, the interplay between revenues and expenditures may be only incidental to the institutional regime.

The next section of the paper develops the idea of different budget regimes in the United States fiscal policy. The rational expectations view of the budget process and its implications for empirical work are found in Section 3. Data and related issues are described in Section 4. Section 5 outlines the empirical search for regimes in budget policy. Single equation error-correction and unrestricted vector autoregression models are employed. While the data and models support the rational expectations view prior to the passage of the CBICA, each representation exhibits parameter instability at 1975:1. Also, a discussion of tax and spend causality is presented in this section. Section 6 presents the results from a forecasting exercise that is used to estimate the informational content in the policy tools of taxing and spending for a policy target of debt management. Conclusions are offered in the last section. References to European economic union are made at this point.

2. DIFFERENT BUDGET REGIMES AND INSTITUTIONAL CONSIDERATIONS

A regime may be defined as the set of predictable actions policy-makers follow for a given set of circumstances. Changes in tools, instruments, targets or goals, and/or changes in the linkages between them (either perceived or real) have been taken as indicating regime breaks. These issues have been well studied within the setting of monetary policy largely motivated by the changing Federal Reserve policy rules of the late 1970s and early 1980s.

In this paper the question is whether a regime change is present when the fiscal budget process is changed. While recorded data measure actual levels of federal government spending and revenues, beneath these series is a nexus of institutional and political relationships that constrain or guide the budget process – the politically determined paths of spending and revenues. This is to say, for a given set of economic conditions, different fiscal arrangements could produce different levels of spending and taxation depending on the relative power relationships between competing government constituencies.

Prior to the CONGRESSIONAL BUDGET and IMPOUNDMENT ACT of 1974 budgeting in the United States federal government was guided by the BUDGET and ACCOUNTING ACT of 1921. Under this latter set of institutional arrangements, the President submitted a unified (spending and revenue) executive budget to Congress for approval. Rather than act on the President’s proposed budget in its entirety, Congress acted (modify or approve) on it in parts, sequentially and separately. The President would either sign or veto the budget returned to him.

In a very real sense, Congress had no legislative procedure for creating its own budget. Budget leadership (with respect to revenues and spending) was deferred to the President.

Thus, budget policy reflected his concerns. Although different Presidents may have viewed the causal ordering between taxes and spending differently, both sides of the budget appeared to be integrated. Revenue and spending policies had a common source. This is the nature of a unified budget proposal.

Underlying the budget process was the use of seniority for regulating individual behavior within Congress itself. With seniority, party leaders could control the budget process internal to Congress. Seniority provided congressional leadership the internal leverage needed to guarantee (to varying degrees) certain outcomes when negotiating budget priorities with the President. In a sense, budget bargaining was done at a relatively low cost given the limited number of people involved.

«The system was untidy, complex, cumbersome, and sometimes apparently irrational, but it worked, primarily because acceptable and necessary conflict-resolving processes were built into the process by statute, tradition, and understandings among the many participants.»

For many different reasons (growth of entitlements, the impoundment of authorized funds, etc.) members of Congress believed that they had lost control over the budget process by the early 1970s. The CBICA of 1974 was an attempt by Congress to assert its authority over a new budget process within the Congress itself. Among the many changes, new budget committees were formed, the Congressional Budget Office was established, the fiscal year was changed, and with the use of a current services budget the meaning of spending cuts became reduced increases.

To be precise, the CBICA offered Congress enhanced control over spending. The legislation had little to do with revenues. While there was at this time a concurrent process aimed at reforming the revenue procedures of Congress, it has been noted that:

«Perhaps the most significant weakness in the bill referred to Committee was the failure to give sufficient attention to the revenue aspect of Congressional budgeting . . . a sound Congressional budget policy cannot be based on the assumption that control over spending levels is sufficient to achieve desirable economic results.»

These and other changes created a congressional budget procedure that was diffused and complicated and which reduced the role of the President in actual budget creation. In addition, the replacement of seniority rules with the party caucus (beginning in 1973), made control more difficult for congressional leaders while it increased the power of those less senior. The power to influence budget outcomes shifted from those most senior to those capable of building congressional coalitions.

11. See SCHICK (1980), especially Chapters X-XIII.
«During the heyday of presidential budgeting after World War II, the annual budget served as a platform for the president’s legislative program and an authoritative statement of national policy. In some recent years, by contrast, the president’s recommendations have been little more than opening bids in a bargaining process.»

Thus, the CBICA fundamentally changed the budget process. It opened it to more special interests, reduced the ability of any one person or single group to control the process, and it reduced the previous tight, unified link between revenues and spending. From a public choice perspective, it made the budget process more sensitive to interest groups. Alternatively, the CBICA may have ended any self-regulating effects offered by a unified presidential budget.

Theoretical support for this historical perspective may be found in several places including WEINGAST, et al. (1981), PERSSON and SVENSSON (1989), and CHARI and COLE (1993). This literature links theories of representative government to budget procedures and outcomes. It is recognized that a free-rider problem exists when the incidence of expenditure benefits differ from the burden of taxation. From the work of CHARI and COLE (1993) the CBICA, by increasing the number of budget participants (new committees and chairs for example), and the decline in seniority governance, enhanced this problem while making the budget process appear more «democratic». This, and the associated lack of commitment to future spending patterns, promotes budgeting with deficit financing. The pre-CBICA procedures had smaller free-rider problems and a presidential focus firmed future spending commitments. CHARI and COLE (1993) argue that debt issuance would be minimized in such an institutional setting.

Thus, targets, goals, and internal relationships of fiscal policy changed in 1975. The CBICA may very well mark a point of regime delineation.

3. THE INTERTEMPORAL BUDGET CONSTRAINT, BEHAVIORAL RELATIONSHIPS, AND ECONOMETRIC ISSUES

In the rational expectations view of economic activity, governmental policy is subject to an intertemporal budget constraint. High deficits must eventually be matched with higher taxes and/or lower spending. Rational individuals see deficits as future taxes and take this into account in their current decisions. As a result, the substitution of a current deficit for current taxes will have no effect on aggregate demand. Eventually, current government spending must be paid for in the future. From here, spending causes taxes. In the end, long run equilibrium for fiscal policy requires that the government’s budget must be balanced in present value terms. This is the restriction associated with the intertemporal budget constraint.

This brief discussion brings out two features of the rational expectations view of budget management. First, spending and revenues are closely related. Second, over the long-run, spending and revenues will not differ too far for long because equilibrium ultimately requires balance.

These factors, as well as the presence of unit roots in spending and revenues and stationarity in the deficit, have encouraged the use of co-integration formats and error-correction models. The existence of a long-run relationship between revenues and spending, and the continual short-run adjustment towards balance with the need to difference data, fits within the spirit of these estimation techniques.

However, their use raises two issues. First, it should be recognized that spending, taxes, debt and the deficit may be cointegrated simply because they are accounting relationships. This is especially true when faced with unit roots in spending and revenues which call for differencing. Next, there is nothing in accounting that requires that a net budget number be a certain value at a unique point in time. This relates to the second point from above; that the net present value of the budget must balance in the long-run. This is more behavioral than it is accounting. Here, institutions play a role in shaping the budget process that determines the level, distribution, and direction of spending and revenues, as well as the political ramifications of deficits. The rational expectations view is clear on this — the budget process creates budget balance over the long run. What is not clear, however, is whether different institutional arrangements in a budget process will create the same long-run outcome. Is the budget outcome independent of the process?

4. THE DATA, VARIABLE CONSTRUCTION, AND METHODOLOGY

The purpose of this paper is to see whether changes in the budget process change budget behavior. It is anticipated that one possible point of regime delineation is 1974:4 with the implementation of budgeting under the CBICA.

Our approach begins with the arguments in TREHAN and WALSH (1988) and BOHN (1991) that error-correction models and certain unconstrained VAR specifications automatically impose the intertemporal budget requirement. It should be noted that the methodology described below is not dependent on strong priors of a break at a particular date.

To be consistent with the literature, the variables of interest are real government revenue (REV) including transfers from the Federal Reserve, real government spending (EXP) less interest paid, and real gross debt (DEBT). All the data (spending, revenues, debt, interest paid, and Federal Reserve earnings) are taken from the NATIONAL

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15. This is different from the work of PERRON (1989).
INCOME and PRODUCT ACCOUNTS (NIPA). The data are quarterly from 1953:1 to 1995:4 and have been converted into 1992 dollars.

Trehan and Walsh (1988) have shown that government spending, revenues, and debt are cointegrated if the deficit inclusive of interest is stationary. Both an augmented Dickey-Fuller test and a Bayes test support stationarity over the entire sample period for this definition of the deficit as well as other commonly used definitions.\(^{16}\)

An important issue is the form of the data in which to view the budget process. To use an error-correction format, revenue, spending and debt need to be I(1).\(^{17}\) Augmented Dickey-Fuller tests and Bayes tests were performed for the variables of interest.\(^{18}\) Both tests indicated that a shares model where the variables are divided by real GDP (RREV and REXP) would not be appropriate. Both RREV and REXP are clearly stationary in level form while the evidence for RDEBT is mixed. For certain, RREV and REXP would need to be over-differenced to fit into an error-correction format and misspecification would result. Also, these tests show that the simple first difference of revenue (DREV), spending (DEXP), and debt (DDEBT) are I(1) over the entire sample and that the deficit (DEFICITI) is stationary.

5. EMPIRICAL ANALYSIS

The search for regime breaks, and the identification of expenditure and revenue causality, begins with a brief discussion of a two-step error-correction procedure. This is used in a single-equation format as described in Bohn (1991) and tested for parameter stability. Next, an unrestricted VAR procedure that maintains the intertemporal budget constraint is tested for parameter stability.\(^{19}\) Finally, F-tests of exclusion for a two variable VAR containing an error-correction term are used to identify causal linkages.

5A. An Error-Correction Format

Differencing filters long-run, or low frequency, information from a data series. An error-correction format attempts to reintroduce this information by adding a variable, the error-correction term, into the estimation. The estimated coefficient on this variable measures the proportion of the disequilibrium in some long-run relationship that is reflected in the current movement in the dependent variable. With respect to the issues at hand, this may be used to measure the component of the current changes in revenues

16. Unit root tests are available from the authors.
17. A general discussion of the error-correction approach may be found in Davidson and MacKinnon (1993).
18. Results are available from the authors.
and expenditures that are associated with the long-run tendency to move towards a balanced budget that is part of the rational expectations model.

The problem in the first step is to determine which variables should enter at this point and then to estimate the error-correction variable (ECV) that will be used in the other estimations (the second step). A Johansen trace test and an Engle-Granger co-integration test suggest the presence of a co-integrating relation of rank 1 between REV, EXP and DEBT over the entire sample. In addition, it is clear that this relationship is between REV and EXP while DEBT appears not to be in the co-integrating vector. As such, the residuals from an OLS estimation between the contemporaneous levels of REV and EXP are used as the error-correction variable – the variable that reflects the long-run behavior suggested in the rational expectations view of debt management. Unless otherwise stated, it is entered into future estimations lagged one quarter.

5B. Single Equation Representations

Separate single equation error-correction models were estimated for the variables of interest, DREV, DEXP, DDEBT. Initially, the independent variables were four lags of DREV, DEXP, DDEBT, a constant, and the error-correction term (ECV) from the first stage. Through the use of F-tests of exclusion, the number of independent variables and/or the number of lags for each was reduced. The final form of the revenue equation consists of its own four lags, one lag of DEXP, a constant, and ECV. The equation for DEXP consists of four lags of DDEBT, one lag each of DEXP and DREV, a constant and ECV.

In these forms, the error-correction term was negative in the DREV equation (-.1664 with marginal significance of .0000) and positive in the DEXP equation (.0388 with marginal significance of .1870). Given the set-up of the first stage equation (DREV is the dependent variable), both signs suggest that part of the change in both DREV and DEXP represent movement towards some long-run equilibrium level of REV and EXP. This is consistent with the intertemporal budget constraint.

The parameter stability of the equations was examined by a recursively estimated likelihood ratio test. The results from this exercise are seen in Figures 1A and 1B which represent plots of the likelihood ratio. The vertical line marks the date of the CBICA.

20. Results available from the authors.
21. The cointegrating vector of (1, -.94, -.028) is very close to that estimated by Bohn (1991) over a much longer sample (1792-1988). This is one reason why we tend to discount the criticism of using quarterly data over a shorter period to evaluate the intertemporal budget constraint. The results from cointegration testing are available from the authors.
22. The OLS coefficients are available from the authors.
23. The form of the final debt equation is available from the authors.
24. The results are not presented here due to our interest in regime breaks rather than with the outcome of the estimation. This single equation method imposes restrictions that are associated with the intertemporal budget constraint. The purpose of this paper focuses attention on the stability of these restrictions.
The horizontal line is the 5% critical value of the $\chi^2$ test statistic (14.07 with 7 degrees of freedom).

**Figure 1: Single Equation Likelihood Ratio Test**


A: Revenues - Error-Correction Model

As shown, the revenue equation first exhibits parameter instability at the date of the CBICA. At this point, the fixed parameter error-correction model fails. On the other hand, the error-correction set-up for spending maintains parameter stability until the early 1980s.

5C. Vector Autoregressions

While only the single equation revenue model (Figure 1A) supports the idea of a regime break at the CBICA, our interest is in the budget process, not necessarily the parts of the budget. Rather than build a structural model of the budget process (see BARRO, 1986 for an example), we choose an unrestricted vector autoregression format similar to that described in BOHN (1991) and developed in CAMPBELL (1987). In general, the estimates from this representation are reduced-form in character and would be common to many different structural models.
The variables of interest remain DREV, DEXP, and DDEBT. The VAR consists of three lags.\(^{25}\) However, to maintain the restrictions inherent in the intertemporal budget constraint, the lags of either DREV or DEXP must be replaced by three lags of the actual budget deficit (revenues minus expenditures less interest).\(^{26}\) These VARs were estimated and parameter stability was tested using a similar likelihood ratio procedure.\(^{27}\)

Plots of the likelihood ratio tests are depicted in Figures 2A and 2B. (The horizontal line is for the 5\% critical value of the \(\chi^2\) test statistic; 55.76 with 39 degrees of freedom.) The figures clearly show parameter instability at the time of the CBICA and then again in the early 1980s. The fiscal regime is not constant as has been implicitly assumed in the literature. Thus, some of the discussions may have been based on misspecified models.

**Figure 2: VAR Likelihood Ratio Test**

25. An F-test could not reject the null that the fourth lag across the variables was equal to zero.
27. Estimated coefficients for the VARs are available from the authors. Again, our primary interest is in the stability of procedures that impose the intertemporal budget constraint.
5D. Pre-CBICA and post-CBICA considerations

The single equation and vector autoregression set-ups show parameter instability at the time of the CBICA. The restrictions in the models associated with the intertemporal budget constraint do not hold at 1975:1, the date of the beginning of the CBICA.

In this section we address the causality within fiscal policy pre and post CBICA. To begin the discussion of the causality in the budget process, we estimate a two variable, three lag VAR with DREV and DEXP as the principal variables. A constant and ECV (from the earlier single equation first stage) are entered as determinants. This set-up was selected by examining unit root tests. From these it is not clear if debt should be differenced, particularly in the 1953:1 - 1974:4 period. Accordingly, it is dropped from the estimation.

F-test of lag exclusion and the coefficients ECV from this VAR are shown in Table 1 for three different sample periods. A plot of the likelihood ratio test is shown in Figure 2C.

| Table 1 - Two Variable Vector Autoregression F-Tests and Error-Correction (ECV) Coefficient |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| Variable | DREV | DEXP | ECV | Significance level |
| DREV | 0.0379 | 0.4732 | -0.1673 | 0.0000 |
| DEXP | 0.0794 | 0.4672 | 0.0363 | 0.2560 |

| B. Sample Period: 1953:1 - 1974:4 |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| Variable | DREV | DEXP | ECV | Significance level |
| DREV | 0.0038 | 0.0916 | -0.2507 | 0.0001 |
| DEXP | 0.1517 | 0.3812 | 0.1007 | 0.1112 |

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<tbody>
<tr>
<td>Variable</td>
<td>DREV</td>
<td>DEXP</td>
<td>ECV</td>
<td>Significance level</td>
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<tr>
<td>DREV</td>
<td>0.1396</td>
<td>0.4700</td>
<td>-0.1316</td>
<td>0.0077</td>
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<tr>
<td>DEXP</td>
<td>0.0873</td>
<td>0.3673</td>
<td>0.0213</td>
<td>0.6099</td>
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Note: The first column is the order of dependent variables. The numbers beneath DREV, DEXP, ECV are the significance levels of F-tests for the exclusion of the four lags. The number below ECV is the estimated coefficient. The number to the right of each is the significance level of ECV.

28. Unit root tests are available from the authors.
It is clear from the figure that this representation of the budget process exhibits parameter instability at the CBICA. This is consistent with the earlier models. (The horizontal line is the 5% critical value of the $\chi^2$ test statistic; 31.41 with 20 degrees of freedom).

Table 1 tells us some things about the budget process inherent in the VAR. Panel A shows that, over the entire period, revenues are self-determining and that revenues drive spending – contrary to the rational expectations view. Further, the error-correction term is significant only in the revenue equation. Due to the nature of the construction of ECV, the negative sign should be interpreted that above average values of ECV lead to tax reductions (or spending increases). This is consistent with the long-run implications of the intertemporal budget constraint. Thus, over the entire sample period, expenditures move towards long-run equilibrium through a revenue channel.

The story is very different in the two subsamples. In Panel B, revenues are determined by themselves and expenditures. This is consistent with both BARRO (1979) and MILLER and RUSSEK (1990). Also, both spending and revenues partially adjust in each period towards some long-run equilibrium value though the significance of ECV in the DEXP equation is marginal at best. The effect of ECV on DREV is quite large and of correct sign. The budget process seems to have contained a tendency to move towards a long-run equilibrium state as described by the intertemporal budget constraint. This is also consistent with the notion of a unified budget developed prior to the introduction of the CBICA budget process.

In Panel C, however, changes in revenues drive changes in spending. In addition, the long-run equilibrium relation in DEXP is gone and that in DREV has fallen by nearly 50%. These findings are also supported by Engle-Granger co-integration tests and Johansen trace tests. These tests show that after 1975 the co-integrating relation between spending and revenues is absent from the data. This indicates that the data generating process is different before and after the CBICA.

6. A VAR FORECASTING EXERCISE

An alternative way to view the implications of the rational expectations intertemporal budget constraint is through the use of a forecasting exercise. If the long-run tendency to a balanced budget holds within a given institutional fiscal structure, then the path of taxes and spending should contain information about the future path of debt. While the rational expectations view of debt management has nothing to say about the level of debt (see BARRO, 1974 and 1979), it does imply that future taxes and/or spending will be changed so as to bring the budget back into balance in a present value sense. If this is the case, then the change in taxes and the change in revenue should tell us something about the change in debt.

29. Results available from the authors.
Typically, the informational content of one variable in the forecast of another is found within standard VAR analysis by building forecast error variance decompositions from innovations in selected variables. A problem with this methodology, however, is that interpretation is often dependent on the ordering of the variables in the VAR set-up. Ordering implies structure which seems counter to the rationale of VAR methodology.

As an alternative, we employ an approach outlined in ROBERDS and WHITEMAN (1992) which is not sensitive to variable ordering. In general, a beginning VAR set-up is used to capture the error covariance of some target variable like DDEBT over a given forecast horizon. Next, a similar exercise is performed for DDEBT but conditioned on the knowledge of some other policy variable like DREV or DEXP. A comparison of the original (or, unconditional) forecast with the second (the conditional forecast) is a measure of the improvement, or information, offered by the conditioning (or policy) variable.

Table 2 lists the results of this exercise using the earlier three variables (3 lag) VAR error-correction set-up with DDEBT, DEFICIT, a constant, and either DREV or DEXP. In Panel A, DREV is the conditioning variable while DEXP assumes this role in Panel B. The log-determinant of the variance-covariance matrix of forecast errors is shown under the «Unconditional» column in each panel. The «Conditional» column lists the log-determinant of the variance-covariance matrix of forecast errors conditioned on the knowledge of the specified conditioning variable. The advantage offered by the «Conditional» over the «Unconditional» is listed under «Improvement». This is the average reduction in the standard deviation for the forecast variable (DDEBT) over a 1 to 16 quarter forecast horizon. The reported values are posterior means based on 1000 Monte Carlo replications.
Table 2 - Improvement of Conditional over Unconditional Forecasts with Sample Division at the CBICA (1975:1) - 1000 Monte Carlo Replications

**Panel A**

Target: Change in Debt (DDEBT)  
Instrument: Change in Taxes (DREV)

<table>
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<th>Sample</th>
<th>Unconditional</th>
<th>Conditional</th>
<th>Improvement</th>
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<tbody>
<tr>
<td>1954:1-1974:4</td>
<td>91.4547</td>
<td>89.1611</td>
<td>7.1675</td>
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- Change in Improvement: -26.71%
- Posterior Probability of a Decrease in Improvement; 1975:1-1995:4 .9970
- Log Posterior Odds of No Change in Improvement vs. a Decrease; 1975:1-1995:4 -5.3212

**Panel B**

Target: Change in Debt (DDEBT)  
Instrument: Change in Spending (DEXP)

<table>
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<tr>
<th>Sample</th>
<th>Unconditional</th>
<th>Conditional</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1954:1-1995:4</td>
<td>90.6237</td>
<td>89.3187</td>
<td>4.0780</td>
</tr>
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- Change in Improvement: -33.60%
- Posterior Probability of a Decrease in Improvement; 1975:1-1995:4 .9160
- Log Posterior Odds of No Change in Improvement vs. a Decrease; 1975:1-1995:4 -.3932

Note: The log determinant of the variance-covariance matrix of the forecast errors (over a 16 quarter horizon) is listed beneath «Unconditional» and «Conditional». «Improvement» is the average reduction in the standard deviations for DEBT over the 1 to 16 quarter forecast horizon. The posterior probability indicates the probability of a decrease in forecast accuracy when the subsequent period is added to the sample. The log posterior odds tests the null that there is no change in improvement given even prior odds. The alternative is a decline in improvement after 1974:4. The null is rejected with negative odds.

As shown, in both the 1954:1-1995:4 and the 1954:1-1974:4 samples, knowledge of a future path of either revenues or expenditures increases the accuracy of the forecast of changes in debt. This is seen in the positive «Improvement».

An alternative way to contrast the forecast information contained in DREV and DEXP, is to compare the «Improvement» over the full sample to the «Improvement» up to the beginning of the budget process under the CBICA. This allows the isolation of the...
contribution in the post-CBICA period, 1975:1-1995:4. As indicated, the «Improvement» declines by 26.71% for debt forecasts based on DREV and by 33.60% for debt forecasts based on DEXP. In addition, the posterior probabilities indicate that the probability of a decrease in forecast improvement when the subsequent period is added is nearly certain. The log posterior odds tests the null that there is no improvement given prior odds; the alternative being a decline in improvement after 1974:4. Under this set-up the null is rejected when the log posterior odds are negative. As indicated in the panels, the null can be rejected although less convincingly for DEXP than for DREV.

7. CONCLUSION

A few remaining issues need to be addressed. First, do different presidential terms mark different budget regimes? According to Figures 2A-C, a break is found at 1975:1. This date is not associated with an election. In fact, up to this point, rational expectations restrictions hold while different Presidents with very different views of fiscal policy (EISENHOWER, KENNEDY, JOHNSON, and NIXON) hold office. This suggests that the process matters more than the president.

The next point deals with the size of the sample period – 1953:1-1995:4. The rational expectations view of debt management stresses a long run view. Thus, the current sample may be viewed by some as small. First, HAMILTON and FLAVIN (1986) find support for the rational expectations view using annual data covering only 24 years - 1960-1984. In addition, the co-integrating vectors for the current paper are very close to that of BOHN (1991) sample that covered the years 1890 - 1986. As such, we feel that the sample is appropriate. The findings of this paper may simply be saying that the period of time before realizing the budget atonement inherent in the rational expectations view is dependent on the institutional regime.

Finally, BARRO (1986) and BAGHESTANI and Mc NOWN (1994) both tested for regime breaks and found none. BARRO employed a structural model and compared predicted deficits to actual deficits. The forecast errors in any one period did not appear to be very different from those in any other period. Alternatively, BAGHESTANI and Mc NOWN employed recursive residuals while including nominal GDP in their estimations. Our approach, on the other hand, has focused on the internal budget process and not the instrument - target relationship of fiscal policy. We have also maintained an unstructured approach. As such, use of the likelihood ratio test for parameter stability may be more appropriate for this type of modeling.

Economists have been discussing the roles of rules and regimes in monetary policy for years. The purpose of this paper has been to bring attention to the role of rules and regimes in fiscal policy. The findings suggest that the data generating process is sensitive

30. Results available from the authors.
31. This was addressed in MOUNTS and SOWELL (1995).
MOUNTS/SOWELL

to changes in the institutional budget process as is the causality between revenues and expenditures. It appears that not all budget structures are consistent with the rational expectations view of debt management.

Control over the budget may require fundamental structural change in the institutional framework that forms budget development. As the European community moves to full economic integration, the findings of this paper suggest that the rules concerning the interrelationships of the various internal fiscal policies that are developed now, will alter future patterns of the fiscal policies of the participants. As such, the European community is headed towards breaks in fiscal regimes. In addition, such regime changes may also affect the role of the monetary authority in its response to budget deficits.32

REFERENCES

CHARI, V.V. and HAROLD COLE, «Why are Representative Democracies Fiscally Irresponsible,» Research Department Staff Report 163, Federal Reserve Bank of Minneapolis, August, 1993.

32. See BOYES, MOUNTS, SOWELL, and PAYNE. (1996).


SUMMARY

Two strains of literature have come out of the research addressing the size and duration of the United States federal government budget deficit. The first, focusing on budget control, deals with causality issues between expenditures and revenues. The second addresses the sustainability of the budget deficit. Here, one finds the rational expectations view of debt management. The empirical work in these two areas, however, offers many conflicting results. This paper addresses this confusion by searching for changes in the budget regime. For various reasons the Congressional Budget and Impoundment Control Act of 1974 is the principal point of focus of this empirical investigation. Indirectly, this paper offers a useful framework in which to understand the impact of changes in internal fiscal policies and budget rules that may be required of the countries participating in European economic union.

ZUSAMMENFASSUNG

RESUME

Dans les recherches sur la grandeur et la durée du déficit dans le budget du gouvernement des États-Unis, on a produit deux thèmes principaux. Le premier, qui vise le contrôle du budget, considère surtout les questions de causalité entre dépenses et revenus. Le second demande combien de temps et sous quelles conditions on peut soutenir le déficit. C'est ici que l'on trouve la théorie de contrôle de dettes qui s'appelle attente rationnelle. Le travail empirique dans ces deux domaines, cependant, offre beaucoup de résultats contradictoires. Nous voudrions nous adresser à cette confusion en cherchant les changements dans le régime du budget. Pour différentes raisons le Congressional Budget and Impoundment Act de 1974 est le sujet principal de notre enquête empirique. Indirectement, notre travail offre une perspective utile pour comprendre les conséquences de changements dans la politique fiscale intérieure, changements qui peuvent devenir nécessaires aux pays de la Communauté européenne économique.