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Restraining Yourself: Fiscal Rules and Stabilization

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Abstract

State budgets in the United States played a significant macroeconomic role in the 1970s and 1980s, and the level of cyclical responsiveness was affected by the severity of statutory and constitutional fiscal restraints. Moving from no fiscal restraints to the most stringent restraints lowered the fiscal offset to income fluctuations by around 40 percent. Simulations indicate that a reduction in aggregate fiscal stabilizers of this size could lead to a significant increase in the variance of aggregate output.

Keywords:
Fiscal stabilization, fiscal restraints

JEL Classification Nos.:
E62, H61, and H74

1/ International Monetary Fund and University of California at Berkeley, respectively. The views expressed here do not necessarily represent those of the International Monetary Fund. For helpful comments we are grateful to Jim Poterba and Geoffrey Woglom.

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Summary

Restraints on the fiscal autonomy of budgetary authorities are very much in the news. In Europe, the Maastricht Treaty on Economic Union specifies ceilings or "reference values" for the debts and deficits of EU members that participate in the monetary union. In the United States, the Gramm-Rudman-Hollings Act and subsequent legislation limit the U.S. Congress' leeway to legislate increases in the federal budget deficit.

Most previous research on statutory and constitutional fiscal restrictions has focused on their effectiveness in limiting debts and deficits. Many investigators have used data across U.S. states, all of which, aside from Vermont, are subject to statutory or constitutional debt and deficit limits. Since the stringency of these provisions differs, they offer a natural experiment on the effects of fiscal constraints on behavior. Political economy analyses which emphasize the roles of log-rolling and pork-barrel politics in creating excessive debts and deficits imply that fiscal restrictions designed to bring about their reduction are desirable.

This paper suggests, however, that there is another side to this coin. Fiscal restrictions that limit U.S. state debts and deficits are also found to reduce the responsiveness of state budgets to the cycle by up to 40 percent, and hence weaken the fiscal stabilization that could otherwise be provided by U.S. state budgets. These results are then used to estimate the potential effect of fiscal constraints on the level of stabilization provided by national governments. Simulations indicate that a reduction in national fiscal stabilizers of the magnitude estimated here for U.S. state governments could lead to a significant increase in the variance of output, on the order of 20 percent.

These findings have implications for several contexts in which the need for fiscal restraints has been mooted. The paper ends by considering the example of the Maastricht Treaty's ceilings on budget deficits. The U.S. experience suggests that such restraints, if vigorously enforced, could significantly diminish the stabilization afforded by national budgets. Since the EU budget will probably remain small compared with the national budgets, if the treaty does in fact inhibit national governments from adjusting their budgets to the cycle, post-Maastricht Europe could enjoy significantly less fiscal stabilization than does the United States.

I. Introduction

Restraints on the fiscal autonomy of budgetary authorities are very much in the news. In Europe, the Maastricht Treaty on Economic Union specifies ceilings or "reference values" for the debts and deficits of European Community member states participating in Europe's monetary union. 1/ In the United States, the Gramm-Rudman-Hollings Act and subsequent legislation (discussed in Sheffrin, 1987) limit the U.S. Congress' leeway to legislate increases in the federal budget deficit, to the point where ratification of the North American Free Trade Agreement required Congress to find other expenditure cuts or revenue increases to offset the foregone tariff revenues. A balanced budget amendment to the federal constitution has also been actively discussed in the U.S. Congress.

Most previous research on statutory and constitutional fiscal restrictions has focused on their effectiveness in limiting debts and deficits. Many investigators have used data across U.S. states, all of which, aside from Vermont, are subject to statutory or constitutional debt and deficit limits. Since the stringency of these provisions differs, the states provide a kind of natural experiment of the effects of fiscal constraints on behavior. 2/ ACIR (1987), von Hagen (1992) and Eichengreen (1994) all use data for U.S. states to model the determinants of deficits and debts, reaching mixed conclusions as to whether fiscal restrictions have significant effects. Bayoumi, Goldstein and Woglom (1993) and Bayoumi and Eichengreen (1994) use state-level data to examine the connection between fiscal restrictions and the cost of government borrowing, again with somewhat mixed results.

Political economy analyses emphasizing the tendency for log-rolling and pork-barrel politics to bias debts and deficits toward being excessive imply

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1/ The Maastricht Treaty requires that budget deficits not exceed 3 per cent of GDP and that public debts not exceed 60 per cent of GDP. These ceilings are subject to significant qualifications, however. Countries will only be said to be in violation of the deficit rule if the deficit ratio exceeds 3 per cent and if in addition either it has not declined "substantially and continuously" to "close to" that level or it cannot be regarded as "exceptional and temporary and...close to" 3 per cent. The debt ratio will be said to be violated only if it exceeds 60 per cent and if in addition it is not "sufficiently diminishing and approaching the 60 per cent level at a satisfactory pace."

2/ A potential problem is that these restrictions could be endogenous with respect to the fiscal behavior in which we are interested. States with stringent statutory or constitutional restraints, it might be argued, are those in which large or widely fluctuating deficits are observed. In fact, these legal measures are largely pre-determined from the viewpoint of current fiscal conditions. Many states adopted them in the 1840s in response to a prior wave of defaults. By the Civil War 19 states had adopted some form of constitutional amendment restricting borrowing. As new states were admitted to the union, many of them incorporated debt limits into their constitutions. See Ratchford (1941) for details.

that fiscal restrictions designed to bring about their reduction are desirable. This paper suggests, however, that there is another side to this coin. 1/ State budgets can in principle provide significant fiscal stabilization. However, fiscal restrictions which limit debts and deficits also reduce the responsiveness of state budgets to the cycle and weaken the fiscal stabilization that could otherwise be provided by state governments in the United States.

In Section II aggregate data for U.S. state and local governments are used to estimate the extent to which they provide fiscal stabilizers and to test for changes in this role over time. Section III uses evidence disaggregated by government and region in order to identify the impact of statutory and constitutional restraints. Section IV compares the results for the United States with those for other countries with both federal and unitary government structures. Section V assesses the implications of fiscal restrictions and the reductions in fiscal stabilization they imply for the volatility of the macroeconomy using simulations from a macroeconomic model. Section VI, in concluding, draws out the implications of the analysis by returning to one of the motivating cases cited in the introduction, namely the fiscal restraints in the Maastricht Treaty.

II. Aggregate Evidence

Quarterly data on fiscal balances and output since 1960 are used to analyze the cyclical properties of state and local government fiscal policy. 2/ No attempt is made to distinguish between movements in the fiscal balance due to discretionary policy and those due to automatic stabilizers (nondiscretionary changes in revenues and expenditures caused by changes in output) since it is difficult to make such a distinction for a government sector which operates under fiscal constraints. Fiscal constraints may force governments to enact "discretionary" changes in taxation and expenditure so as to remain within the statutory limits of behavior. It is also likely that the design of the tax and transfer system, and hence the provision of automatic stabilizers, is to some extent a function of such fiscal constraints; a state with very strict constitutional fiscal controls would be unlikely to adopt a tax and transfer system which was highly sensitive to economic activity.

The association between the aggregate state and local government budget balance and output is displayed in Chart 1, which juxtaposes the balance for state and local governments excluding social insurance payments as a

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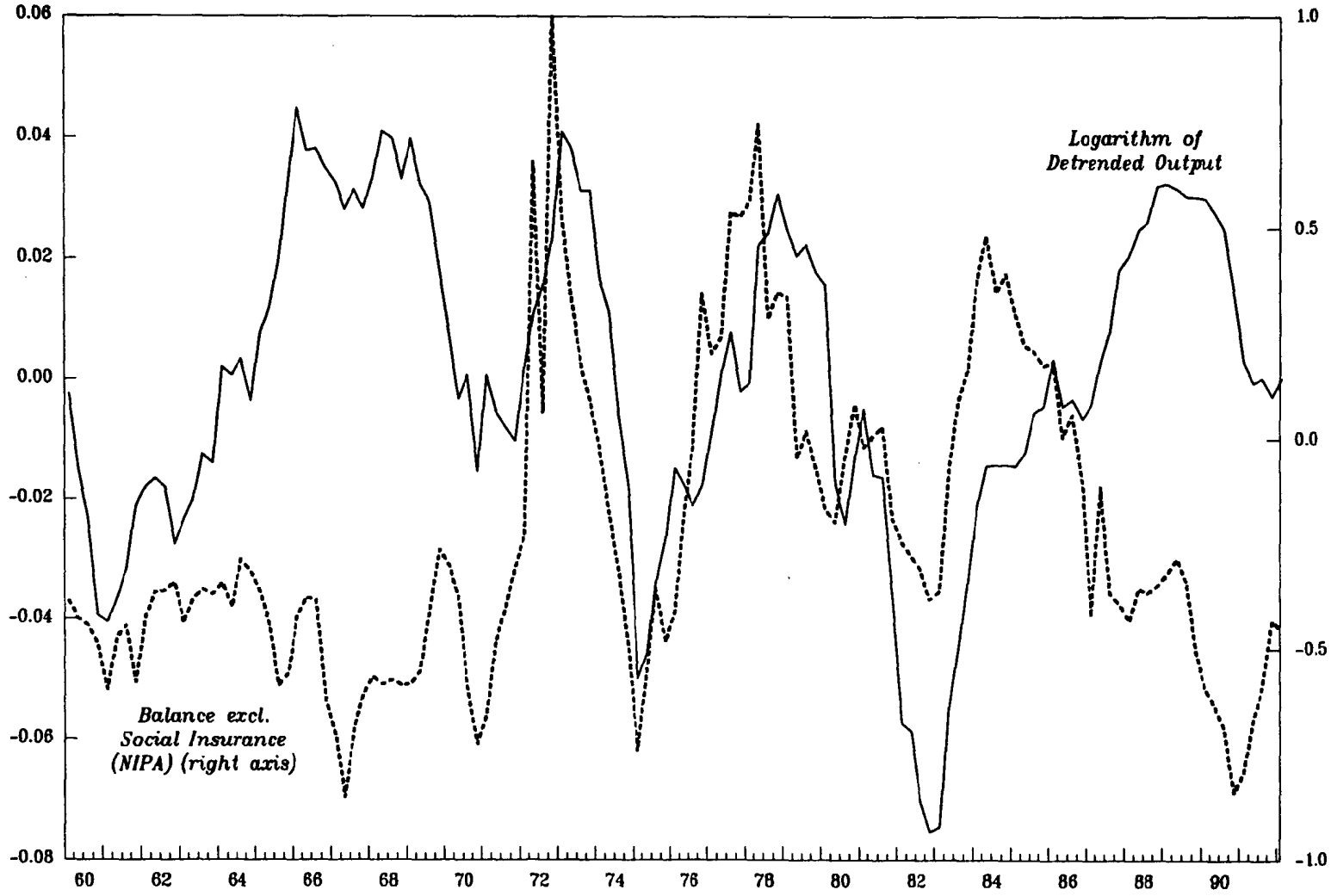
1/ After the first version of this manuscript was drafted, we discovered a study by Poterba (1993) which not only considered the same question we take up here but reached remarkably similar conclusions, albeit using an entirely different methodology.

2/ The quarterly National Income and Product Accounts (NIPA) aggregate state and local governments. We differentiate between them when we move to annual data below.

Chart 1.

Cyclical Behavior of State and Local Government Fiscal Balances

(NIPA basis, in percent of GDP)



percentage of GDP with one measure of the cyclical component of output (the deviation of the logarithm of output from a quadratic time trend). 1/ Comparing cycles in output with changes in the fiscal balance, there is a clear break around 1970. Whereas in the 1960s state and local government fiscal balances varied over a relatively narrow range, after 1970 their variance increased significantly. Having shown little cyclical responsiveness in the 'sixties, in the 'seventies they followed the cycle closely, rising in expansions and falling during contractions. Behavior in the late 1980s and early 1990s was more complex. The steady economic expansion from mid-1984 to 1989 was accompanied by a decline in the fiscal balance. In 1990, when output started to fall relative to trend, the deterioration of the fiscal balance accelerated, as might be expected given the fall in output. The balance then started to improve from mid-1991 onwards. To the extent that there was a change in behavior in the mid-1980s, it would appear that it was a change in the underlying trend, not in cyclical behavior. The cyclical pattern appears to be similar to earlier periods, at least until mid-1991. 2/

These visual impressions can be analyzed more systematically. Assume that the change in the fiscal balance depends upon the rate of growth of real output and on its own lagged value (a term which limits the long-run movement of the balance from its initial equilibrium):

$$\Delta(BAL/GDP)_t = \alpha + \beta\ \Delta\log(Y_t) + \tau\ (BAL/GDP)_{t-1} + \epsilon_t, \qquad (1)$$

where (BAL/GDP) is the ratio of nominal fiscal surplus to output, Δ is the first difference operator, Y is real GDP, ϵ_t is an error term. Greek letters represent estimated coefficients. Since both the fiscal surplus and real output are both measured as first differences, the coefficient β can be seen as measuring the sensitivity of the level of the fiscal balance to real output, with a positive value indicating that the balance varies countercyclically, providing fiscal stabilization and damping fluctuations.

Table 1 reports estimates of equation (1) for the overall balance and for expenditure and revenues separately (all excluding social insurance) for

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1/ Social insurance payments are usually excluded since these payments are nondiscretionary and relatively volatile. Including such payments makes no different to the analysis (Bayoumi, 1992).

2/ Bayoumi (1992) provides further discussion of the behavior of state and local government since the mid-1980s.

Table 1. Cyclical Behavior of State and Local Government

Estimating Equation: $\Delta(BAL/GDP) = \alpha + \beta\Delta lny + \tau(BAL/GDP)_{-1}$

	1959:2 - 1969:4		1970:1 - 1992:1	
	β	R^2	β	R^2
Overall Surplus	-.022 (.021)	.47	.083** (.022)	.75
Expenditures	-.080** (.020)	.99	-.104** (.012)	.96
Revenues	-.104** (.018)	.99	-.029* (.022)	.85

Notes: The equations were estimated using ordinary least squares. Estimates of the constant term and lagged dependent variable are not reported. One or two asterisks indicate the coefficient is significant at the 5 and 1 percent level, respectively.

the periods 1959:2-1969:4 and 1970:1-1992:1. 1/ The estimate of β for the overall balance for the 1960s is negative, although insignificantly different from zero, implying that the state and local government sector played little or no role in damping cyclical fluctuations. The negative coefficient on expenditures, which indicates that spending as a proportion to GDP falls when output is above trend and rises when it is below trend, is almost exactly offset by a similar path for revenues.

For the 1970s, 1980s, and early 1990s, however, the coefficient on the balance is 0.083 is significantly different from zero at the one percent confidence level. Each one percent rise in the growth rate was associated with an increase in the surplus of 0.083 percent of GDP, helping to reduce the impact on the economy of aggregate disturbances. This rise in the coefficient on the balance reflects a rise in the sensitivity of ratio of expenditures to GDP over the cycle, together with a fall in the sensitivity of the ratio of revenue to GDP. 2/ The largest change is in the equation for revenues, where the estimate of β falls from a significant -0.104 before 1970 to an insignificant -0.029 thereafter. 3/

It is possible that this change in the behavior of revenues reflects a change in the behavior of federal grants rather than a change in behavior by the state and local sector itself. To investigate this possibility, the regressions were rerun with the revenue data divided into federal grants and revenues from own resources. Contrary to the above-mentioned hypothesis, most of the change in the behavior of revenues is attributable to revenues from own resources. The estimate of β for revenues from own resources fell from -0.072 to -0.023, that on federal grants from -0.032 to -0.010.

1/ We ran the regressions separately for these two subperiods because of the evidence of a structural shift discussed above. Regressions with and without allowance for a shift in the constant term in the mid-1980s gave very similar results; those reported do not include the split constant term. Experiments with other functional forms, such as including a time trend or a levels term in output, yielded insignificant coefficients on these variables.

2/ Since the balance reflects the difference between spending and revenues, this translates into an increased level of cyclical sensitivity for the balance. Note that a reduction in the sensitivity of the ratio of nominal spending to nominal GDP to the cycle is equivalent to an increase in the sensitivity of the absolute level of real spending to the cycle. This is because GDP moves with the cycle, hence a fixed ratio of spending to GDP implies a large cyclical element in actual spending.

3/ This is consistent with a move to a more medium-term budget perspective, with tax rates being kept relatively stable over the cycle. Feenberg and Rosen (1986) estimate that personal income and sales taxes, which make up the bulk of state (but not local) government revenues, have a combined elasticity of close to unity. This implies that, with unchanged tax rates, the ratio of revenues to nominal GDP would stay constant over the cycle.

The change in the cyclical behavior of both expenditures and revenues plausibly reflects a transfer of fiscal responsibility from the federal to the state level. Prior to the 1970s, federal assistance to state and local governments mainly took the form of categorical grants with narrowly specified objectives. 1/ The "New Federalism" of the Nixon administration aimed to give lower levels of government significantly more discretion over their use of federal money. 2/ This transfer of fiscal responsibility could have encouraged state and local governments to take more account of the cycle when formulating budgets. One possible reflection of this change in priorities was the creation of explicit budget and economic stabilization funds. The first of these funds was set up by Michigan in 1977, an initiative which has been subsequently followed by 34 other states. 3/

III. Regional Evidence

The results reported above use data aggregated over all state and local governments. To further investigate fiscal behavior of different levels of government and locations, state-by-state annual data on state government and on local government balances were collected from the *Bureau of Census*. 4/ Given the change in behavior around 1970 in the aggregate data, we limited estimation to 1971-90. 5/ The fiscal variables were normalized by dividing by nominal gross state product (the regional equivalent of gross domestic product) for the previous year and combined them into the eight standard regions employed by the Bureau of Economic Analysis. 6/

1/ Swartz and Peck (1990).

2/ While the scope of federal assistance expanded in the 1960s, its administration remained essentially unchanged until the early 1970s, when the State and Local Assistance Act (1972) consolidated over 130 categorical grant programs into six block grants with significantly reduced fiscal controls.

3/ Details of the operation of these stabilization funds are contained in ACIR (1991). National Association of State Budget Officers (1992) reports their financial position.

4/ The state fiscal balance is defined as total government revenues minus total expenditures, while the local government fiscal balance is defined as total revenues less direct expenditures. These data are reported on a fiscal year basis, which generally start in July of the previous year. Despite the fact that state unemployment insurance trust funds are administered by the federal government, our consolidated state-level data were constructed to include them since they are likely to be sensitive to the cycle.

5/ Due to limitations of the available data these local government regressions start in 1975. To conserve degrees of freedom a time trend was substituted from the lagged dependent variable in the local government regressions reported below.

6/ New England, Mid-East, Great Lakes, Plains, South East Southwest, Rocky Mountains, and Far West.

Table 2 shows the results from re-estimating equation (1) using these regional data. They suggest that state rather than local governments stabilize over the cycle. When the model was estimated as a system with β constrained to be equal across regions, its estimated value was 0.077 and highly significant at standard confidence levels. In contrast, the coefficient in the local government regressions was 0.003 and insignificantly different from zero. At 0.080, the sum of the coefficients on state and local government is very similar to that produced by the quarterly NIPA data.

We also report the estimated values of β for each region when they are not constrained to be equal and the likelihood ratio statistic associated with the constraint. When the regional coefficients are freely estimated the results confirm the lack of importance of local governments in fiscal stabilization. The constraint of equality across the coefficients cannot be rejected, and only one of the freely estimated values differs significantly from zero. By contrast, the hypothesis of equality is rejected for state governments, indicating the existence of significant differences in behavior across regions. State budgets on the Eastern Seaboard (New England and the Mid East) and the Far West display relatively large cyclical offsets, with coefficients on the order of 0.11-0.14. The other western regions (the South West and Rocky Mountains) have slightly lower values (0.08-0.10), while the Midwest and South (the Great Lakes, Plains and South East regions) have the smallest offsets, ranging from 0.040 to 0.070. 1/

Regions with relatively large cyclical offsets also tend to be those with less stringent fiscal constraints, while those with smaller cyclical offsets have more stringent constraints. Many New England states have particularly weak fiscal restraints; in the Far West, California, which dominates the region economically, has relatively lax fiscal controls; in contrast, all of the states in the Plains region have relatively stringent restraints. Of the 50 states in the Union, 49 have some sort of limits on the amounts and types of debt that they are legally allowed to issue. In addition, a number of states have adopted statutes limiting current deficits as well as debts. The forms of these constraints vary widely. Some states are prohibited from carrying a deficit into the next fiscal year. In others the governor must only sign a balanced budget; subsequent events that cause the fiscal balance to deteriorate do not require immediate action. In yet other states it is only the legislature who must pass a balanced budget. Some of these constraints are in the state constitution, others are statutory. State-by-state details of these provisions can be found in "Significant Features of Fiscal Federalism," an annual publication of the Advisory Council on Intergovernment Relations (ACIR). Table 3 of ACIR (1991), for example, indicates that while the governor must submit a

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1/ All of these cyclical coefficients are significantly different from zero at the one percent level, confirming the result of the previous section that over the 1970-90 period state governments have indeed provided significant regional automatic stabilizers.

Table 2. Regional Results for State Governments and Local Governments

	State Government		Local Government	
	β	R^2	β	R^2
All Regions	.077** (.010)	.32 - [illegible]	.003 (.004)	.16 - .76
New England	.132** (.043)	.66	.016 (.011)	.22
Mid-East	.115** (.027)	.80	.035* (.016)	.40
Great Lakes	.070** (.013)	.70	-.005 (.007)	.45
Plains	.040* (.016)	.33	-.003 (.014)	.40
South East	.066** (.013)	.75	.002 (.009)	.54
South West	.080** (.018)	.53	.013 (.009)	.50
Rocky Mountains	.099** (.015)	.75	-.005 (.010)	.76
Far West	.134** (.023)	.45	.015 (.013)	.60
Likelihood ratio test of constraint ($\chi^2(7)$)	14.2*		9.0	

Notes: The equations were estimated using multiequation least squares. The first row shows the results when all of the β coefficients were constrained to be the same. The last row shows the results from testing this constraint using a likelihood ratio test. The state government equations were estimated over FY 1971-90, the local government data FY 1975-90. The estimated coefficients on constant terms, lagged dependent variables and time trends are not reported. One or two asterisks indicate the coefficient is significant at the 5 and 1 percent level, respectively.

balanced budget in 45 states, he or she is required to sign a balanced budget in only 34 states.

To investigate the connection between legislative controls and counter-cyclical behavior further, the regressions for state governments were repeated on a state-by-state basis. The estimated values of β were then related to an index of the stringency of state fiscal controls taken from ACIR (1987). This index, which varies from 0 to 10, attempts to summarize the severity of fiscal restraints on state governments. 26 of the 50 states have an index of 10, while 8 have a value of 5 or less; only Vermont has an index of 0, indicating no restrictions on borrowing. A regression of the estimated β coefficients on the index of controls produced the following result. 1/

$$COEF = \underset{(0.0201)**}{0.1361} - \underset{(0.0024)*}{0.0055\ FISCAL\ INDEX} \qquad R^2 = 0.10.$$

The coefficient on the fiscal index differs from zero at the five percent level. Moving from no fiscal controls to the most stringent level of controls, it suggests, lowers the cyclical offset by 0.055. Given the estimated intercept of 0.136, this indicates that fiscal controls can have a sizeable impact on stabilization, reducing the cyclical variance of the fiscal balance by around 40 percent of its original value. When the sample is limited to states with fiscal indices of six or more, which covers over four-fifths of the full sample and eliminates the largest outliers, the estimated impact of fiscal controls is even larger, indicating that, if anything, the full-sample results provide a conservative estimate of the effect.

Which components of the surplus, revenues or expenditures, are affected by fiscal restraints? To answer this question equation (1) was re-estimated on a state-by-state basis for revenues and expenditures separately. As with the overall surplus, these coefficients were then regressed on the fiscal index. The logarithm of the level of real state product was also included, since state governments tend to administer more programs directly in smaller states, which may independently affect the cyclical behavior of revenues and expenditures. Most of the difference in behavior associated with fiscal constraints turns out to be on the expenditure side. The coefficient on the fiscal index in the expenditure equation was -0.0045, as opposed to 0.0005 in the revenue equation. These results indicate that around 90 percent of the reduction in fiscal stabilizers associated with fiscal restraints occurs through reducing the cyclical sensitivity of expenditures, a result which contrasts with the comparison between the periods before and after 1970 discussed earlier, where the main change was in the behavior of revenues.

1/ Although the equation uses generated values from an earlier regression, the coefficient estimates are unbiased because the generated values are in the dependent variable.

In short, while some fiscal stabilization appears to be carried out by state governments, less stabilization was undertaken by states operating under relatively stringent fiscal restraints, due mainly to reductions in the cyclical sensitivity of their expenditures.

IV. International Evidence

The results summarized above indicate a significant role for fiscal stabilization by state governments in the United States, a country whose fiscal functions are relatively decentralized. This finding raises the question of how if at all the situation differs in countries where fiscal functions are not comparably decentralized. Is greater responsibility for fiscal stabilization undertaken by the central government, in other words, or is less fiscal stabilization supplied?

To analyze this question we gathered data from the OECD *Annual National Accounts* for several large industrial countries on net lending by central government, by lower levels of government, and by social security funds. 1/ Equation (1) (augmented by a time trend) was estimated for the United States, Germany, Canada, Japan, France, and the Netherlands using data from 1970 to 1989. 2/ The first three countries are federal states, with significant autonomy for lower levels of government, while the others have more unitary fiscal and political structures.

Table 3 reports revenues from own resources for central and lower levels of government as a proportion of nominal GDP. Own revenues accruing to lower levels of government are significantly higher in federal states than in unitary ones, implying higher degree of effective fiscal autonomy for such governments. The table also reports estimates of β for the fiscal balances corresponding to these different levels of government. These suggest a pronounced difference in the extent of fiscal stabilization by lower levels of government between federal states and unitary states. In federal states (the United States, Germany, and Canada) the coefficients associated with output growth are large and significant, while those for

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1/ To focus on the distinction between central and other levels of government the accounts for central government and social security funds were consolidated. It turns out that social security funds provide a significant level of stabilization in the U.S. and Germany but not in the other countries studied.

2/ Models were also estimated for the UK and Sweden, but the results were unsatisfactory. This presumably reflects structural shifts in fiscal policy relationships associated with changes in government.

Table 3. Estimation Results for OECD Countries

Estimating Equation: $\Delta(BAL/GDP) = \alpha + \beta\Delta lny + \tau(BAL/GDP)_{-1} + \delta t$

	Central Government (and Social Security Funds)		Lower Levels of Government	
	REV/GDP	β	REV/GDP	β
United States	.202	.49(.13)**	.103	.08(.02)**
Germany	.302	.33(.11)**	.138	.23(.04)**
Canada	.193	.34(.13)**	.181	.17(.06)*
Japan	.212	.31(.10)**	.061	.06(.03)
France	.399	.43(.11)**	.034	.01(.03)
The Netherlands	.477	.47(.10)**	.031	-.01(.04)
Log likelihood test $\chi^2(6)$		8.1		20.0**

Notes: The equations were estimated using multi-equation least squares on annual data over the period 1971-89. Estimated coefficients on the constant terms, lagged dependent variables and time trends are not reported. One or two asterisks indicate the coefficient is significant at the 5 and 1 percent level, respectively. The likelihood ratio test is a test that all of the coefficients are equal.

unitary states they are small, insignificant, and often incorrectly signed. 1/ There is a clear difference, moreover, between the estimated coefficients for lower levels of government in the United States on the one hand and in Germany and Canada on the other. In the United States, where borrowing by the state and local sector is widely constrained by statute and constitution, the coefficient associated with output growth is less than half of that for Germany and Canada. This is consistent with our earlier evidence that statutory and constitutional restraints reduce the use of fiscal stabilizers. Cross-equation restrictions confirm the significance of both the difference between federal and unitary states and that between the United States and the other two federal states. When estimated as a system, likelihood ratio tests reject the restriction that the United States, German, and Canadian coefficients are equal, as well as rejecting equality across countries.

By contrast, the estimated coefficients for the fiscal stabilization provided by central government (including social security funds) are similar across countries. All of the estimated coefficients fall in the range 0.31-0.49, and the hypothesis of equality across countries cannot be rejected. Fiscal stabilizers provided by different central governments are remarkably similar, or so it would appear. Given marked differences in the stabilizers provided by lower levels of government, this implies (for this limited sample of countries at least) that those with a federal structure provide significantly more fiscal stabilization. Central governments do not appear to provide more stabilization in unitary states, rather, the level of stabilization is lower. 2/

We also estimated the model separately for expenditures and for revenues from own resources. There was little consistent pattern across countries. Although the β coefficients associated with central government revenues were generally small and insignificant, those for France and the Netherlands were around -0.3 and highly significant. The β coefficients on

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1/ The estimates of β for the U.S. confirms the conclusion that the state and local government sector has operated a countercyclical policy is robust to alternative data sources. While central government (including social security funds) provides the bulk of the automatic stabilization, state and local government also plays a significant role. At .08, the estimated coefficient on the change in output for the fiscal balance of lower levels of government is very close to that derived from the preceding section on the basis of independently-constructed data. Comparing the estimated coefficient for state and local government with that for central government, it appears that state and local government provided about one seventh of total automatic stabilizers over the 1970-89 period.

2/ Similar results are found in Jaeger (1993), which looks at the cyclical response of the general government balance for the seven major industrial countries. Two federated states, Germany and Canada, have the largest responses, although, in contrast to our results, the other federated state, the United States, has the lowest response.

expenditures in these countries were correspondingly higher. These differences may reflect reliance on indirect tax revenues in these countries. Overall, it appears that the relatively predictable behavior of the total balance is consistent with a range of sensitivities of revenues and expenditures to output.

V. Simulation Analysis

Underlying this discussion is the notion that fiscal stabilization can reduce the impact of macroeconomic shocks and hence that diminishing the cyclical sensitivity of those balances may increase the variability of output. This section provides evidence on the economic significance of these effects using MULTIMOD, a rational-expectations macroeconomic model developed at the IMF.

A version of MULTIMOD in which the response of the U.S. government fiscal balance to the cycle roughly corresponded to the average of the central government results reported in Table 3 was developed. Accordingly, the coefficient linking the fiscal balance to output was set at 0.4, the approximate average value for central government responses. Though the use of the U.S. model in the simulations was arbitrary, limited experiments with models for other countries indicate that the major conclusions carry over. We focus on a shock which might be thought of as a typical "business cycle" disturbance, namely a temporary 5 percent fall in the propensity to consume. 1/

A standard simulation was first run in which the level of real government consumption and the tax rate were left unchanged while the fiscal balance allowed to vary freely. The simulation was then repeated with the fiscal balance fixed (by varying a either government consumption or taxes net of transfers).

Results are reported in Table 4. The size of the initial shock to output rises, as expected, when the operation of the government balance is constrained. The size of this change is dependent, however, on the instrument that is used to eliminate movements in the fiscal balance. When government consumption is used, the initial change in output rises by around two-thirds, from 2.8 percent to 4.6 percent. When taxes net of transfers are used, the increase is smaller, from 2.8 percent to 3.2 percent. This reflects the large difference in the output multipliers associated with these different instruments in MULTIMOD. 2/

1/ Clearly, many other types of shocks could be analyzed. As a check on the robustness of the results, the analysis was repeated for an alternative shock, namely a temporary rise in the short-term interest rate. The effect of the government balance on output was very similar across the two simulations, indicating that the precise shock is relatively unimportant for the results.

2/ This in turn reflects the relatively Ricardian nature of MULTIMOD.

Table 4. Results from a MULTIMOD Simulation of a Temporary 5 Percent Fall in the Propensity to Consume

(Percentage deviation from baseline)

	1993	1994	1995	1996	1997
			Base Case Scenario		
Real GDP	-2.8	-0.4	0.9	1.1	1.0
Govt. deficit ($b)	-64.5	5.9	46.8	57.2	45.5
			Government consumption used to Close Budget Gap		
Real GDP	-4.6	0.0	2.0	1.8	0.8
Govt. consumption	10.1	-0.9	-6.5	-6.2	-3.0
			Taxes Net of Transfers Used to Close Budget Group		
Real GDP	-3.2	-0.2	1.2	1.3	0.9
Tax rate (percentage)	0.3	0.4	0.1	-0.1	-0.3

Notes: See text.

While these results show the impact of completely eliminating fiscal stabilizers, fiscal restraints are more likely to reduce the responsiveness of the government balance to the cycle than eliminate it altogether. Since the model is approximately linear it is possible to calculate intermediate variations by appropriately averaging the basic simulations. The results for U.S. state governments reported above indicate that fiscal restraints may reduce the sensitivity of the fiscal balance to the cycle by 40 percent, with most of the adjustment coming through expenditure restraint. 1/ Assuming that this adjustment is divided between government consumption and taxes net of transfers in the ratio of three-to-one, the implied shock to output is 3.4 percent (0.6x2.8 + 0.3x4.6 + 0.1x3.2), a rise of over 20 percent from the case with fiscal stabilizers acting freely.

Our calculations thus indicate that if central government fiscal stabilizers fell by the percentage that we have estimated occurs in states with stringent fiscal restraints, the macroeconomic impact could be significant. To put the point another way, unitary governments which fail to increase central government fiscal stabilization in order to compensate for lack of stabilization at the state and local levels are likely to experience significantly greater macroeconomic variability.

VI. Conclusions and Implications

This paper has considered the impact of fiscal restraints on the countercyclical fluctuation of state budget balances in the United States. State budgets played a significant role in fiscal stabilization in the 1970s and 1980s, providing about one seventh of the total fiscal offset to income fluctuations. The rest was provided by the federal budget and social security. (Local governments played little or no stabilization role.) The pattern is broadly the same in other federal states such as Germany and Canada. In countries with unitary governments, by contrast, the degree of fiscal stabilization provided by the central government is broadly comparable, but because lower levels of government do not engage in significant stabilization, the countercyclical impact of the consolidated fiscal system is less.

In the U.S. the cyclical responsiveness of state budgets is significantly affected by fiscal restraints. The fiscal balance of states with stringent statutory and constitutional restrictions on deficit spending and debt issue varies less over the cycle. Simulations indicate that a reduction in aggregate fiscal stabilizers of the magnitude we have estimated for U.S. state governments could lead to a significant increase in the variance of output.

These findings have implications for each of the contexts in which the need for fiscal restraints has been mooted. To close with one of the examples mentioned in the introduction, consider the Maastricht Treaty on

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1/ As discussed in Section 3 above.

Economic and Monetary Union, which provides for ceilings for the budget deficits of the of the European nations that participate in Europe's monetary union. U.S. experience suggests that such restraints, if vigorously enforced, could significantly diminish the stabilization afforded by national budgets. In post-EMU Europe the EC budget will in all likelihood remain small by U.S. standards. National budgets, in contrast, will be large by the standard of state budgets in the U.S. If the provisions of the treaty in fact inhibit national governments from adjusting their budgets to the cycle, post-Maastricht Europe may enjoy significantly less fiscal stabilization than the U.S. economic and monetary union.

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