The authors would like to thank Rob Grovenstein for research assistance and Hashem Dezhbakhsh and Casey Mulligan for helpful comments. Keith Poole provided some of the data used here.
Theories of the size of government focus on either the demand for government or the supply of tax revenues. Demand side theories such as those of Peltzman, Meltzer and Richard, Husted and Kenny, and Lott and Kenny are essentially political theories. They emphasize the role of voters or interest groups in expanding government. Supply side theories such as those of Kau and Rubin, Baumol, West, and Ferris and West emphasize the ability of government to collect taxes. In this paper, we combine both demand and supply side theories. For demand, we use the Poole-Rosenthal time series data on the ideology of Congress, on the theory that all political forces must ultimately express themselves in voting which is measured by ideology. For supply, we use the Kau-Rubin measures of the ability of government to collect taxes as a function of the deadweight costs of tax collection and ability of individuals to hide revenues. We find that female labor force participation and the associated ability to tax female productivity is the most important factor associated with government, and it alone explains about 60% of the actual growth of government. The ideology of the Senate is also significant, but has a small effect. This paper may be the first to examine the influence of ideology on the time path of a policy; other research examining ideology (including ours) has been cross sectional. Further research on the role of ideology in changing policies over time is clearly warranted.
THE GROWTH OF GOVERNMENT: SOURCES AND LIMITS

I. Introduction

The expansion of government in recent times is a major issue in the social sciences. For example, in the U.S. government (Federal, state and local) share of GNP grew from 10% in 1929 to 34.8% in 1987. This growth occurred in both federal expenditures, which went from 3% of GNP in 1929 to 23.7% in 1987, and state and local expenditures, which increased from 7% of GNP in 1929 to 11.1% in 1987. (All figures from Mueller, 1989, Table 17.1). There is no dearth of theories to explain this expansion. Recent summaries are available in Mueller (1989) and Holsey and Borcherding (1997).

Theories aimed at explaining this growth may be divided into two types. Holsey and Borcherding (1997) call them “political” and “nonpolitical” theories. Political theories involve the demand for government services, including income redistribution. There are several well-known examples. Meltzer and Richard (1981, 1983) and Peltzman (1980) develop theories of the ability of interest groups based on income to form coalitions and vote for redistribution. Krusell and Rons-Rull (1999) develop a dynamic version of the Meltzer-Richard model. Husted and Kenny (1997) argue that the elimination of the poll tax and increase in voting by lower income individuals caused an increase in state level welfare spending. Lott and Kenny (1999) argue that extending the franchise to women caused an increase in government size. Interest group theories such as that of Becker (1985) and Olson (1982) are also examples of political or demand theories, with the specific interest groups left unspecified.

Supply side theories are based on costs of government. There are fewer supply theories than demand theories. Baumol (1967), who focuses on the costs of government provided services, and Kau and Rubin (1981), who examine the ability of government to collect revenues, are examples; these theories are compared and extended in West (1991) and Ferris and West (1996). Brennan and Buchanan (1980) argue that government maximizes revenue. Becker and Mulligan (1998) do provide a theory with both demand and supply elements. They conclude that increased efficiency of tax collection and increased political power of the elderly are the main determinants of the growth of government in the U.S.
The purpose of this paper is twofold. First, we consider both demand and supply side theories in a unified framework in order to better understand the growth of government. Second, we provide the first time series analysis of a particular policy outcome (specifically, government growth) using newly developed time series data on congressional ideology.

II. Ideology: The Demand Side

Stigler (1971) created interest in ideology as an explanation for government behavior. He took an extremely strong stand against the importance of ideology, and argued that virtually all economically relevant political behaviors could be explained by economic self-interest. The first attempts to test for the importance of ideology as an explanation of congressional voting (e.g., Kau and Rubin 1979) were aimed at testing this hypothesis. Following this initial study, there has been a substantial body of empirical analysis of congressional voting showing that factors measuring ideology have large power in explaining congressional voting. Kalt and Zupan (1984) also made an important contribution; they argued that ideological voting was a form of shirking. (We do not examine the issue of shirking here; for a discussion, see Kau and Rubin, 1993 or Lott and Davis, 1992.) These scholars have found that ideology, measured as a score on a voting index such as that of the Americans for Democratic Action (ADA) or the American Conservative Union (ACU) has significant explanatory power in predicting voting by individual congressmen. These results may be considered as confirming Schumpeter's (1950) claim that ideology is important in economic affairs.

The basic method has been to use congressional voting on issues as the dependent variable in a probit or logit regression. Independent variables are a list of factors aimed at measuring constituent economic interests and also ideological variables. Votes by individual congressmen on particular bills are the unit of analysis. The constituent characteristics, measured at the level of the congressional district (or the state, for senators), typically include income, age, urbanization, race, education, unemployment, industry of employment, unionization, measures of government spending in the district, and sometimes measures of particular types of economic activity in the district. Following Kau and Rubin (1979) it is common to regress these measures on a measure of

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1See also Mueller, 1989, p. 213, note 14, for a discussion essentially agreeing with this conclusion.
ideology such as ratings by the Americans for Democratic Action or another ideological pressure groups and then use the residual as the measure of “pure” ideology. Sometimes a simultaneous model is used where contributions are also controlled for (e.g., Chappell, 1982; Kau, Keenan and Rubin, 1982; Kau and Rubin, 1982, 1993. See also Stratmann, 1992a, for a thorough analysis of this issue.) Logrolling is also controlled for in some specifications (e.g., Kau and Rubin, 1979; Stratmann, 1992b.) In such analyses, the measure of ideology is invariably statistically and economically significant.

What has perhaps been equally influential in convincing many scholars that ideology is an important variable have been relatively unsuccessful attempts to challenge the hypothesis. Indeed, the original work by Kau and Rubin was intended to show that ideology did not matter, and was unsuccessful in this attempt. Later, Peltzman (1984, 1985) engaged in a determined effort to show that ideology was not important. Peltzman (1984) controlled more carefully than had others for constituent characteristics, specifically by measuring the characteristics of those who actually voted for Senators rather than by measuring characteristics of all voters in the electoral district (here, the state.) In this way he was able to reduce the impact of the ideological variable, but not, in general, to eliminate it. In other words, Peltzman (1984) found that ideology mattered, although perhaps not as much as others had suggested. Indeed, in a subsequent paper Peltzman (1985) found much the same result as others: while economic factors matter in explaining congressional voting, and, in particular, trends in such voting, non-economic factors also are extremely significant. Peltzman (1985) generally calls these non-economic factors “history” but he indicates (p. 666) that “…one could allude to regional differences in ideology as easily as to ‘historical inertia’…” In his 1985 paper, Peltzman relegates the results of his 1984 paper to a footnote (Note 19). Thus, the existence of ideology as an important determinant of congressional voting has survived a concerted attack by an accomplished econometrician.2

The most significant research on ideology and probably the most significant public choice analysis of Congress is Poole and Rosenthal (1997). This is a book length treatment of roll call voting by the House and Senate for all roll calls from the first

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2We do not offer a complete analysis of the economic literature relating ideology to passage of legislation. There are numerous papers providing such analysis; Lott and Davis (1992) is an excellent summary.
Poole and Rosenthal find that what they call ideology is the basic organizing principle behind all such voting. They define ideology (p. 4): “That is, voting is along ideological lines when positions are predictable along a wide set of issues.” They show that individual congressmen can be arrayed along a continuum for most roll call votes, and that relative positions of particular congressmen do not change from vote to vote. Almost everyone to one side of a “critical point” on this continuum will vote one way and almost everyone to the other side will vote the other way, with errors being clustered near the critical point. The winner in any vote is then determined by the location of this critical point for that vote. Poole and Rosenthal find that ideology as so defined is more important than constituent economic interest in explaining voting by legislators.

Moreover, ideology is even more important in explaining policies that are actually selected than in explaining Congressional voting. Policies adopted tend to be systematically biased away from the center of the distribution of legislators and towards the ideological center of the majority party. That is, a small shift in the average ideology of the legislature can lead to a large shift in the particular policy chosen as the outcome of voting if the small shift moves from a liberal majority to a conservative majority. Ideology is more important in influencing the outcome of the legislative process than in influencing voting by legislators, even though voting is what has most often been studied.

A major issue raised by Poole and Rosenthal is the nature of the voting continuum. They define it in several ways. It is roughly defined in terms of conflict over economic redistribution. It also generally reflects party loyalty. A key point is that the continuum represents logrolling. That is, votes are structured so that coalitions are maintained across most issues. This explains in part why economic interests of constituents are not significant in any one vote. The vote trading reflected in the continuum in part accounts for these interests. One theoretical treatment consistent with these arguments is Hinich and Munger (1996). Poole and Rosenthal also show that for most of American history, a single ideological dimension is all that is required to array votes. For two periods (the 1830s-1840s and the 1940s-1960s) a second dimension

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3 More recent data are available from Poole’s website, [http://voteview.gsia.cmu.edu/](http://voteview.gsia.cmu.edu/).
dealing with race was also useful.\textsuperscript{4} From the New Deal until the 1970s, they find that there was actually a three party system in the US (Republicans, Northern and Southern Democrats.) More recently, the country has returned to a single dimension and a two party system.

The procedure used to estimate the continuum is called “NOMINATE.” It is an iterative procedure, aimed at maximizing the probabilities assigned to the observed votes. The program and data are available at Poole and Rosenthal’s web site, http://voteview.gsia.cmu.edu/. They also develop a dynamic procedure, D-NOMINATE, that is based on assuming each legislator moves at most along a linear trend over his career. This assumption and trend line enables Poole and Rosenthal to estimate a common issue space for all US history. Because of the amount of data involved (11,473 legislators, 70,234 votes and 10,428,617 total decisions), the estimation requires the use of a supercomputer. A two dimensional model (i.e., an issue space allowing for two ideological dimensions) and a linear trend for each legislator provides as good a fit (about 85% of individual votes predicted correctly) as higher order models (with either more dimensions or a more complex polynomial time path for legislators.) Indeed, a one-dimensional model assuming each legislator maintains a constant position predicts about 80% of the votes correctly.

Poole and Rosenthal show that the NOMINATE variable is highly correlated with more traditional measures of ideology, such as the ADA rating. This is a nice result since most researchers have used these scores in measuring ideology. NOMINATE is a preferred rating scale since it is more comprehensive and since traditional interest group ratings are subject to “folding” problems. That is, a legislator just a little more liberal than the ADA would get the same rating as a representative who was more conservative by the same amount. However, many of the major interest groups (e.g., ADA, ACU) are at or very near the (opposite) ends of the political space, so this problem is not acute.

Political theories all suggest that some group of voters influences the size of government. The identity of these voters varies from theory to theory: they are relatively low income voters in the Meltzer and Richard and Peltzman theories, newly enfranchised

\textsuperscript{4} In theory, more dimensions could be required, but empirically, one is almost always sufficient, and the explanatory power of the second dimension is rather small.
voters in the Husted and Kenny theory, women in the Lott and Kenny theory, and elderly voters in the Becker and Mulligan (1998) analysis. However, if such an influence exists from any source, it can only be transmitted through congressional voting. Indeed, for example, Lott and Kenny examine the influence of women voters in a state on the Poole-Rosenthal measure of the ideology of that state’s congressional delegation. In other words, whatever the source of increased demand for government or for redistribution, the pressures must be expressed through the political process, including voting in congress. Thus, these theories imply that voting behavior by congress should respond to interest group pressures and that the outcome of congressional voting should have in influence on variables of interest. Since Poole and Rosenthal show that the major explanation of congressional voting is ideology, it must be true that political demand side pressures for government expansion occur through changes in ideology. We argue that these theories imply that government should grow more quickly when liberals are in power, and more slowly when congress is more conservative.

The Poole-Rosenthal data on congressional roll call voting can be used to test these theories. In what follows, we use the Poole-Rosenthal D-NOMINATE scores for the House and Senate as a measure of congressional ideology. It is important to note that data such as this is necessary if time series analysis is to be used. It is not meaningful to compare standard measures of ideology (e.g., ADA ratings, or even the Poole-Rosenthal NOMINATE scores) from one year to another. This is because the issues change from year to year and so it is impossible to compare raw annual vote scores. In previous research, we and others have used vote scores to explain voting on issues in a given year (e.g., Kau and Rubin, 1979), but it has been impossible to use this data for time series analysis. Poole and Rosenthal have done a real service to scholars in calculating and making available data useful for time series analysis.

Because we use data based on all votes, and no demographic data, it is not possible for our methodology to determine which particular demand side factors are

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5 For example: In year 1, the legislature passes a minimum wage of $2.00 per hour by a 51%-49% margin. Liberal ratings services such as the Americans for Democratic Action count a vote for the minimum as a plus, so 51% of the legislature receives a positive score for this vote. In year 2, the legislature is more liberal, so it passes a $2.50 minimum wage by the same margin. The liberal rating service still counts a vote for as a plus, so again 51% of the legislature gets a positive score. Thus, even though the legislature is more liberal, conventional measures of ideology will show no change.
relevant for explaining the growth of government. All of the factors identified in the literature may be relevant for determining ideology. That is, if female voters or lower income voters are in favor of government transfers or larger government, then this will be captured in the ideology measure as these voters elect more liberal representatives. However, the magnitude of the effect of ideology is a measure of the effect of demand or political variables on government growth.

**III. Cost of Taxes: The Supply Side**

For supply side variables, we use the basic specification of our 1981 paper. The argument is that there are deadweight costs to taxation and the amount of taxes a society is willing to tolerate is a function of these deadweight costs; Becker (1985) and Becker and Mulligan (1999) also emphasize the deadweight costs of government policies. As deadweight costs decrease, the size of government will increase, and conversely. In our earlier paper, we did not estimate the demand side, and so implicitly assumed that government maximized revenue subject to the cost of taxation. Here, we are able to be more explicit about the determinants of revenue because we also measure the demand for government, as discussed above. This is important because Holsey and Borcherding (1997, p. 574) suggest that what we have called supply side variables (e.g., female labor force participation) could also be related to changes in social preferences, and that further testing is needed to disentangle these two effects. By controlling explicitly for ideology as a demand side variable, we are able to perform this separation.

The cost of taxes is effected by the ability of the government to find income to tax and by the costs of tax avoidance. In our model, citizens avoid taxes by working in areas or activities that are more difficult to tax. In our earlier analysis, we found that female labor force participation was the most significant variable in explaining growth of government from 1929-1970. Women are productive either as housewives or as workers. However, it is difficult for the government to measure productivity of housewives, so that it is difficult to tax the product of women who are not in the labor force. On the other hand, there are records measuring wages or productivity of women employed outside of

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6 We use the 1930-1993 time period, determined by data availability. Our previous paper ended in 1979. The end date is determined by the Poole-Rosenthal data. For a discussion of the growth of government in the 1920s, see Holcombe (1996).
the home, so that it is possible to tax earnings of these women. We therefore hypothesize that tax revenues should grow with the number of women in the labor force.

Theory also suggests that self-employment should be relevant. Self-employed individuals can more easily hide income from tax collectors, and so are more difficult to tax. On the other hand, depending on the nature of the technology available to the economy, self-employment may reduce productivity, so that the self-employed may earn lower pre-tax incomes. That is, some technologies make self-employment relatively less productive than working in a firm. There is then a trade-off between being self-employed and earning a lower but less taxed income and working for a firm, with higher but more heavily taxed earnings. Thus, the amount of self-employment depends on the level of taxes, and the amount of tax revenue that the government can raise depends on the level of self-employment. Technology (which we measure by the percentage of households with a computer) also determines the ability of the government to monitor behavior and tax earnings. We predict that increases in computerization lead to increased government size because of the increased ability of the government to monitor and tax incomes.

All relationships are simultaneous. In the main equation, the dependent variable is per capita state and federal revenues. We hypothesize that this is negatively related to self-employment and positively related to female employment, technology, and liberal ideology. We estimate two systems of equations. In one specification, we use ideology of the House; in the other, the Senate. All specifications are in log log form, so the coefficients are elasticities.

We expect female labor force participation to be negatively related to taxation. It should also be negatively related to agricultural employment, as measured by farm revenues as a percent of GNP and by agricultural employment as a percent of total employment. This is because women on farms can participate in economic activity without formally entering the labor force. Female participation should be positively related to female earnings and to education of women, measured by percentage of females who are college graduates.

We predict that self-employment will be positively related to tax revenues. It is also determined by various factors relating to relative productivity in self-employed activities as compared with non-self-employment. These are urbanization, miles of
roads, and concentration in manufacturing, all hypothesized to be negatively related to self-employment. Urbanization and roads increases possibilities for division of labor and exchange, and therefore make self-employment less productive relative to wage labor. Concentration in manufacturing is a measure of economies of scale, and increasing economies of scale make the opportunity costs of self-employment greater. On the other hand, increased numbers of home computers reduce the advantage of centralization, and should lead to increased self-employment.

We also have equations measuring urbanization and farm revenues to complete the system of equations. We make no theoretical predictions regarding these equations.

IV. Econometric Method and Results

The relationships discussed in the theory are all inter-related so a system of simultaneous equations is used. We use a two-stage least-squares estimation and time series analysis. This method involves regressing all endogenous variables on all exogenous variables and using the estimates as the instrumental variables. The instrumental variable estimates provide a consistent estimate. All variables are in logarithms so the estimated coefficients represent elasticities. The data was collected from the *U.S. Historical Statistics* and the Bureau of Labor Statistics and includes years 1930-1993.

For the dependent variable, we use total federal and state spending in each year. The theory of taxation discussed above applies to all taxes, not merely federal taxes, and so it is necessary to include state as well as federal spending. We believe that the ideology of congress should be associated with state spending as well as federal spending since a more liberal legislature indicates that voters are in general more liberal. We use spending rather than tax revenues because deficits must ultimately be paid from tax revenues.

When dealing with macroeconomic variables over time, the data generating process is often described as a unit root process. The majority of the variables in this study show signs of a unit root when the augmented Dickey-Fuller (1981) test is implemented. The Stock and Watson (1988) paper suggests that the estimation of a coefficient on an integrated variable can be consistent as long as the error term is stationary. The error term is stationary so level data was used.
The results are shown in Table 3 A and B.\textsuperscript{7} Table 3A is the specification with ideology measured for the Senate and Table 3B with ideology measured for the House. Senate but not house ideology is significant in explaining the growth of government. All other results are consistent between both sets of equations.

In the equation predicting government revenues, female participation is significant and positive, indicating that the ability to tax working females is an important part of the growth of government. Self employment is significant but has the opposite sign from our prediction and from the results of our earlier paper, from 1929-70. This means that since 1970 something has happened to make it easier to tax the self employed; we have no explanation for this result. Other variables are significant but with relatively small effects, except for GNP. This has a negative coefficient, indicating that per capita taxation has decreased as GNP has increased. Looking at Table 2, we see that over the relevant time period GNP has increased from $90 billion to $6560 billion, an increase of 7300 percent, while Adjusted Federal and State Revenues per capita have increased from $545 to $6329, an increase of 1161 percent, a much smaller increase.

The results do indicate strongly that supply side variables associated with the ability of the government to increase taxes, and particularly the increase in female labor force participation, are a major determinant of the growth of government. We have calculated the contribution of each of our variables to the total increase in government revenues. Per capital revenues have increased from $545 to $6329 (in 1982 dollars) over our sample period; this is an increase of 1161%. In Table 4, we have calculated the contribution of each economic variable (female participation, self-employment, technology, and year) to the growth in government. The coefficients in Table 3 are elasticities. Applying these elasticities to the percentage change in each variable, we see that the largest effect on the change is due to the increased female employment, which would explain a 706% increase in government revenues, about 61% of the total change in revenues. The increase in GNP explains a net reduction in government of 388%. While Senate ideology is significant, it explains only a 48% increase in government revenues, out of an actual change of 1161%; that is, ideology explains only a very small fraction of

\textsuperscript{7} Since the constant term was not significant in the main equations, those predicting revenues, we omitted it from the empirical specification.
the actual change in government. The effect of the other variables is quite small. Overall, our theory explains only about 20% of the change in government revenues over the 1930-1993 period.

V. Summary and Implications for Further Research

We have found that some of the growth of government from 1930-93 can be explained by increases in the ability of the government to raise taxes. The major determinant has been the increase in female labor force participation, and the corresponding increase in the ability of government to tax women’s earnings. Ideology is significant in explaining this growth, but it accounts for only a small part of the total effect. Nonetheless, this is the first attempt of which we are aware to use the time series ideology measures to explain a long term policy change. Additinoal uses of this variable are clearly warranted.
Table 1: Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFSR</td>
<td>Adjusted per capita federal and state spending (1982 dollars)</td>
</tr>
<tr>
<td>SE</td>
<td>Self-employment as a percent of civilian labor force</td>
</tr>
<tr>
<td>FP</td>
<td>Female labor force participation rate</td>
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<tr>
<td>U</td>
<td>Urbanization as a percent of population in urban areas</td>
</tr>
<tr>
<td>FR</td>
<td>Farm revenues as a percent of GNP</td>
</tr>
<tr>
<td>MR</td>
<td>Miles of paved road</td>
</tr>
<tr>
<td>CM</td>
<td>Concentration of manufacturing</td>
</tr>
<tr>
<td>I</td>
<td>Per capita income</td>
</tr>
<tr>
<td>CF</td>
<td>Percentage of females who are college graduates</td>
</tr>
<tr>
<td>A</td>
<td>Agricultural employment as a percentage of civilian labor force</td>
</tr>
<tr>
<td>FI</td>
<td>Mean income of female full time workers</td>
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<tr>
<td>T</td>
<td>Technology measured by percent of households with a computer</td>
</tr>
<tr>
<td>HOU</td>
<td>Poole-Rosenthal ideology variable for the house</td>
</tr>
<tr>
<td>SEN</td>
<td>Poole-Rosenthal ideology variable for the senate</td>
</tr>
<tr>
<td>YEAR</td>
<td>Trend term</td>
</tr>
<tr>
<td>PAFSR</td>
<td>Predicted federal and state revenues per capita</td>
</tr>
<tr>
<td>PSE</td>
<td>Predicted self-employment as a percent of civilian labor force</td>
</tr>
<tr>
<td>PFP</td>
<td>Predicted female participation rate</td>
</tr>
<tr>
<td>PFR</td>
<td>Predicted farm revenues as a percent of GNP</td>
</tr>
<tr>
<td>PU</td>
<td>Predicted urbanization rate</td>
</tr>
<tr>
<td>YEAR</td>
<td>Begin</td>
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<td>------</td>
<td>-------</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>GNP</td>
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</tr>
<tr>
<td>AFSR</td>
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<tr>
<td>FI</td>
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<tr>
<td>T</td>
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<tr>
<td>Senate</td>
<td>0.88</td>
</tr>
<tr>
<td>House</td>
<td>0.89</td>
</tr>
</tbody>
</table>
Table 3: Determinants of Adjusted per Capita Federal and State Spending
1930-1993

A. Results using senate as ideology variable:

\[
\begin{align*}
\text{AFSR} & = 8.39\times\text{PFP} + 1.01\times\text{PSE} - 0.049\times\text{T} - 2.00\times\text{YEAR} + 1.49\times\text{SEN} + 0.745\times\text{DW} - 0.915\times\text{GNP} \\
& \quad (3.58) \quad (2.85) \quad (0.856) \quad (3.65) \quad (2.77) \quad (4.36) \quad (1.94) \\
\text{SE} & = 0.029\times\text{PAFSR} - 3.08\times\text{MR} + 0.19\times\text{T} - 1.61\times\text{PU} + 4.50\times\text{YEAR} - 0.032\times\text{DW} \\
& \quad (0.428) \quad (4.84) \quad (1.29) \quad (2.36) \quad (10.79) \quad (0.983) \\
\text{FP} & = 0.049\times\text{PAFSR} - 0.076\times\text{A} + 0.107\times\text{CF} + 0.109\times\text{FI} + 0.004\times\text{PFR} + 0.302\times\text{YEAR} - 0.073\times\text{DW} \\
& \quad (1.78) \quad (3.24) \quad (2.44) \quad (3.88) \quad (0.193) \quad (9.40) \quad (9.15) \\
\text{FR} & = 0.336\times\text{PAFSR} + 0.649\times\text{A} - 0.16\times\text{T} - 0.263\times\text{YEAR} - 0.042\times\text{DW} \\
& \quad (3.13) \quad (6.68) \quad (8.63) \quad (1.94) \quad (1.02) \\
\text{U} & = 0.177\times\text{PAFSR} - 0.084\times\text{I} + 1.28\times\text{MR} - 0.925\times\text{YEAR} - 0.051\times\text{DW} \\
& \quad (6.48) \quad (3.76) \quad (5.75) \quad (3.98) \quad (5.96)
\end{align*}
\]

B. Results using house as ideology variable:

\[
\begin{align*}
\text{AFSR} & = 7.72\times\text{PFP} + 0.486\times\text{PSE} - 0.0005\times\text{T} - 1.48\times\text{YEAR} + 0.136\times\text{HOU} + 0.729\times\text{DW} - 0.93\times\text{GNP} \\
& \quad (3.25) \quad (1.65) \quad (0.008) \quad (3.19) \quad (0.579) \quad (4.05) \quad (1.85) \\
\text{SE} & = 0.076\times\text{PAFSR} - 2.69\times\text{MR} + 0.011\times\text{T} - 2.11\times\text{PU} + 4.30\times\text{YEAR} - 0.052\times\text{DW} \\
& \quad (0.968) \quad (3.71) \quad (0.668) \quad (2.67) \quad (9.20) \quad (1.42) \\
\text{FP} & = 0.050\times\text{PAFSR} - 0.076\times\text{A} + 0.107\times\text{CF} + 0.110\times\text{FI} + 0.007\times\text{PFR} + 0.300\times\text{YEAR} - 0.074\times\text{DW} \\
& \quad (1.82) \quad (3.24) \quad (2.43) \quad (3.87) \quad (0.325) \quad (9.30) \quad (9.17) \\
\text{FR} & = 0.333\times\text{PAFSR} + 0.646\times\text{A} - 0.16\times\text{T} - 0.259\times\text{YEAR} - 0.042\times\text{DW} \\
& \quad (3.10) \quad (6.65) \quad (8.63) \quad (1.91) \quad (1.00) \\
\text{U} & = 0.178\times\text{PAFSR} - 0.084\times\text{I} + 1.29\times\text{MR} - 0.929\times\text{YEAR} - 0.051\times\text{DW} \\
& \quad (6.51) \quad (3.78) \quad (5.75) \quad (3.99) \quad (5.96)
\end{align*}
\]
Table 4: Effect of Independent Variables on Tax Growth
(Based on Senate Equation)

<table>
<thead>
<tr>
<th></th>
<th>Begin</th>
<th>End</th>
<th>Change</th>
<th>Average</th>
<th>C/A</th>
<th>ß</th>
<th>C/A x ß</th>
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<tbody>
<tr>
<td>SE</td>
<td>19.58</td>
<td>7.96</td>
<td>-11.62</td>
<td>12.71</td>
<td>-.914</td>
<td>1.01</td>
<td>-.923</td>
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<tr>
<td>FP</td>
<td>24.80</td>
<td>57.90</td>
<td>33.1</td>
<td>39.29</td>
<td>.842</td>
<td>8.39</td>
<td>7.06</td>
</tr>
<tr>
<td>T</td>
<td>0.00</td>
<td>30.00</td>
<td>30</td>
<td>3.34</td>
<td>8.98</td>
<td>-.049</td>
<td>-.44</td>
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<tr>
<td>Year</td>
<td>1930</td>
<td>1993</td>
<td>63</td>
<td>1961.5</td>
<td>.0032</td>
<td>– 2.00</td>
<td>-.0064</td>
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<tr>
<td>GNP</td>
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<td>6329.85</td>
<td>6238.45</td>
<td>1471.03</td>
<td>4.24</td>
<td>-.915</td>
<td>-3.88</td>
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<tr>
<td>Sen</td>
<td>0.88</td>
<td>1.22</td>
<td>.34</td>
<td>1.05</td>
<td>.324</td>
<td>1.49</td>
<td>.483</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.2936</td>
</tr>
</tbody>
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REFERENCES


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