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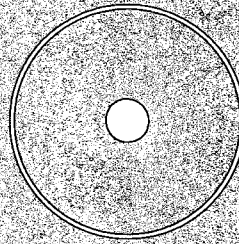
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Wissenschaftszentrum



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TOTAL SPENDING BY GOVERNMENT:
AN EVALUATION OF
SOME ALTERNATIVE MODELS

by

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discussion papers

INTRODUCTION

Government spending, and the entire question of government's role in the allocation of societal resources, is a matter of continuing importance in any attempt at understanding the stresses and strains endemic to modern nations. In an age of grave economic and social problems, this question will have enduring consequences for the resolution of these problems. In any age it will mirror and affect the political character of society. Herein we examine two modestly different formulations of the decision-making rules determining one of the central outcomes of the process of government resource allocation: total spending. The empirical validity of both of these is examined in light of the recent experience of twenty major nations.¹ An effort is also made to integrate the factors included in both into one formulation and to evaluate the utility of this amalgam.

The basic premise of each formulation examined here is the notion that decisions regarding government total spending critically hinge on the expected revenues of the state.² These expected revenues form the spending base in any year. Other considerations serve to add and/or subtract from this base. What distinguishes the two constructions examined here are these factors which act as corrections to the base. In the first instance we examine what is best labelled the Fiscal-Budgetary Politics Model.³ Two supplements to expected revenues are included within this formulation. The first factor represents the recent performance of the economy. The second factor represents bureaucratic inertia. In the second case we examine what we have labelled the Political Support/Opposition Model.⁴ Here only one adjustment is introduced into the basic equation: the level of opposition to the government. After examining the performance of each of these complementary representations, we go on to assess the utility of combining their elements in one equation. Since there is no explicit or implicit theoretical assumption inherent in either formulation which would

contradict such a tack, this seems both reasonable and useful.

THE EXPECTED REVENUE BASE

We start with two critical assumptions. The first is that spending decisions by government are quite constrained.⁵ At the macro-level, total spending by government is highly dependent upon the amount of money government can expect to receive from its various tax sources and public enterprises. At the micro-level, spending on any particular governmental function is constrained by past precedent and current budgetary situation. The second assumption is that tax and other revenue decisions are mainly made at the margin.⁶ Governments rarely alter in any significant way the organization of property-holding rights within society nor are they prone to modify the basic structure of the tax system. These fundamental changes can occur. This happens only infrequently, usually when some significant political-economic displacement has occurred.

What can be inferred from these assumptions? First, the expected revenues accruing to the state serve as the base spending figure in any year. Governments will, other things being equal, strive to spend neither more nor less than that amount of money. Second, from an evaluative perspective, the base figure, expected revenues, must be operationalized in a way that accurately reflects the planning figure used by government in its macro-budgetary decision-making. Third, in the absence of any significant shocks to the system under study, and assuming an adequately operationalized estimate of expected revenues, a correctly specified model incorporating this term should yield a regression coefficient for that term not significantly different from 1.0. Simply put, expenditures should equal expected revenues, other things being equal.

But other things are rarely equal. While it is commonplace to assume that government is one of the least restrained economic agents within society, a more reasonable view is one which acknowledges that government, like every other individual and institution, in the end must balance its outlay with real income. Short-term, and not so short-term, solutions such as borrowing permit government to pass through hard times. Still, a government recognizes that it must finance its way in a manner that does not disrupt the economic system on which it rests. Government, however, is not necessarily restricted in the growth of its spending. Aside from various forms of deficit financing, it can increase its revenues in many other ways. Two means have proven useful, though the first is clearly more common than the second. First, in constructing its tax system, government can provide for sufficient elasticity within that system to allow expansion of its tax revenues when either real or nominal growth is present in the economy. For many developed economies, this has proven to be the favorite instrument for revenue expansion. It has the desired effect of generating ever greater revenues in the presence of either form of growth. Yet, at least in the short-run, it has none of the untoward consequences that are attendant to explicit and apparent changes in tax schedules and widening of tax bases. These latter actions are also available to government, though clearly they represent an unattractive set of options. This second means of revenue expansion is nonetheless employed. The amount of political opposition it generally inspires, however, causes governments to refrain from engaging constantly in such activity and to confine the attendant political damage. This tends to minimize significant revenue expansion through this avenue.

Government spending decisions must, in the main, be made prior to the receipt of revenues. This means that the broad outlines of the state's budget are constructed before the time government actually spends the money it receives. Minor adjustments frequently occur during the period in which

these budgetary plans are implemented, and occasionally major adjustments take place.⁷ The necessity for forming a budget prior to the actual receipt of its revenues helps to meet various legal and institutional requirements. It also minimizes untoward political effects that arise from the uncertainty created by the lack of such a plan.

There is no universally applied procedure with which governments assess the revenues they may expect during a fiscal period.⁸ However, the basic elements which must be employed in the calculus of all surely include: (1) an expectation regarding the size of the bases whence tax revenues are to be extracted; (2) an expectation regarding the rates of taxation for each of these bases; and (3) an expectation with regard to the amount of income government can earn from non-tax sources of revenue such as publicly-owned enterprises. The development of an integrated set of formulae which would capture even these broad desiderata entails an enormous undertaking in terms of data collection. By necessity, then, we require the creation of some relatively simple formulation having modest data requirements.

To deal with expectations with regard to the size of the tax base and non-tax revenues (items (1) and (3) above) we shall assume that an expectation of future revenue base (EXPBASE) can be developed by combining the most recent performance of the broadest definition of that base (BASE). In the case of market economies, Gross Domestic Product is used; Net Material Product is employed for centrally planned economies. The level of this expected base is assumed to correspond to what that base was in the most recent period plus the change that occurred in the base from the period previous.⁹ Thus, the expected revenue base for time T is set equal to:

$$\text{EXPBASE}_T = \text{BASE}_{T-1} + (\text{BASE}_{T-1} - \text{BASE}_{T-2}) \quad (\text{def. 1})$$

Given this expectation regarding the economic base from which government can draw its revenues, what would best

represent the expectation it would hold regarding the rate at which it can draw these revenues? Obviously some weighted average of the various tax and other revenue raising schedules is one representation. We have chosen to use the proportion of the base which government put to its own use in the previous period. This has the advantage of incorporating the assumption stated above to the effect that governments do not frequently alter to any significant extent their extractive efforts. Thus, the expected revenues (EXPREV) of the state would be equal to the following:

$$\text{EXPREV}_T = (\text{REV}_{T-1} / \text{BASE}_{T-1}) * \text{EXPBASE}_T \quad (\text{def. 2})$$

This formulation suffers from a number of disadvantages. One problem is that it may not always adequately represent the expected revenues of a state with a highly elastic tax structure. In the presence of this condition, and assuming that the historical period under study is one characterized by economic growth, the estimated coefficient for expected revenues in the expenditure equation should be somewhat higher than 1.0. A second problem may reside in the validity of our assumption that tax schedules and property rights are not very malleable in the absence of severe shocks to the system. When this does not hold, the idea of expected revenues is removed from the realm of tautological measurement and transformed into a problem requiring explanation. This, however, unnecessarily complicates our problem and will, for the while, be ignored.¹⁰

FISCAL-BUDGETARY POLITICS

Many students of public finance have come to appreciate the importance of three elements in the determination of government budgets. These are (1) the need to conform to the revenue base, (2) the inertial quality of budgetary allocations, and (3) the use of the budget as an instrument for regulating the national economy.¹¹ While various labels have come to be attached to this general school of thought, we

shall employ the term Fiscal-Budgetary Politics when discussing it.

This approach assumes that revenues play a central role in budgetary decision-making. Revenues act as a severe constraint on policy-makers. They act as a boundary or limit to the spending possibilities considered by these leaders. The revenues expected to be available to the state are a focal point, the salience of which is undeniable for bureaus and administrators competing for the largesse of the state treasury. Central authorities involved in the negotiating process that produces the budget can and will point to the estimate of revenues in their efforts to not only hold down total spending but also to rearrange or maintain the distribution of finance across competing programs.

There are, however, conditions which force governments to diverge from this base in the finalization of the total spending figure. In the modern era, government leaders have come to adopt the principle that the budget can and should be used to influence the general performance of the economy. This has meant, in terms of spending, that government alters outlay to counter cycles in economic performance. When general economic conditions decline, spending by government increases to foster greater demand or to spur investment. When the economy is expanding, governments do not add to the level of demand within the economy since this will tend to exacerbate competition for resources and leads to increases in prices. Government spending should be cut back under these circumstances.

This scenario captures the dicta of conventional economics with regard to the role of government spending. However, as Lindbeck has noted, governments are often accused of finding it convenient to practice the regulatory role in a fashion calculated to advance their own interests.¹² Some facets of this self-interested performance include timing of increased spending so as to coincide with critical points

in the electoral cycle, alteration of spending levels in response to varying levels of support, as expressed in public opinion polls, for the political party in power, and so on. Lindbeck takes the position that these very "political" conditions generally coincide with the economic conditions to which "idealistic" government will respond.¹³ In the "ideal" form, then, one would expect that recent economic performance should be negatively related to government spending, other things being equal. The latter should increase when performance declines and should decrease when performance is on the upswing. We have operationalized the measure of performance (REP) as the change (or first difference) in societal product (the base in the revenue expectation formula) manifesting itself prior to the year in which the spending by government takes place. Thus,

$$\text{REP}_T = \text{BASE}_{T-1} - \text{BASE}_{T-2} \quad (\text{def. 3})$$

Of course, this "ideal" version of government's response to economic conditions within society may tend to overstate government's disinterest in influencing the economy for its own political gain. An equally attractive version of the effects of recent economic performance is the notion that governments only take the opportunity to alter their spending levels when it is to their short-run advantage to do so, i.e., when economic performance is poor, and refrain from cutting back on their outlays, with the loss in political support this usually entails, when economic performance is on the favorable side.¹⁴ In the analysis reported below, we will provide the findings developed for both these formulations. In operational terms, the second version of REP (NEGREP) takes the following values:

$$\begin{aligned} & \text{BASE}_{T-1} - \text{BASE}_{T-2}, \text{ when } \text{BASE}_{T-1} < \text{BASE}_{T-2} && (\text{def. 4}) \\ & \text{"0"} && , \text{ when } \text{BASE}_{T-1} \geq \text{BASE}_{T-2} \end{aligned}$$

In this formulation, the second factor considered by policy-makers, when deciding to modify the spending base of expected revenues is found in the inertial effects of extant commitments to programs -- and the bureaucracies and interest groups that benefit from these programs. Crecine argues that such commitments have a strong equilibrating effect. This is especially so when one takes into account the pressures not to deny what has been legitimized by past practice, nor withhold what extant law and statute require. Nonetheless, the revenue ceiling requires some flexibility in the expenditure pattern of government. An obvious and salient solution to this problem is to split the difference between what expected revenues seemingly allow and what precedent demands. Central authorities thus maintain a fiscally responsible position while at the same time acceding to the clear and present pressures bureaucracies and interest groups place on them. Crecine suggests that this inertial effect (INERT) is best captured in the following formulation:

$$\text{INERT}_T = \text{TE}_{T-1} - \text{EXTR}_T \quad (\text{def. 5})$$

where TE_{T-1} is equal to total expenditures in the previous period. The consequence of constructing the variable in this way, other things being equal, is to presume that the inertial effect is symmetric. During periods with expected revenues lower than spending in the previous period, some part of this difference should be added to the expected revenues in the finalization of total spending. Periods with expected revenues higher than the previous spending level should see some part of the difference cut from the base of expected revenues when the finalization occurs. While this is a plausible construction, we expect that an alternative formulation is equally plausible. Specifically, we suggest that the inertial effect would come into play only when expected revenues are down from the previous level of spending.¹⁵ This operational

formulation, POSINERT, takes the following values:

$$\begin{aligned} TE_{T-1} - EXTR_T, & \text{ when } TE_{T-1} > EXTR_T && \text{(def. 6)} \\ "0" & , \text{ when } TE_{T-1} \leq EXTR_T \end{aligned}$$

Both constructions are examined in the empirical analysis reported below.

We have, then, a set of three factors which the Fiscal-Budgetary Politics formulation specifies as the determinants of government's total outlay. As noted above, two of these factors readily permit alternative representation. Rather than overwhelm the reader with statistical results, as perhaps we will anyway, relating to marginally different formulations, we have chosen to deal with only two operational equations in evaluating the Fiscal-Budgetary Politics approach. In the first we have employed the "ideal" version of government's spending response to economic conditions in conjunction with Crecine's formulation of the inertial effect. This equation takes the following form:

$$TE_T = a_1 EXTR_T + a_2 REP_T + a_3 INERT_T \quad \text{(Equa. 1)}$$

where the expectation is that $a_1 = 1$; $a_2 < 0$; and $0 < a_3 < 1$.

The second equation incorporates the non-"ideal" version of government's spending response to economic conditions and the nonequilibrating inertial effect:

$$TE_T = b_1 EXTR_T + b_2 NEGREP_T + b_3 POSINERT_T \quad (\text{Equa. 2})$$

where, while two of the variables are measured in different ways, the expectations regarding the associated coefficients remain unchanged. Thus, $b_1 = 1$; $b_2 < 0$; $0 < b_3 < 1$.

POLITICAL SUPPORT/OPPOSITION

Some writers have suggested that an important element in the determination of various resource allocation decisions by government is found in the degree of support for government. The character of this support, its roots and its manifestations, is diverse both across nations and time. Parsimony, however, requires that we represent it in as general a fashion as possible. As noted in the previous section, some scholars have employed rather narrow operational versions of this concept, e.g., level of opposition to or support for (as expressed in opinion polls) the political party in power. Given the diversity of political institutions and structures found in the countries included in this study, such a narrow representation obviously lacks applicability in every instance. To deal with this problem we have chosen to employ an event based series of domestic conflict data available for all the countries in our study for an extensive period of time. While this measure of political conflict incorporates an array of events, some of which are of no real importance to budgetary decisions, this scale still provides us with a useful tool. Manifest societal conflict is a general corollary of opposition to government. Thus, this index, which taps the same basic dimension of behavior within all the states included in the study, allows a meaningful comparative analysis of the ebb and flow in opposition to government.

Measurement aside, the theoretical argument for the approach under consideration here can be summarized as follows. Public spending is a political instrument in the hands of the authorities. Since these authorities clearly desire to maintain their tenure in power and to preserve the regime and polity that makes their position possible, such leaders will avail themselves of those instruments which serve to secure their tenure. The expenditures of government, authoritatively allocated by these leaders, can be used to co-opt those groups within society that express their opposition to the government. This money can also be used to finance the means with which opposition can be suppressed.

The use of the budget in this way must, however, be viewed in light of the resource base of the state. Government's ability to finance its outlays will serve to constrain wild fluctuations in that outlay. Indeed, its resource base, best captured in terms of its tax and other non-deficit financed revenues, represents the willingness and ability of governments to spend in the absence of open political opposition. Failure to spend at this level will only alienate those groups already benefit from government outlay, and perhaps equally likely, reduce the financing of the critical elements of power and coercion constructed with previous budgets.

In sum, it seems reasonable to propose that for purposes of comparative analysis the political support formulation has its simplest and most useful representation in the following equation:

$$TE_T = c_1 EXTR_T + c_2 POLOPP_{T-1} \quad (\text{Equa. 3})$$

where $c_1 = 1$ and $c_2 > 0$, and $POLOPP_{T-1}$ is a measure of political conflict and opposition within society at period $T-1$. It should be noted that the data used to represent $POLOPP$ come from Azar's COPDAB data set and that each country series is the composite index of domestic conflict including such elements as physical violence and military unrest.

It should also be noted that $POLOPP_{T-1}$, as operationalized here, represents a weighted average of the domestic conflict score for T-1 and T-2, with the score at T-1 given twice the weight of the score at T-2.

COMBINED FORMULATIONS

As indicated in the introduction to this paper, it is useful to explore the implications of combining the elements of the two separate formulations into one expression of the basic decision rules for government total spending. There is no explicit or implicit theoretical assumption in either that would undermine such an effort. In addition, the incorporation of the political opposition factor within a formulation of the Fiscal-Budgetary Politics model may help to make more explicit some of the political considerations that underly it. Thus, the following two equations will also be evaluated in terms of their empirical validity:

$$TE_T = d_1 EXTR_T + d_2 REP_T + d_3 INERT_T + d_4 POLOPP_{T-1} \quad (\text{Equa. 4})$$

$$TE_T = e_1 EXTR_T + e_2 NEGREP_T + e_3 POSINERT_T + e_4 POLOPP_{T-1} \quad (\text{Equa. 5})$$

where the expectations for the coefficients associated with $EXTR$, REP , $NEGREP$, $INERT$, $POSINERT$ are as before and the following should also hold: $d_4, e_4 > 0$.

EMPIRICAL EVALUATION¹⁶

To what degree do these formulations accord with reality? Are there differences between countries or sets of countries in terms of their applicability? To answer these questions we have examined the experience of twenty major countries during the period 1950-1975. The results of these analyses are provided in Tables 1 through 3.

Developed Market Economies: Despite the rather extensive amount of information conveyed in Table 1, some major findings are quite discernible. Clearly none of the equations has any real difficulty in accounting for the variations in the movement of government total spending for these countries. On this dimension one can be simultaneously satisfied and dissatisfied. While there is little variance unaccounted for, it would be impossible to choose amongst the formulations on the basis of the relatively simple criterion of the overall adequacy of fit.

The most consistently significant determinant of government spending in these countries has been the level of expected Revenues. This variable takes on a value, in nearly all instances, approximately equal to that specified by the theoretical expectation (i.e., 1.0). However, in many instances the estimated coefficient has a value which is slightly higher than that desired. Given our previous discussion, this would suggest the need for modifying the Expected Revenues variable in such a way as to take into account the implicit elasticity found in the tax structures of these nations.

When one examines the estimated coefficients for the other factors included within the different formulations, a much cloudier picture is observed. No one specification does consistently well across the eight countries under consideration. In two instances, Britain and the United States, the Fiscal-Budgetary Politics Model, with the "idealistic" response

TABLE 1: PUBLIC EXPENDITURE EQUATIONS FOR DEVELOPED MARKET ECONOMIES

| (Equation) | EXPECTED REVENUES | RECENT ECONOMIC PERFORMANCE | | INERTIAL EFFECT | | POLITICAL OPPOSITION | \bar{R}^2 (%) | ESTIMATION TECHNIQUE | |
|---------------------------|-------------------|-----------------------------|-----------------|-----------------|-----------------|----------------------|--------------------|----------------------|-----|
| | (EXTR) | (REP) | (NEGREP) | (INERT) | (POSINERT) | (POLOPP) | | | |
| BRITAIN 1952 - 1975 | 1 | 1.080 (.023) | -.360 (.152) | | .573 (.274) | | 95.7 | RLS | |
| | 2 | 1.030 (.019) | | -.776 (.278) | | .104 (.471) | 96.3 | RLS | |
| | 3 | .983 (.050) | | | | | .013 (.007) | 86.8 | RLS |
| | 4 | 1.075 (.039) | -.353 (.161) | | .572 (.282) | | .0007 (.0044) | 95.4 | RLS |
| | 5 | 1.048 (.031) | | -.844 (.296) | | .062 (.479) | -.0031 (.0043) | 96.2 | RLS |
| CANADA 1952 - 1975 | 1 | 1.076 (.020) | -.208 (.081) | | -.166 (.358) | | 97.3 | RLS | |
| | 2 | 1.017 (.016) | | -.576 (.216) | | -.432 (.865) | 97.0 | RLS | |
| | 3 | 1.050 (.023) | | | | | -.0040 (.0045) | 96.3 | RLS |
| | 4 | 1.083 (.023) | -.197 (.085) | | -.141 (.367) | | -.0024 (.0041) | 97.1 | RLS |
| | 5 | 1.029 (.023) | | -.550 (.282) | | -.461 (.879) | -.0029 (.0042) | 97.0 | RLS |

Note that numbers within brackets are the standard errors associated with the estimated coefficients. **xxx** indicates that no variation was observed and the variable was excluded from the equation. In terms of the estimation technique, Generalized Restricted Least Squares (GRLS) was employed when the presence of a significant level of first-order autocorrelated error indicated that Restricted Least Squares (RLS) was inappropriate.

| (Equation) | EXPECTED REVENUES | RECENT ECONOMIC PERFORMANCE | | INERTIAL EFFECT | | POLITICAL OPPOSITION | R^2 (%) | ESTIMATION TECHNIQUE | |
|------------------------------------|-------------------|-----------------------------|-----------------|------------------|-----------------|----------------------|-------------------|----------------------|----------------------|
| | (EXTR) | (REP) | (NEGREP) | (INERT) | (POSINERT) | (POLOPP) | | | |
| FRANCE 1952 - 1969 | 1 | 1.070 (.030) | .007 (.097) | | .619 (.231) | | 96.5 | GRLS (rho = -.44) | |
| | 2 | 1.068 (.019) | | -1.507 (.714) | | .255 (.373) | 96.5 | RLS | |
| | 3 | 1.052 (.028) | | | | | .0011 (.0008) | 95.2 | RLS |
| | 4 | 1.052 (.042) | .021 (.110) | | .500 (.264) | | .0005 (.0006) | 95.4 | GRLS (rho = -.39) |
| | 5 | 1.044 (.024) | | -1.665 (.694) | | .115 (.370) | .0010 (.0007) | 97.2 | RLS |
| GERMANY (FRG) 1957 - 1979 | 1 | 1.041 (.117) | .139 (.047) | | 1.079 (.013) | | 99.0 | RLS (rho = -.60) | |
| | 2 | .993 (.012) | | -.512 (.120) | | 1.040 (.020) | 99.2 | GRLS (rho = .32) | |
| | 3 | .001 (.002) | | | | | .0009 (.0019) | 98.9 | GRLS (rho = 1.07) |
| | 4 | 1.038 (.015) | .109 (.044) | | 1.076 (.017) | | .0015 (.0015) | 98.8 | GRLS (rho = -.43) |
| | 5 | 1.006 (.016) | | .111 (.584) | | 2.318 (.223) | -.0020 (.0018) | 99.2 | RLS |
| ITALY 1953 - 1975 | 1 | 1.097 (.020) | -.029 (.047) | | .646 (.135) | | 96.8 | RLS (rho = -1.06) | |
| | 2 | 1.083 (.019) | | -.582 (.164) | | .309 (.229) | 97.0 | GRLS (rho = -.49) | |
| | 3 | 1.029 (.026) | | | | | .0062 (.0013) | 95.3 | GRLS (rho = -.61) |
| | 4 | 1.088 (.021) | -.102 (.059) | | .277 (.234) | | .0030 (.0015) | 96.1 | GRLS (rho = -.94) |
| | 5 | 1.063 (.024) | | -.540 (.166) | | .104 (.267) | .0023 (.0017) | 97.0 | GRLS (rho = -.46) |

| (Equation) | EXPECTED REVENUES | RECENT ECONOMIC PERFORMANCE | | INERTIAL EFFECT | | POLITICAL OPPOSITION | \bar{R}^2 (%) | ESTIMATION TECHNIQUE | |
|------------------------------------|-------------------|-----------------------------|-----------------|-----------------|-----------------|----------------------|---------------------|----------------------|----------------------|
| | (EXTR) | (REP) | (NEGREP) | (INERT) | (POSINERT) | (POLOPP) | | | |
| JAPAN 1954 - 1975 | 1 | 1.142 (.030) | .050 (.070) | | 1.727 | | 98.8 | GRLS (rho = .42) | |
| | 2 | .951 (.019) | | -.529 (.059) | | *** | 99.0 | GRLS (rho = .29) | |
| | 3 | .990 (.020) | | | | | -.00061 (.00231) | 96.8 | GRLS (rho = -.70) |
| | 4 | 1.108 (.023) | .080 (.066) | | 1.783 (.395) | | .0059 (.0020) | 99.0 | RLS |
| | 5 | .940 (.019) | | -.487 (.062) | | *** | .0033 (.0021) | 99.0 | RLS |
| SOUTH AFRICA 1963 - 1975 | 1 | 1.068 (.068) | .137 (.143) | | .798 (.311) | | 97.0 | RLS | |
| | 2 | 1.100 (.012) | | *** | | 1.241 (.013) | 97.6 | GRLS (rho = -.48) | |
| | 3 | 1.309 (.049) | | | | | -.00033 (.00015) | 96.8 | RLS |
| | 4 | 1.051 (.076) | .081 (.161) | | 1.186 (.085) | | .0001 (.0002) | 97.6 | GRLS (rho = -.60) |
| | 5 | 1.059 (.059) | | *** | | .606 (.268) | -.00028 (.00013) | 97.9 | RLS |
| UNITED STATES 1952 - 1975 | 1 | 1.055 (.024) | -.133 (.067) | | .908 (.024) | | 97.2 | GRLS (rho = .43) | |
| | 2 | 1.008 (.017) | | .013 (.282) | | 1.323 (.704) | 96.5 | RLS | |
| | 3 | 1.030 (.035) | | | | | .0117 (.0221) | 92.7 | RLS |
| | 4 | 1.059 (.032) | -.131 (.068) | | .923 (.291) | | -.0033 (.0156) | 97.0 | GRLS (rho = .44) |
| | 5 | 1.009 (.025) | | .019 (.305) | | 1.340 (.793) | -.0010 (.0167) | 96.3 | RLS |

to economic conditions and symmetric inertia is clearly superior in that the predictions regarding the coefficients are met in every instance and the adequacy of fit is very high. No other countries in this group exhibited patterns of behavior that accord as well with the formulation contained in Equation 1.

The alternative formulation of the Fiscal Budgetary Politics Model, the one that includes non-"idealistic" response and asymmetric inertia appears to do a reasonable job for France, West Germany, Italy and Japan. It would be an overstatement, however, to say that in all these instances every prediction has been fulfilled. In the case of France, Expected Revenues and Recent Economic Performance have coefficients that are acceptable. The asymmetric inertia variable, while having a coefficient that takes on the predicted sign, is statistically insignificant.

For Germany, the pattern of the coefficients is quite good with, again, the exception of asymmetric inertia, which is slightly above the upper bound set by theoretical expectations. This equation is quite attractive for Germany because analysis indicates it is one of the least susceptible to problems of autocorrelation in the residuals. For Italy, the model again does well. Yet, the Expected Revenues coefficient is higher than anticipated and the asymmetric inertia coefficient is not quite significant. The model also does well in the case of Japan. However, the absence of any instance where Total Expenditures at T-1 were less than Expected Revenues at T, excludes the inertia variable from the estimated model and makes an assessment of the model's performance a rather thorny, counterfactual problem.

The Political Support/Opposition Model finds some support in three of the countries with developed market economies. In the case of Britain, the model performs adequately.

Nonetheless, the ability of the model to account for variation in total spending levels in Britain is inferior to that of any other formulation under consideration. In the case of France, the model's explanatory power is as adequate as any other formulation, but the statistical significance of the Political Opposition variable is not clearly established. For Italy, the model's performance is the best, at least as indicated by the estimated coefficients. The relatively large amount of autocorrelated error, however, makes ready acceptance of this formulation somewhat unattractive.

To what extent do the combined formulations provide a better portrayal of the spending dynamics of these states? On the whole, one would have to answer that no major improvement occurs when the different elements of the two basic formulations are combined. There is not one case where the entire set of expectations are met. And, for those countries, i.e., Canada and South Africa, where no clearly acceptable account is provided by the basic formulations, there is no improvement when one considers the combined representations.

For this set of industrialized capitalist states it is clear that none of the formulations examined performs consistently well across all eight states. For six of the eight, however, it would appear that some version of the Fiscal-Budgetary Politics Model best captures the macro-budgetary decision rules. Are there similar results for the centrally-planned and developing states?

Centrally Planned Economies: Table 2 provides information on the performance of the various equations in accounting for the dynamics of government spending in four centrally planned economies. With the exception of the Soviet Union, none of the models performs according to expectations. An interesting point is also brought forth in the cases of East Germany and Poland. Equation 2 specifies non-"idealistic" response to economic conditions and asymmetric inertia as two of the determinants of government's total spending. Given that neither condition manifested itself during periods for which data are available, the equation is reduced to the single factor of Expected Revenues. In both cases, the coefficient for this variable takes on a value almost exactly equal to that predicted and the amount of variance accounted for is quite high. Another interesting aspect of the results reported in this Table is to be seen in the the findings for the Political Support/Opposition Model. With the exception of Czechoslovakia, where the results clearly indicate the inappropriateness of this formulation, the political opposition variable takes on a coefficient that is both significant and opposite that predicted. By implication, then, if East German, Polish, and Soviet authorities were operating under this formulation of decision rules, opposition or lack of support for the government would lead them to cut back on the size of the state budget. Given that for these countries such a shift would likely mean an increase in household consumption, this reversal is perhaps to be expected. The Soviet Union is the only one of the four centrally planned states that has manifested a spending pattern that conforms with the Fiscal-Budgetary Politics formulation. Indeed, the estimated coefficients closely resemble those found for Britain.

In general, the proficiency with which these models account for public spending patterns in centrally planned economies is not extraordinarily great. Clearly expected revenues do play a central role. And, there is perhaps good reason to believe that these states respond to political opposition in a way different from both theoretical expectation and the practice of some western states.

TABLE 2: PUBLIC EXPENDITURE EQUATIONS FOR CENTRALLY PLANNED ECONOMIES

| (Equation) | EXPECTED REVENUES | RECENT ECONOMIC PERFORMANCE | | INERTIAL EFFECT | | POLITICAL OPPOSITION | \bar{R}^2 (%) | ESTIMATION TECHNIQUE | |
|------------------------------------|-------------------|-----------------------------|-------------------|-----------------|-------------------|----------------------|--------------------|----------------------|----------------------|
| | (EXTR) | (REP) | (NEGREP) | (INERT) | (POSINERT) | (POLOPP) | | | |
| CZECHOSLOVAKIA 1952 - 1975 | 1 | 1.030 (.019) | .377 (.167) | | 1.033 (.021) | | 96.4 | GRLS (rho = -.52) | |
| | 2 | .984 (.013) | | .529 (1.630) | | .997 (.013) | 94.1 | GRLS (rho = -.39) | |
| | 3 | .009 (.008) | | | | | .002 (.001) | 95.4 | GRLS (rho = 1.07) |
| | 4 | 1.031 (.023) | .377 (.171) | | 1.035 (.033) | | -.0001 (.0017) | 96.2 | GRLS (rho = -.53) |
| | 5 | .998 (.020) | | .483 (1.579) | | 1.025 (.032) | -.0018 (.0020) | 95.1 | GRLS (rho = -.49) |
| GERMANY (GDR) 1952 - 1975 | 1 | 1.000 (.033) | -1.347 (1.155) | | -1.668 (1.535) | | 98.5 | RLS | |
| | 2 | 1.010 (.011) | | *** | | *** | 98.3 | RLS | |
| | 3 | 1.020 (.011) | | | | | -.0017 (.0011) | 98.4 | RLS |
| | 4 | .991 (.043) | -1.000 (1.138) | | -1.651 (1.567) | | -.0015 (.0011) | 94.4 | RLS |
| | 5 | - same as equation 3 - | | | | | | | |

TABLE 2 ctd

| (Equation) | EXPECTED REVENUES | RECENT ECONOMIC PERFORMANCE | | INERTIAL EFFECT | | POLITICAL OPPOSITION | \bar{R}^2 (%) | ESTIMATION TECHNIQUE | |
|-----------------------------------|-------------------|-----------------------------|-----------------|-----------------|------------------|----------------------|--------------------|----------------------|-----|
| | (EXTR) | (REP) | (NEGREP) | (INERT) | (POSINERT) | (POLOPP) | | | |
| POLAND 1963 - 1975 | 1 | .903 (.049) | 1.149 (.260) | | .907 (.046) | | 97.0 | GRLS (rho = -.45) | |
| | 2 | 1.016 (.019) | | *** | | *** | 96.4 | RLS | |
| | 3 | 1.053 (.021) | | | | | -.0096 (.0040) | 97.4 | RLS |
| | 4 | 1.131 (.086) | .645 (.728) | | 1.981 (1.136) | | -.0122 (.0056) | 97.3 | RLS |
| | 5 | - same as equation 3 - | | | | | | | |
| SOVIET UNION 1952 - 1975 | 1 | 1.069 (.015) | -.256 (.118) | | .539 (.332) | | 99.7 | GRLS (rho = .29) | |
| | 2 | 1.047 (.014) | | -.348 (.124) | | *** | 99.5 | RLS | |
| | 3 | 1.028 (.009) | | | | | -.030 (.012) | 99.5 | RLS |
| | 4 | 1.063 (.015) | -.200 (.158) | | .304 (.323) | | -.023 (.011) | 99.5 | RLS |
| | 5 | 1.656 (.014) | | -.300 (.116) | | *** | -.025 (.011) | 99.6 | RLS |

Developing Economies: Table 3 presents information on the findings with respect to eight developing countries. The utility of the five formulations, when considered in this context, proves quite limited. The Political Support/Opposition Model performs quite well for both Brazil and Iran. No other model matches its performance in these two instances. For India, the Fiscal Budgetary Politics Model incorporating non-"idealistic" response and asymmetric inertia is clearly the best formulation, though the capacity of the model to account for variation in the dependent variable is not very high. The other formulation of the Fiscal Budgetary Politics Model does an adequate job in the case of Nigeria. However, here the estimated coefficient for the Expected Revenues variable is unacceptably high. The evidence with regard to Argentina, Mexico, Pakistan and Turkey is such as to question the utility of any of the five formulations in accounting for the dynamics of public spending in these countries.

In the case of Argentina, Expected Revenues is the only variable that behaves in a fashion generally consistent with the theoretical expectation. For Mexico the same is true, though to an even lesser extent. With regard to Pakistan, the Fiscal-Budgetary Politics Model with non-"idealistic" response and asymmetric inertia conforms best to expectations, though the response variable's coefficient is clearly insignificant. There is little in the results for Turkey which would lend credence to any of the formulations considered.

Summary: The empirical evaluation of these alternative formulations, while relatively simple, has been, on the whole, moderately supportive of the basic line of argument presented from the outset. For the developed capitalist states, the Fiscal-Budgetary Politics Model, in one version or the other, has proven to be a relatively useful account of their budgetary behavior. To a very limited extent, the Political Support/Opposition Model has also proven useful in this context. However, for two of the eight countries in this

TABLE 3: PUBLIC EXPENDITURE EQUATIONS FOR DEVELOPING MARKET ECONOMIES

| (Equation) | EXPECTED REVENUES | RECENT ECONOMIC PERFORMANCE | | INERTIAL EFFECT | | POLITICAL OPPOSITION | \bar{R}^2 (%) | ESTIMATION TECHNIQUE | |
|--------------------------------------|-------------------|-----------------------------|----------------|-----------------|-----------------|----------------------|--------------------|----------------------|----------------------|
| | (EXTR) | (REP) | (NEGREP) | (INERT) | (POSINERT) | (POLOPP) | | | |
| ARGENTINA 1961-1969, 1972-1975 | 1 | .951 (.107) | .063 (.089) | | 1.626 (.313) | | 87.5 | RLS | |
| | 2 | .984 (.097) | | -.187 (.984) | | 1.573 (.322) | 87.5 | RLS | |
| | 3 | .002 (.004) | | | | | .00011 (.00006) | 90.6 | GRLS (rho = 1.10) |
| | 4 | .946 (.113) | .084 (.107) | | 1.782 (.509) | | .0007 (.0044) | 94.8 | RLS |
| | 5 | .981 (.103) | | -.205 (.278) | | 1.492 (.511) | .0002 (.0008) | 87.4 | RLS |
| BRAZIL 1952 - 1973 | 1 | 1.112 (.074) | .048 (.068) | | .547 (.176) | | 93.0 | RLS | |
| | 2 | 1.146 (.056) | | -.128 (.158) | | .272 (.215) | 92.4 | GRLS (rho = .36) | |
| | 3 | 1.016 (.059) | | | | | .00069 (.00017) | 94.2 | RLS |
| | 4 | .986 (.067) | .033 (.066) | | .426 (.144) | | .00055 (.00015) | 95.8 | GRLS (rho = -.31) |
| | 5 | .975 (.039) | | .286 (.104) | | .411 (.145) | .0007 (.0001) | 96.4 | RLS (rho = -.54) |

| | EXPECTED | RECENT | | INERTIAL | | POLITICAL | \bar{R}^2 (%) | ESTIMATION | |
|--------------------------|----------|-----------------|-----------------|------------------|-----------------|-----------------|---------------------|----------------------|----------------------|
| | REVENUES | ECONOMIC | PERFORMANCE | EFFECT | OPPOSITION | | | | |
| (Equation) | (EXTR) | (REP) | (NEGREP) | (INERT) | (POSINERT) | (POLOPP) | | TECHNIQUE | |
| INDIA 1962 - 1975 | 1 | 1.209 (.192) | -.095 (.112) | | .612 (.493) | | 34.5 | RLS | |
| | 2 | 1.174 (.135) | | -.402 (.135) | | .543 (.387) | 52.0 | RLS | |
| | 3 | 1.977 (.112) | | | | | -.00094 (.00055) | 32.3 | RLS |
| | 4 | 1.354 (.313) | -.087 (.116) | | .422 (.489) | | -.0004 (.0007) | 30.3 | RLS |
| | 5 | 1.320 (.256) | | -.395 (.185) | | .349 (.489) | -.0004 (.0006) | 49.9 | RLS |
| IRAN 1961 - 1975 | 1 | .430 (.120) | 1.593 (.209) | | 1.456 (.144) | | 99.0 | RLS | |
| | 2 | 1.323 (.052) | | 3.590 (6.366) | | .713 (.214) | 95.6 | GRLS (rho = -.52) | |
| | 3 | 1.065 (.068) | | | | | .00084 (.00055) | 92.6 | RLS |
| | 4 | .430 (.127) | 1.592 (.216) | | 1.453 (.172) | | .00000 (.00023) | 99.0 | RLS |
| | 5 | 1.112 (.059) | | 2.196 (7.908) | | 1.546 (.917) | .00048 (.00041) | 93.4 | GRLS (rho = -.46) |
| MEXICO 1952 - 1970 | 1 | .852 (.161) | .208 (.178) | | .503 (.400) | | 78.6 | RLS | |
| | 2 | 1.010 (.046) | | *** | | .569 (.568) | 79.6 | RLS | |
| | 3 | 1.081 (.055) | | | | | -.00018 (.00015) | 78.9 | RLS |
| | 4 | .879 (.162) | .227 (.179) | | .372 (.419) | | -.0002 (.0002) | 80.0 | RLS |
| | 5 | 1.099 (.072) | | *** | | .371 (.624) | -.00014 (.00017) | 79.1 | RLS |

| | EXPECTED | RECENT | INERTIAL | | POLITICAL | \bar{R}^2 | ESTIMATION | |
|----------------------------|----------|-----------------|-----------------|------------------|-------------------|---------------------|------------|----------------------|
| | REVENUES | ECONOMIC | EFFECT | | OPPOSITION | | | |
| (Equation) | (EXTR) | PERFORMANCE | (INERT) | (POSINERT) | (POLOPP) | (%) | | |
| | | (REP) (NEGREP) | | | | | | |
| NIGERIA 1962 - 1972 | 1 | -.096 (.047) | .910 (.078) | | | 96.2 | RLS | |
| | 2 | .859 (.019) | -.006 (.074) | | 1.734 (.110) | 98.2 | RLS | |
| | 3 | .769 (.065) | | | | .00034 (.00016) | 85.2 | RLS |
| | 4 | 1.142 (.079) | -.089 (.047) | | .783 (.141) | .00006 (.00006) | 96.3 | RLS |
| | 5 | .846 (.029) | | .016 (.094) | 1.664 (.200) | .00002 (.00005) | 98.2 | RLS |
| PAKISTAN 1961 - 1975 | 1 | .965 (.206) | .022 (.091) | 1.165 (.388) | | | 71.5 | RLS |
| | 2 | 1.105 (.179) | -.069 (.110) | | .836 (.433) | | 72.2 | RLS |
| | 3 | -.13 (.13) | | | | .00009 (.00010) | 78.8 | GRLS (rho = 1.03) |
| | 4 | 1.084 (.281) | -.017 (.112) | 1.056 (.432) | | -.00008 (.00013) | 70.0 | RLS |
| | 5 | 1.457 (.266) | | -.252 (.266) | .326 (.503) | -.00022 (.00013) | 76.1 | RLS |
| TURKEY 1952 - 1971 | 1 | 1.207 (.043) | -.387 (.103) | -.551 (.467) | | | 96.9 | GRLS (rho = .31) |
| | 2 | 1.134 (.032) | | -1.194 (.605) | -1.580 (1.086) | | 96.0 | RLS |
| | 3 | 1.118 (.037) | | | | -.00002 (.00005) | 95.4 | RLS |
| | 4 | 1.215 (.052) | -.387 (.106) | -.509 (.485) | | -.00003 (.00009) | 96.7 | GRLS (rho = .30) |
| | 5 | 1.146 (.040) | | -1.241 (.623) | -1.486 (1.110) | -.00005 (.00008) | 95.8 | RLS |

set, Canada and South Africa, none of the models provides an adequate account of spending dynamics. With the exception of the Soviet Union, the Socialist countries generally manifest a pattern of behavior different from that found in the West. While Expected Revenues again play a central role, the effects of political opposition is the reverse of that in the West and that expected given the theoretical formulation. The findings for the less developed countries present a very mixed picture.

The attempt to combine different elements of the two basic formulations has not proven very fruitful. There are no cases where these combined formulations perform in an outstanding way. Indeed, the conjunction of the different elements often tends to reduce or distort the impact of one or more of the factors included within the equation.

CONCLUSION

We have developed and evaluated some alternative formulations of the decision rules guiding the determination of total spending by government. A central element in each of these formulations is the notion that governments will, other things being equal, spend no more nor any less than the tax and entrepreneurial income they expect to receive in any given year. As a corollary to this, it is argued that governments will not alter their basic extractive efforts in the absence of any severe political or economic displacement. In addition to expected revenues, other elements were considered including: the propensity of governments to alter fiscal aggregates in light of economic conditions, bureaucratic inertia, and political opposition. The various formulations have been examined to determine their empirical validity with reference to the recent experience of twenty major nations. For six of eight states with developed market economies an approach which emphasizes the use of the budget as a fiscal tool, the presence of inertia, and expected revenues provides a quite adequate account of their

spending behavior. Centrally planned economies seem to respond more to problems of political support when deciding to finalize total spending in light of expected revenues. The developing countries included in this study present no uniform picture and, indeed, the different models employed here do not perform all that adequately.

The adequacy of any of the formulations considered has not been clearly established though the findings would seem to indicate that an approach directed along these lines should prove useful. At this time we need to move in three directions. First a more adequate representation of the macro-budgetary decision rule for total spending is required. Clearly both the conceptualization of the political opposition variable, as well as the data used to measure it can be improved. In addition, the measurement of expected revenues would seem to require further work. This last point leads to the second direction in which our work should move. Our hope is to develop rules for specific revenue decisions. While we believe that no major adjustments in basic extractive effort occur in the absence of significant shocks to the system, we are of the opinion that minor adjustments do have political consequences and that the relative significance of the three revenue channels we eventually expect to model, direct taxes, indirect taxes, and non-tax revenue, can be and is altered. Such change presumably flows from political and economic considerations and has important political and economic effects. The third direction, one along which we have already made some progress, refers to the decision rules with which expenditures are allocated across different functions. Our focus here is on the allocations going to defense, welfare, investment and other civilian purposes.

These three directions are all part of a plan to develop a comprehensive model of government resource allocation. We see the process by which decisions are made in this area as hierarchically organized in terms of both the locus of critical influence and the character of outputs. With regard to the first we assume that central political authorities have the primary role in the determination of the budgetary process outputs. The role of individual government bureaucracies, as well as non-governmental agents, is important, but much less so. In essence, decision making in the budgetary area is sharply influenced by the goals and objectives of the governing elite. As to the character of outputs, we believe that decisions with respect to specific expenditure and revenue items do not flow from independent processes and thus broad budgetary aggregates represent the sum of separately produced components. Rather we take the position that the broad aggregates are themselves determined first and then the component parts are produced in light of the constraints represented by these aggregates.

NOTES

1. Among the countries examined in this study are eight with developed market economies (Britain, Canada, France, Germany (FRG), Italy, Japan, South Africa, and the United States), four with centrally planned economies (Czechoslovakia, Germany (GDR), Poland, and the Soviet Union), and eight with developing economies (Argentina, Brazil, India, Iran, Mexico, Nigeria, Pakistan, and Turkey).

2. Writers with clearly different orientations, for example, Frey and Schneider (1978), Fischer and Crecine (1979), Wildavsky (1975), and Alt and Chrystal (1979), all accord, at least implicitly, a central place to revenues in the determination of spending levels. That done, however, a general tendency is to go on to argue that some other components are the critical elements in the decision process. This tendency has resulted in a situation where the formulation of an expectation regarding the revenue available to be spent is generally ignored. In addition, generally no effort is made to specify the assumptions held with respect to the decisions on revenues--decisions which should, on the face of it, have some relevance to spending decisions.

3. In formulating this model we have relied heavily on the work of Crecine and his colleagues in their studies of US budgetary processes (see esp., Crecine, 1971 and Fischer and Crecine, 1979). It should be noted that the empirical tests of this model carried out by Fischer and Crecine have focused exclusively on the United States and have dealt with the planning figures produced during the budget development cycle. Our efforts here include: (1) an attempt to extend the model through the evaluation of alternative representations of some of the terms included within the model, (2) a focus on actual as opposed to planned budget figures, and (3) an assessment of the utility of the model in a variety of other national settings.

4. One of the more interesting attempts to develop a model along these lines can be seen in the Ames (1977) paper on public expenditures in Latin America. Admittedly, the work of the "new political economists" might also be said to fall within this approach. The tendency of writers such as Frey and Schneider (1978) to concentrate on advanced industrial democracies and to focus on authority support while at the same time emphasizing bureaucratic momentum and economic performance leads us to consider their work as more appropriately fixed within the Fiscal-Budgetary Politics school (see Lindbeck, 1976).

5. Much of the "budgetary politics" literature shares this emphasis on constraint. While most of this work has focused on micro-level questions, i.e., the allocation of revenues to

specific functional programs and bureaucracies, and emphasized the importance of "base" figures with minor or "incremental" dynamic adjustments (see, e.g., Davis, Dempster, and Wildavsky, 1966; Gist, 1977; Wanat, 1974), the work of Crecine and his colleagues (see, e.g., Kamlet and Mowrey, 1979) has helped lay the groundwork for a "top-down" approach to the question of government finance which should allow for a complete specification of both all the important budgetary outputs as well as the processes that produce them.

6. Here we share the notion advanced by Peacock and Wiseman (1967) to the effect that the population's tolerance for taxation is relatively rigid and can only be altered when some major disruption in the political-economic environment has occurred. A corollary to this is a hesitancy on the part of political authorities to make any salient adjustment in government's extractive effort. A somewhat similar argument is put forth by Alt and Chrystal (1979).

Complete rigidity is not implied here. As Peacock and Wiseman point out, rising per capita income should allow for a greater extractive proportion by government if this is done through a "progressive" (or elastic) tax structure.

7. As Caiden and Wildavsky (1974) demonstrate, developing countries are quite susceptible to the problem of budgetary plans needing frequent and dramatic revision in the face of rather unstable revenue receipts.

8. For a discussion of the similarities and differences in the forecasting techniques used by seven advanced industrial democracies, see the OECD (1965) report, Techniques of Economic Forecasting.

9. It would be more useful to distinguish between tax and non-tax revenue bases. However, the paucity of relevant data for extended periods of time inhibit the construction of such indices.

10. A research report is presently being prepared detailing some preliminary analyses indicating that the overall revenue extractive efforts of most of the countries included within this study are primarily elastic and also lack buoyancy (i.e., during the period under study, no major rate and/or base changes were implemented). For an interesting discussion of some quantitative techniques employed in the appraisal of tax systems, see Wilford and Wilford (1978).

11. See Fischer and Crecine (1979) for an application of this type of model to US federal budgetary practices.

12. Lindbeck (1976) has provided an interesting and insightful description of some of the principal issues in the political-economy of advanced industrial societies.

13. He contends that "the popularity variable is influenced by approximately the same variables ... (one would choose)... to treat as idealistic variables in the target preference function, though possibly with different weights and

different timing." (ibid., p.12)

14. Clearly it is to the short run advantage of government to increase demand during slack or stagnant periods. In terms of the long run, it is as well to its advantage to refrain from overheating the economy. This, however, would require governments to cut back during expansionary periods. Such action would mean a loss in political support by those previously benefitting from such outlays. One can see, then, that the principle of ignoring the idealistic requirement to cut back during expansionary periods may appear more than attractive to political leaders whose time horizons generally tend to be very short. See Mosley (1976) for a similar argument.

15. In some sense, this asymmetric formulation is more attractive. If one assumes that government benefits from the responsibility for outlays to one or many groups, the increased outlay made possible by the heightened revenues will clearly advantage it. On the other hand, the return of part of these revenues through some minor cut in tax rates may work to government's advantage as well.

16. All finance and economic data employed within this analysis are expressed in constant price (base year 1970) US dollars. For centrally planned economies, while these data are expressed in US dollars, no explicit deflation was applied. The principal sources for these data were various issues of the UN's Yearbook of National Accounts and the UN's Statistical Yearbook. For the most part, the government finance data refer to general government though in some instances the reference is to central government alone.

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