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Interpretations Of Public Expenditure Trends In East And West

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I. INTRODUCTION

For the last twenty-five years Lloyd Reynolds has displayed a keen interest in analyzing the economic behavior of the government sector from a comparative point of view. This is reflected not only in some of his articles (e.g., Reynolds 1971) but also in his aid to younger economists at Yale who were working on such problems. In particular, Lloyd Reynolds greatly encouraged and assisted basic research on differences in the public sectors in East and West which I carried out at the Yale Growth Center. This essay represents an attempt to reanalyze some of this early work, taking into account fourteen years of further developments of the nations under examination.

The concept of "public sector" refers to three major phenomena: public ownership of the means of production, public participation (directly or indirectly) in production decisions, and public financing of goods, services, and transfer payments through taxes and loans. And "public" itself can refer to various levels of government, to "social" authorities, or other groups such as nonprofit units or charitable foundations.

Although a study of the changing role of the public sector in countries with different economic systems can thus refer to a wide range of economic events, a researcher faces two major limitations. First, certain topics cannot be easily studied because of the paucity of readily available and comparable data; for instance, it would be extremely difficult to study differences in governmental participation in production decision making in many countries. Second, certain topics do not seem fruitful to study; for instance, the economies of Eastern Europe are primarily nationalized, with the exception of the agricultural and petty trade and service sectors, so that "trends" in nationalization primarily reflect changes in sectoral composition of output, rather than any dramatic change in policy.

I have chosen to focus this essay on changes in public consumption expenditures, particularly related to education, health, and social welfare, in Eastern and Western Europe. The topic is extremely important, for the single most dramatic change in the public sector in the West in the last twenty years has been rapid growth of public expenditures. For instance, the average share of total public

consumption expenditures in the GNP of the OECD nations has risen from 28.5 percent in 1955-57 to 34.5 percent in 1967-69 to 41.4 percent in 1975-76, and further increases are anticipated (OECD 1978, 20-21). Leading this trend has been the rise in "welfare state expenditures," that is, expenditures for education, health, and social welfare (which includes income maintenance and pensions).

The purpose of this essay is to present some quantitative evidence on public expenditures to allow us to explore a number of hypotheses about the causes of this dramatic increase in the public sector, both traditional approaches from the demand side and more recent ideas focusing on political factors and other "supply side" considerations. By contrasting the experience of nations with different economic systems, we can also attempt to isolate the systemic factors underlying public expenditures. The major conclusions of this exercise are three: demand factors seem considerably more important than supply factors in explaining this increase in public expenditures; such expenditures appear to have grown more rapidly as a share of GNP in the market than the centrally administered economies; and in the future, such public expenditures may constitute a significantly higher share of total expenditures in the market than in the centrally administered economies.

Before turning to the analysis, it must be emphasized that comparative examination of public expenditures data raises some important statistical problems which can only be handled by circumventing them. One serious difficulty concerns the meaning of public investments, for the government can participate in the investment process in a variety of ways which may have the same end result but which utilize different institutional mechanisms. In the United States in 1975, for instance, direct investments by all levels of government amounted to roughly 24 percent of total gross investment.[1] However, governmental agencies on the federal level also lent out funds amounting to about 26 percent of total gross investment and guaranteed a group of loans that amounted to 13 percent of total gross investment. Since the degree to which these loans were used for investment purposes is quite unclear, all we can say is that government involvement in capital formation was somewhere between 24 percent and 64 percent of total gross investment. Inclusion of loans and guarantees by state and local governments would raise the upper limit and our uncertainty becomes greater. This problem is avoided by focusing only on current expenditures.

Another difficulty concerns government participation in such fields as housing, where government action having the same end effect can take place through direct investment in housing, subsidies for interest or construction costs or maintenance costs, or various types of income or rent subsidies to renters. This problem is avoided by omitting consideration of housing.

Still another difficulty concerns transfer payments, which can be either in money or in kind; the latter are extremely difficult to separate from government expenditures on goods and services (e.g., education). It might also be argued that transfer payments must also include those given by quasi-public bodies such as pension funds, an issue that leads us to considerations of "pension fund socialism" discussed by economists such as Drucker (1976) and which gives rise to enormous problems in finding comparable data. These problems are

avoided by combining current expenditures and transfer payments and by focusing only upon direct agencies of government at various levels.

For these and other reasons, I have chosen to focus on public consumption expenditures (i.e., current expenditures for goods and services plus transfers) in seven specified areas which are made by various levels of government. Of course, delineation of "current expenditures" raises a number of conceptual problems which cannot be touched upon here. A number of specific statistical problems concerning the expenditures and the GNP data are discussed in the following section, a necessary but unpleasant prelude to the presentation of the data and their interpretation.

II. THE DATA

A. Sample Selection

This essay represents an extension of a previous study by the author (Pryor 1968) that analyzed public consumption expenditures in seven market, and seven centrally administered economies. The countries originally selected were matched roughly for per capita GNP in 1956. Although such levels have diverged considerably, they are sufficiently close so that the sample can still be used. Other problems arise because in one case (Hungary) a centrally administered economy has tried since 1969 to introduce a guided market economy; nevertheless, this nation has had central administration of sufficient magnitude, and a price structure sufficiently distorted by differential subsidies and taxes requiring the employment of many nonmarket allocative devices, so that it must be considered as representing some type of hybrid economic system leaning toward a centrally administered system. Furthermore, in a number of the market economies in the sample, governmental dirigisme of production has increased, so they have moved somewhat closer to central administration of production; nevertheless, their economic systems have sufficient market elements so that they may be considered as representing some type of hybrid economic system leaning toward a market economy. In short, the two groups of economies still diverge to such a degree that we need not abandon the sample and select other nations. The countries under consideration and certain basic information about them are presented in Table 1.

B. Estimation Procedures

Public consumption expenditures, on which this analysis focuses, are current governmental expenditures plus transfers that are financed either by taxes or by governmental borrowing. Expenditures for military equipment are considered as a current expenditure. Although primary attention is placed on governmental budgetary expenditures, important extrabudgetary expenditures financed through taxlike payments are also included.

Given problems of obtaining comparable data for the fourteen countries, this analysis has focused on seven functions financed through public consumption expenditures for which estimates could be made. These adjusted budgetary expenditures include: general administration, internal security (police and justice), external

TABLE 1
The Sample of Nations in 1970

Market Economies	GNP per capita indices	Population in thousands	ABE/GNP in percent	Centrally Administered Economies	GNP per capita indices	Population in thousands	ABE/HNP in percent
U.S.A.	100.0	204,880	27	East Germany	63.9	17,060	32
West Germany	78.2	60,710	28	Czechoslovakia	62.0	14,330	26
Austria	54.2	7,430	33	U.S.S.R.	46.9	242,760	27
Italy	49.2	53,660	28	Hungary	42.7	10,340	18
Ireland	45.1	2,950	24	Bulgaria	37.3	8,490	20
Greece	38.5	8,790	24	Poland	35.4	32,530	23
Yugoslavia	25.8	20,370	28	Romania	31.2	20,250	17

Note: ABE/GDP = adjusted budgetary expenditures / gross domestic product.

Sources: GNP per capita data from Pryor (1979) and Kravis, Heston and Summers (1978).

Population data from United Nations (1977).

Sources and calculation of the ABE/GDP data are described in the text.

security (military, diplomacy, and foreign aid), education, health, social welfare (pensions plus general social expenditures), and research and development. The exact definitions are described in the book cited above (Pryor 1968).

Adjusting the data from the various nations so that they are comparable is a wearisome task. It took me roughly two years of full-time research to make the data for the various nations compatible for the 1950-62 period that is covered in the book. I did not have the luxury of such time to extend these data to 1976; therefore, I was forced to use a number of shortcut methods that reduced the period of research but, at the same time, reduced the accuracy of the estimates. However, by focusing upon welfare state expenditures -- expenditures on education, health, and social welfare -- I have selected that subset of expenditure estimates on which I place the most confidence. The data came from a wide variety of national and international sources of data (which may be obtained from the author), and they certainly reflect the most important trends, even if certain details may be questioned. In making the estimates, some corrections were made to the data for 1962 to reflect more recent information; no corrections were made to 1956 data.[2] The result of these efforts is that for this study we have twenty-year series (from 1956 through 1976) of adjusted budgetary expenditures for fourteen nations in Eastern and Western Europe and North America.

The very difficult task of separating transfers from current expenditures could not be carried out; therefore we have no valid method of calculating fixed-price series. Since we are left with current-price series, some method must be devised to abstract from the impact of gross changes in prices. The most usual procedure found in the literature is to express these data in terms of a percentage of GDP. However, such a procedure raises a serious problem for the countries under consideration which deserves brief discussion, for some interpretive difficulties are involved.

For the market economies, it seemed appropriate to compute the ratio of public consumption expenditures to the GDP at factor costs, that is, the GDP at market costs minus net indirect business taxes (indirect business taxes minus subsidies). For the centrally administered economies, GNP data according to Western definitions are available for all countries; and GNP minus net indirect business taxes can be calculated. Since the difference between GDP and GNP for these nations is minimal, this is not a problem. However, the meaning of GNP at factor prices raises some questions, for there is no market for capital or land and the factor costs attributable to them in the GNP at factor prices do not necessarily reflect their marginal productivity as they roughly do in market economies.

Ideally, we should estimate the marginal productivity of these two factors of production, then revalue all goods and services according to their factor costs and costs of inputs at these new prices, and finally calculate the ratio of public consumption expenditures to the GNP using these adjusted prices. This task would, for the seven countries involved, take many years, and we must adopt some shortcut techniques. But it should be noted that whatever technique is involved, the results are strongly affected. In Table 2 I present ratios of adjusted budgetary expenditures and also of welfare state expenditures (i.e., education, health, and social

welfare) to the GNP in prices at which the goods and services are sold or transferred (established prices), GNP minus net indirect business taxes, and GNP minus net indirect business taxes and also minus profit taxes. The results show quite clearly that the value of the ratio depends critically on which concept of GNP is chosen.

For the centrally administered economies for the rest of this study I have chosen as the denominator of the expenditures/production ratio the GNP minus net indirect business taxes (the same solution adopted in my previous study). This should not greatly affect the trend data; however, those dubious of this procedure should be careful in comparing relative levels of public consumption expenditures among nations.

C. The Results

The results of these calculations are presented in Tables 3 and 4. Between 1956 and 1976, adjusted budgetary expenditures increased dramatically in all market economies; in contrast, in the centrally administered economies, these increases were relatively small or, in the cases of the Soviet Union and Romania, decreases were registered. (In the former country, so many difficulties were encountered in estimating external security expenditures that this may be a statistical artifact.) Turning to welfare state expenditures, we see that they account for most of the dramatic increases in the market economies and, in addition, show an increase (sometimes considerable) in all centrally administered economies except Romania.

From Table 4 we see that in most countries a major share of the increase in welfare state expenditures came from increases in social welfare expenditures. It should be noted that a major share of these social welfare expenditures -- about 75 percent or more -- go for pensions and other payments to the elderly.

The tables contain some interesting information about the differential timing of these changes. For instance, in most countries, the major changes in welfare state expenditures came after 1962; and in many centrally administered economies, these payments rose especially after 1970. It is upon these data that the statistical experiments described below are performed to reveal other facets of this rising importance of the public sector.

III. INTERPRETATIONS

In early studies of the determinants of public expenditures, primary attention was paid to the demand forces underlying the level and change of these expenditures. Somewhat later, supply side considerations began to be considered. Recently we are beginning to see attempts to apply both demand and supply models. The data presented in the previous section are considered in the light of all three approaches.

A. Demand Approaches

Some statistical considerations. For at least a half a century simple demand approaches toward the determinants of public expenditures have been used. A typical equation using just such an approach is:

TABLE 2
The Impact of Various Methods of Valuation of the GNP on the Expenditures/GNP Ratio in 1970
(Percent)

Valuation Method:	Adjusted Budgetary Expenditures/GNP			Welfare State Expenditures/GNP		
	A	B	C	A	B	C
East Germany	38	32	30	23	20	18
Czechoslovakia	34	26	24	24	19	18
U.S.S.R.	32	27	23	17	14	12
Hungary	22	18	16	13	11	10
Bulgaria	24	20	18	16	14	12
Poland	27	23	19	17	15	12
Romania	19	17	15	13	12	10

Notes: Method A = GNP in established prices (prices at which goods and services are sold or trans-
ferred) minus net indirect business taxes (indirect business taxes minus subsidies) minus
business profits taxes.
Method B = GNP in established prices minus net indirect business taxes.
Method C = GNP in established prices.

Sources: These calculations were made from the public consumption expenditures data described in
the text and from GNP data presented in Thad P. Alton, et al. (1973). The Alton esti-
mates were supplemented with data from national sources and, for the USSR, from other
Western recalculations of the Soviet GNP.

TABLE 3

Trends in Public Consumption Expenditures and Welfare State Expenditures, 1956-1976
  (Percent of Gross Production)

	Adjusted Budget Expenditures				Welfare State Expenditures			
	1956	1962	1970	1976	1956	1962	1970	1976
Market economies								
U.S.A.	20	23	26	27	8	11	14	19
West Germany	25	29	28	38	18	19	20	29
Austria	25	28	31	35	21	23	26	30
Italy	24	25	28	33	15	17	21	16
Ireland	21	18	24	34	16	14	18	26
Greece	17	18	24	24	8	10	14	13
Yugoslavia	27	28	28	30	13	16	18	19
Centrally administered economies								
East Germany	33	30	32	36	19	20	20	22
Czechoslovakia	31	27	26	33	20	18	19	24
U.S.S.R.	30	30	27	28	14	14	14	16
Hungary	23	19	18	28	11	12	11	20
Bulgaria	28	21	20	25	14	12	14	17
Poland	21	20	23	21	12	12	15	14
Romania	20	18	17	13	10	12	12	9

Notes: The calculation of this table is described in the text. For Hungary, data are for 1955.

Sources: The 1956 data are from Pryor (1968).

TABLE 4
Education, Health, and Welfare Data
(Percent)

| | Expenditures as a Percent of Gross Production | | | | | | Population 65 and over as Percent of Population 15 through 64 | |
| | Education | | Health | | Welfare | | | |
	1956	1976	1956	1976	1956	1976	1956	1976
Market economies								
U.S.A.	2.4	5.0	0.9	2.9	4.8	11.3	14.5	16.4
West Germany	2.2	3.8	2.6	5.1	13.1	20.6	14.8	22.9
Austria	2.5	4.6	2.8	4.6	15.5	21.1	17.1	24.4
Italy	2.7	5.0	3.0	6.1	9.8	14.8	13.2	17.6
Ireland	2.6	5.8	3.8	7.4	10.0	13.3	18.3	18.8
Greece	1.3	2.0	1.0	1.4	5.3	9.3	11.5	19.5
Yugoslavia	2.1	4.8	3.2	4.5	7.5	10.0	9.6	13.3
Centrally Administered Economies								
East Germany	3.8	4.9	4.4	5.1	10.7	11.7	19.7	26.0
Czechoslovakia	3.8	3.9	4.2	3.8	11.9	16.3	12.7	18.8
U.S.S.R.	4.4	3.7	3.0	2.6	6.4	9.3	8.9	12.4
Hungary	2.7	3.4	2.6	5.3	5.6	11.6	12.7	19.3
Bulgaria	5.1	3.9	3.4	3.1	5.5	10.3	10.9	16.2
Poland	2.6	3.2	2.6	3.3	6.5	7.1	8.7	14.7
Romania	3.4	2.5	2.7	1.9	3.8	5.0	9.6	15.1

Notes: The calculation of the expenditure ratios for 1976 is described in the text. For Hungary, data are for 1955 instead of 1956. Population data for West Germany in 1956 omit West Berlin. Population data for Bulgaria, Czechoslovakia, and Yugoslavia are for 1975 instead of 1976. Population data for the USSR are for 1974 instead of 1976; the age distribution for the USSR was, in part, estimated.

Sources: The 1956 expenditures data are from Pryor (1968). Population data for all market economies except Yugoslavia are from OECD (periodic); data for all other countries are from United Nations (1960 and 1977).

$$G_t = a + bX_t$$

where G is government expenditures as a percentage of GNP, X is a vector of causal variables related to the demand for public expenditures, b is a vector of coefficients, a is a constant term, and t is the time subscript. One causal variable receiving a great deal of early attention is per capita income, an hypothesis called "Wagner's Law" (Timm 1961), but discussed much earlier by other economists such as Adam Smith and J. S. Mill. A large number of other economic causal variables that are somehow related to the demand for these services have also been proposed, for example, the degree of urbanization, the density of the area, the size of the governmental unit, and various demographic variables. More recently, social scientists from other disciplines have attempted to add political variables (reviewed in Pryor 1968) or sociological variables (Wilensky 1975); the latter seem more promising than the former. Sometimes the demand for public expenditures is related to certain variables in isolation from what is happening in the rest of the economy; sometimes the demand for public expenditures is tied to the demand for private expenditures and the degree to which the private sector is able to provide services either as complements to, or a substitute for, services provided through the public sector.

In recent years this type of specificiation has been considerably modified. Some analysts have assumed that the basic causal variables influence desired, not actual, government expenditures and that there is lagged response of actual to desired expenditures (so that an additional explanatory variable representing government expenditures in the previous period is added to the above equation). Other complications in the form of various types of interactions can be introduced. For instance, we can model a mutual causation between certain response coefficients (b in the equation) and governmental expenditures or we can make some of the response coefficients functions of still other independent variables (e.g., when the growth rate of the economy influences the response to per capita income), so that some interaction terms must be added to the above equation. Unfortunately, the sample used for analysis in this study is too small to permit these various modifications of the simple demand equation to be introduced successfully.

Two very serious interpretative problems of the regression analysis based on the demand approach must also be mentioned: these relate to problems of multicollinearity and confusion between cross-sectional and time-series results.

In many of the studies using the demand approach there is considerable multicollinearity between the explanatory variables. One example occurs because per capita income and the relative price of government expenditures, both important demand elements, rise together and in a number of studies both are included as independent variables. The interpretations given to the resulting regression coefficients (and their standard errors) are open to considerable doubt since the results are so highly sensitive to those cases where one of the two variables does not predict well the other variable. In such a case, if the price variable is dropped, the calculated response coefficient of government expenditures to per capita income includes price effects as well.

In recent years perhaps the most serious interpretative problem in applying the demand approach has been a confusion of cross-sectional and time-series elasticities of government expenditures. For instance, both T. E. Borcherding (1977, ch. 3) and Sam Peltzman (1980) have argued that since the income elasticity of public expenditures is unity or less, the dramatic rise in public expenditures can not be due to demand factors. However, these demand elasticities are drawn from cross-sectional regressions of U.S. states and local governments, and then they are applied to time-series data where they do not apply. Several examples can demonstrate this point more concretely.

Among the OECD nations in recent years, the fastest growing part of public expenditures is, in most cases, transfer payments and these are primarily payments to the elderly which are included under my definition of social welfare expenditures. As one can see from the data in Table 4, for the sample nations, at any given point in time there seems to be only a weak relationship between per capita income of a country and the relative importance of retired people; but over time as per capita income has increased, the share of the elderly has increased dramatically. Further, as I discuss below, social welfare expenditures as a share of GNP are related to how long the social insurance system has been in operation, which is not strongly related to per capita income. So we have very important reasons to expect that the elasticity derived from time-series data for social welfare expenditures should be much greater than the elasticity derived from cross-sectional data.

Another example concerns education expenditures. At any single point in time, a certain level of education in the population is needed to utilize the most modern technology. Comparing two points in time for a nation with a constant per capita income, the same nation at the later time will require more educated people because the general level of world technology rises. Thus for education the time-series income elasticity should be higher than the cross-sectional income elasticity.

A final example refers to the situation where the cross-sectional elasticities are derived from governmental subunits within a nation, and the time series elasticities refer to total governmental expenditures. This is an incorrect procedure since we are comparing two different series of governmental expenditures (the time series includes federal governmental expenditures while the cross section does not). Further, on a state and local level there is a strong demonstration effect, for example, the state of Mississippi, which is relatively poor, may have governmental education expenditures per student that are almost the same as those in a much richer state such as New York, since the students from the former state must later compete against students from the latter state in the national labor market. Since state and local governments make certain decisions about their expenditures on the basis of what other states are spending, the cross-sectional income elasticities of public expenditures may be quite low vis-à-vis the time-series income elasticities where the causal role of income is more direct.

In the calculations about to be presented, I calculate cross-sectional regressions at several different points in time. I also calculate cross-sectional regressions of twenty-year changes in each

country since I do not have enough time slices to calculate true time-series elasticities for the individual sample nations. One caveat must be added: the very peculiar behavior of government expenditures in Romania provides an extreme point which has some influence on the results because the sample is small; to determine this effect, I have calculated the regression results both with and without this nation. Because the major conclusions are not changed, only the former results are presented.

Some demand experiments: cross sections of levels. The most aggregative public expenditures data are the most difficult to explain; for I find no very impressive statistical relationships between total adjusted budgetary expenditures as a share of GDP and such explanatory variables as per capita income and an economic systems dummy variable in any of the four years. Similarly unsuccessful results occur when total welfare state expenditures as a share of GNP is used as the dependent variable instead.

The situation is quite different in the case of welfare expenditures, where the problem is not finding explanatory variables, but rather separating the effects of the three most promising. One variable is per capita income in a common currency;[3] and one would suspect that the higher such income, the higher the share of welfare expenditures since the greater amount of discretionary income the society would have for such purposes. A second variable is the ratio of the population aged sixty-five and over to the population fifteen through sixty-four; and one would suspect that the higher this ratio, the greater the share of welfare expenditures in the economy since pensions constitute the greatest portion of these expenditures and the need for such pensions would be greatest. A third variable is a supply variable, namely, the length of time that the social insurance system had been in operation. (The operation of this variable is discussed below.) In addition to these three intercorrelated variables, I also include an economic systems variable which plays several roles: as a measure of market versus centrally administered economy; as a measure of multiparty versus single party rulership (for the market economies, however, Yugoslavia is similar to Eastern Europe); and as an additional measure of need, since the retirement age is lower in Eastern Europe than in Western Europe. The effect of this need can be argued in several ways. Although the lower retirement age in Eastern Europe would indicate a higher ratio, the greater inequalities of income in the market economies (on which data are presented in Pryor 1973, ch. 3) would indicate a greater relative need for welfare payments to those in the lower part of the income distribution. In short, we have counteracting forces that may cancel each other out. Therefore, we are left with the economic system and the multiparty versus the single-party political systems. Evaluation of the impact of these phenomena on welfare expenditures raises a number of ideological and other issues for which no definitive answer can be given. Therefore, I include the variable as possibly important, but without prediction about its sign. Since the results for all four time slices are roughly similar, in Table 5 I present such regressions only for 1956 and 1976.

TABLE 5
Cross-Country Experiments with Welfare Expenditures

A. Variables:
   AGED = ratio of population 65 and over to population 15 to 65.
   YCAP = logarithm of per capita GNP in a common currency.
   YEARS = years from founding of social insurance system to 1970.
   SYS = 0 for market economy; 1 for centrally administered economy.
   WFARE = logarithm of ratio of welfare expenditures to GDP.

B. Correlation Matrices:

	AGED 1956	YCAP 1956	YEARS	SYS	WFARE 1956
AGED 1956	1.00	.53	.52	-.33	.61
YCAP 1956		1.00	.27	-.17	.35
YEARS			1.00	.03	.72
SYS				1.00	-.32
WFARE 1956					1.00

	AGED 1976	YCAP 1976	YEARS	SYS	WFARE 1976
AGED 1976	1.00	.53	.65	-.18	.65
YCAP 1976		1.00	.34	-.18	.54
YEARS			1.00	.03	.47
SYS				1.00	-.47
WFARE 1976					1.00

C. Regressions (standard errors in parentheses):

1956

$$\text{WFARE} = 1.039 - 0.274 \text{ SYS} + 0.0209 \text{ YEARS}$$
$$\qquad\qquad\quad (0.150) \qquad\quad (0.0053)$$
$R^2 = .5172$
$R^2 \text{ adj.} = .4770$

$$\text{WFARE} = 1.192 - 0.104 \text{ SYS} + 0.0688 \text{ AGED}$$
$$\qquad\qquad\quad (0.204) \qquad\quad (0.0301)$$
$R^2 = .3752$
$R^2 \text{ adj.} = .3231$

$$\text{WFARE} = 1.284 - 0.216 \text{ SYS} + 0.264 \text{ YCAP}$$
$$\qquad\qquad\quad (0.225) \qquad\quad (0.235)$$
$R^2 = .1255$
$R^2 \text{ adj.} = .0526$

1976

$$\text{WFARE} = 1.930 - 0.364 \text{ SYS} + 0.0127 \text{ YEARS}$$
$$\qquad\qquad\quad (0.166) \qquad\quad (0.0058)$$
$R^2 = .4582$
$R^2 \text{ adj.} = .3597$

$$\text{WFARE} = 1.538 - 0.274 \text{ SYS} + 0.0567 \text{ AGED}$$
$$\qquad\qquad\quad (0.154) \qquad\quad (0.0200)$$
$R^2 = .4215$
$R^2 \text{ adj.} = .3733$

$$\text{WFARE} = 0.264 - 0.292 \text{ SYS} + 0.571 \text{ YCAP}$$
$$\qquad\qquad\quad (0.173) \qquad\quad (0.282)$$
$R^2 = .4343$
$R^2 \text{ adj.} = .3414$

Sources: See Tables 1, 3, 4 and footnote 3. Data on social insurance
systems: U.S. Dept. of Health, Educ., and Welfare (1975).

For the two years presented in the table the results are somewhat different. In 1956, the number of years of operation of the social insurance system appears unambiguously the single most important explanatory variable; in 1976, the explanatory role of the percentage of aged, and also the per capita income, appear practically the same. In both years the centrally administered economies also appear to have lower welfare expenditures; however, with one exception these coefficients designating the economic system are not statistically significant at the .05 level. In 1976, however, statistical significance at a somewhat lower level of confidence is achieved and if the trends persist, it appears from these calculations that sometime in the future the share of welfare expenditures in the GNP of the market economies may be significantly higher than in the centrally administered economies. Such conclusions can also be drawn, albeit more tentatively, if the regressions are calculated with Romania omitted.

Some demand experiments: cross sections of changes. The time-series patterns among countries have varied considerably and it is useful to attempt to separate the important causal factors underlying this phenomenon. A simple way to approach this is by comparing changes between the two ends of the twenty-year period; therefore, I have selected as a dependent variable the percentage change of the ratios of various public consumption expenditures to the GDP. That is, if the expenditures/GDP ratio rose from .10 to .15, the dependent variable is the 50 percent increase in this ratio. To explain such changes, a number of possible explanatory variables can be selected.

An obvious candidate to explain the growth of expenditures is the initial level of the variable: other things being equal, it seems likely that the growth of any expenditure would be inversely related to the initial level of this share. Another candidate for an explanatory variable is per capita income: other things being equal, the higher this income variable, the greater the share of GNP growth can be considered discretionary, and the faster the growth of expenditures might be if it were a "luxury." A third candidate for an explanatory variable is the economic system, and a variety of ideological considerations can be imagined for its justification. A fourth candidate is the growth rate of GNP, and two possible relationships could influence the results. The faster the growth of GNP, the more public expenditures might lag behind what .they are desired to be, since other parts of the economy are growing so quickly; thus there might be an inverse relation between GNP growth and the growth of public expenditures. Further, the slower public expenditures grow, the more resources are available to increase growth in other parts of the economy so that an inverse relationship between GNP and public expenditures growth from this reversed causality is also possible. Unfortunately, the sample is too small for separating these effects or dealing in the most satisfactory manner with any possible simultaneous equations bias.

Some of the results with the highest degree of explanatory power are presented in Table 6. The regressions results when Romania is dropped from the sample are quite similar and are not included. It is interesting that we are able to explain time-series of the most aggregative public expenditures more easily than the more

TABLE 6
Experiments with Expenditure Share Changes

A. Variables:

PTOT = percentage change in share of total adjusted budget expenditures in GDP between 1956 and 1976.
PHEW = percentage change of share of health, education, and welfare expenditures in GDP between 1956 and 1976.
PWEL = percentage change of share of welfare expenditures in GDP between 1956 and 1976.
SYS = 0 for market economy; 1 for centrally administered economy.
GDPGR = average annual GDP growth between 1956 and 1976.
YCAP = per capita GNP in common currency.
HEW56 = share of health, education, and welfare expenditures in GDP in 1956.
WEL56 = share of welfare expenditures in GDP in 1956.

B. Regressions (standard errors in parentheses):

$$PTOT = 0.864 - 0.399 \text{ SYS} - 0.0976 \text{ GDPGR}$$
$$(0.063) \quad\quad (0.0263)$$

$R^2 = .8414$
R^2 adj. $= .8126$

$$PHEW = 2.164 - 0.324 \text{ SYS} - 0.184 \text{ GDPGR} - 4.852 \text{ HEW56}$$
$$(0.129) \quad\quad (0.057) \quad\quad (1.669)$$

$R^2 = .6939$
R^2 adj. $= .6021$

$$PWEL = 0.821 - 0.188 \text{ SYS} - 0.0606 \text{ WEL56} + 0.0106 \text{ YCAP56}$$
$$(0.167) \quad\quad (0.0242) \quad\quad (0.0051)$$

$R^2 = .5091$
R^2 adj. $= .3698$

Sources: Data from sources cited in Tables 1, 3, 4 and footnote 3.

disaggregated series, which is exactly the reverse of the experiments reported in Table 5. Further, for welfare state expenditures as a whole, as well as for social welfare expenditures separately, the expected negative relationship between initial level and subsequent growth appeared. This, in turn, suggests that these levels of public expenditures are converging, at least between nations with the same economic system.

An extremely puzzling result occurs in the regression experiments for the growth of welfare expenditures, namely, that neither the share of aged in the population in the initial year, nor the percentage growth of the share of the aged, nor the growth rate in the GNP, seemed to influence the results in any important manner. This is exactly contrary to the cross section results of absolute levels where the percentage of aged played an apparently important causal role. I suspect that the discrepancies between the two sets of results occurred because the role of this variable, as shown in Table 5, was somewhat different in the two time slices. Unfortunately, we have insufficient data to explore this matter more deeply and, indeed, it may be a simple statistical artifact.

B. Supply Approaches

Supply approaches toward the explanation of determinants of public expenditures depend crucially on mechanisms either directly related to the process of producing government services (e.g., economies of scale) or bureaucratic processes within the government itself. It is useful to review rapidly some of these variables which have received recent attention in order to determine their applicability to the problem at hand.

Scale and relative productivity effects. If economies of scale were important in the production of public services, one would suspect that the share of public expenditures in the GDP would decline, ceteris paribus, as the GDP increased. Of course, such a scale effect lowers the effective price and, as a result, influences demand so that one must try to take account of a complicated interaction of variables. This does not seem to provide an interpretative problem for these data since few econometric studies of government expenditures have revealed any important scale effect.

The relative productivity effect, on the other hand, does appear important. The argument is quite simple: because productivity in the production of services generally increases more slowly than in the production of goods, and because wages in the production of government services keep pace with the wages in other sectors of the economy, the relative costs of government services will rise, and we would expect a rise in the share of public expenditures in the GDP when both are defined in current prices, at least in so far as the price elasticity of demand for government services is not sufficiently great to cause a decrease in the quantity of government services demanded that totally offsets such a rise in relative costs.

A good deal of evidence is available to support this position. On a macroeconomic level, for instance, the OECD (1978) has shown that in constant prices, the ratio of production of government services to the GDP has stayed roughly constant while the current price ratio has

risen considerably. The current price ratios have risen because of this price effect and also because transfers (which were not included in government services) rose. Further, a number of studies have attempted to demonstrate the extremely slow rise in productivity for particular governmental services, especially on the local level (e.g., Bradford, Malt, and Oates 1964). The role of relative productivity differences as a cause of the rising level of government expenditures to the GDP seems to be generally accepted, and to be part of the conventional wisdom in public finance.

However, the importance of the relative productivity effect has recently been challanged by Orzechowski (1974) who points out that in the United States the capital/labor ratio in the federal governmental sector (even with defense excluded) is much higher than in the manufacturing sector as a whole. Therefore, there is no reason to believe that its productivity growth (at least at this level) should be lower than the economy as a whole. Unfortunately, since government output is so difficult to measure (and, indeed, is measured in the GNP account in terms of inputs), productivity increases may not be reflected in the statistics used to compute the expenditures/GDP ratios.

Since I have measured the government services in terms of their inputs in the sample nations, the relative productivity effect certainly may play a role in the rise of the expenditures/GDP ratio. However, it is not by any means the only cause of all the rise, for, as shown in Table 4, such expenditures as welfare, which consist mostly of transfers, have risen very fast as well. Unfortunately, I have no way of measuring this relative productivity effect -- and neither does anyone else examining the problem on a macroeconomic level.

The displacement effect. In a well-known book, Alan Peacock and Jack Wiseman (1961) proposed that the pattern of government expenditures over time reveals a ratchet effect. Due to the difficulties of the political authorities in raising tax rates, government expenditures as a ratio of GNP move along some slowly changing trend line until the occurrence of a war or other national emergency. At this point, it is politically feasible to raise tax rates and, after the end of the national emergency, they may be lowered, but never to the previous level. In short, the national emergency provides a displacement of the trend. Such an argument is a particularization of a common hypothesis among historians that economic crises lead to a strengthening of government as groups attempt to utilize the government to resolve their problems.

This rather superficial theory has received considerable comment in the literature. Most attempts to test it statistically using time-series data from various nations have generally revealed the displacement to be small or negligible in most cases. More important to our purposes, this theory does not explain the dramatic increase in public expenditures as a ratio of GNP in the West during the last two decades, for most countries have not experienced war. Although to save the theory we might define this period as a "national emergency," such a step changes the theory into a tautology, which was certainly not the intention of its proponents.

A government employee voting mechanism. A number of economists (especially the authors of the essays in Borcherding 1977) have suggested that the presence of government workers in a democracy adds an impetus to the growth of governmental expenditures, for it is in their career interests to vote for candidates favoring larger budgets. Since empirical evidence has shown that governmental employees have a much higher participation in voting than the average voter, these workers may constitute a swing vote that brings about an upward spiral of government expenditures.

As economists such as Courant (1979), Greene and Munley (1979), and Pommerehne and Frey (1978) have pointed out, this approach has some theoretical difficulties which reduce its credibility. It would not be surprising that empirical tests of the hypothesis on local governmental votes have not been able to validate it. This approach also does not seem promising to explain trends in public expenditures in East and West.

A monopoly mechanism. Drawing upon the work of William Niskanen (1971), some economists (e.g., Orzechowski 1977) have pointed toward the following constellation of factors as underlying the growth of government expenditures. First, government bureaucrats try to maximize their budgets, for this allows them to increase their personal power over resources. Second, the output of government is hard to measure, as is the efficiency of the offices performing this work. Third, politicians in the legislature have neither the time nor the expertise to check thoroughly the budgets of these agencies to determine carefully what they are producing and how productive their work is. Thus, the government bureaus stand in a monopoly position vis-à-vis the politicians and, therefore, government expenditures tend to increase.

It can be argued that politicians have an incentive to be elected and since high taxes are painful to pay, they have an incentive to keep the expenditures of the government at a low level so as to maximize their votes. This would invalidate the third argument. Further, the conclusion does not follow from the assumptions. That is, although the government bureaus may stand as monopolists vis-à-vis the legislature, this means only that their budgets are somewhat higher than they ordinarily would be, and that they may be inefficient, not that the ratio of these budgetary expenditures to the GNP is constantly rising.

Another problem with this type of approach is that a static argument is being extended illegitimately to a dynamic situation. That is, the argument was originally propounded in terms of a cross-sectional comparison. Even if we assume that it is correct, it does not imply that the share of public expenditures will increase over time, something that Niskanen (1975) has pointed out.

A variant of this argument is one of the humorous laws propounded by G. Northcote Parkinson, who suggested that it is the essence of bureaucracy to increase its expenditures, even when the tasks it performs may be decreasing. There is, of course, considerable anecdotal evidence for this position. And as I have pointed out in a previous section, the ratio of such expenditures to the GNP depends in part on how long the social insurance system has been in operation: the longer the time period, the higher the ratio of public

expenditures. This is because such programs increase in the share of the population served, in the extent of their programs, and in the magnitude of the payments. The crucial question, however, is whether these changes represented a demand or a supply phenomenon.

The question becomes more pointed when examining the results of a quantitative study of public expenditures by the OECD for their member nations for a period from the early 1960s to the early 1970s. The results (OECD 1978, 26) showed that for the total growth of social welfare expenditures, 16 percent was due to demographic changes (e.g., a larger number of the elderly receiving social insurance), 44 percent was due to eligibility changes, 24 percent to increased per capita payments and changes in the relative size of real benefits, and 16 percent to changes in costs. Clearly the impact of demographic factors can not be attributed to supply factors. Are the changes in eligibility, per capita payments, and real benefits a result of bureaucratic forces? Or did these changes truly reflect the demands of the voters? Unfortunately, no statistical analysis separating such factors has yet been made for this case.

Other supply effects. A number of analysts have pointed toward other supply effects. For instance, in city expenditures, the presence of a city manager versus a mayoral form of government seems to make a difference. Or the presence of grants from a central government to local governments may increase local governmental expenditures. Or the presence of competiton between local governments for enticing industry to their regions may act to lower expenditures, at least in so far as low tax rates are offered to potential investors. No believable evidence has yet been presented that such supply effects would make much difference on the national level on which we are focusing. Other types of supply effects, for example, the impact of public spending limits, appear to have more effect (Pascal 1979) but the evidence on these matters is relatively limited.

The occurrence of some special supply effects for Eastern Europe must also be noted. For the Soviet Union, Gur Ofer (1973) has shown that the analysis of the service sector (including the government sector) must take into account the presence of less-trained workers (particularly women) than in other sectors, the underpricing of defense goods (which is made up to the producers by subsidies that are not included in these calculations), the underpricing of medical services (because of the relatively low salaries of doctors), and the constant campaigns to cut down "unproductive labor." Obviously, some of these factors are offsetting so that their net effects are much smaller than their separate gross effects. Moreover, some appear to apply more to the Soviet Union than to some of the other Eastern European nations (e.g., in the DDR, the salaries of doctors are relatively high).

Two observations about such supply factors special to Eastern Europe must be made. First, in most cases, they introduce quantitative effects that are strictly of secondary importance. Second, they probably affect cross-sectional analyses more than time-series analyses since there is little reason to believe that such effects are growing or declining in importance.

C. A Combined Approach

The combined supply and demand approaches that have been proposed usually focus upon the mechanisms by which the demand for public expenditures is related to the financing of such expenditures. Perhaps the earliest exponent of such an approach was Alexis de Tocqueville (1835) who considered the relative public expenditures in three communities whose legislatures were dominated, respectively, by the richest class, by the middle class, and by the most numerous and poorest class.

De Tocqueville argued that public expenditures would be lowest when the middle class had legislative power, for this class would be loath to tax itself: "Nothing is so onerous as a large impost levied upon a small income. The government of the middle classes appears to me the most economical, I will not say the most enlightened, and certainly not the most generous, of free governments." When universal suffrage occurs, the poor are invested with the government of authority. And in this case, "[public] expenditures will always be considerable, either because the taxes cannot weigh upon those who levy them, or because they are levied in a manner as not to reach these poorer classes."

This kind of approach has been embodied in analyses of the growth of public expenditures in several different ways. Sometimes it is generalized in a manner that focuses upon the relative strength of the beneficiaries of public expenditures compared with those who pay the taxes to finance them. For instance, Meltzer (1976) argues that public expenditures rise because the beneficiaries are more organized and have more to gain by public expenditures benefiting them alone than any single individual outside the group loses. Thus, the latter have less incentive to organize around the issue than the former. Such an argument has a great deal of intuitive appeal, but it is difficult to see exactly how it could be empirically tested.

Peltzman (1980) has recast de Tocqueville's approach in an elegant model. (He reaches farther back in history and designates the poor taking from (taxing) the rich as the "Robin Hood effect.") He mathematically derives three propositions for a democracy with universal sufferage. 1. The wider the range of income between the rich and the poor, the higher the taxes on the rich and public expenditures will be. 2. The narrower the range of income among the lower-income classes, the higher the taxes on the rich and. thus the public expenditures will be. 3. The more educated the lower-income classes, and the more able they are to understand and operate the political process, the higher the taxes on the rich and public expenditures will be.[4]

But what does this tell us about nations whose public expenditures are not decided through a legislature whose members are elected through universal sufferage? Certainly some nondemocratic societies (e.g., Japan before the Meiji restoration) had considerable public expenditures. However, this arose because the rich controlled the state and used the state to benefit themselves by taxing the poor. Other precapitalist societies without universal suffrage appear to have had a relatively low level of public expenditures.

What does such an approach tell us about the differences between public expenditures in East and West? Assuming away, for the moment, differences in the political structure, no firm conclusions can be drawn. Certainly the income distribution per se should play no important role, for in Eastern Europe the income differences within the lower half of the income distribution, and between the lower and the upper halves of the income distribution, seem more equal than in the West (Pryor 1973) and, according to Peltzman, these two effects work in opposite directions on public expenditures. Further, the educational levels are not very different between the two sets of countries.

Of course, in the nations of Eastern Europe the legislature plays a very minor role in the setting of the governmental budgets and, further, competition between political parties for votes does not occur. From this, Peltzman's argument suggests that welfare state expenditures would be greater in the West during the entire period. However, we only find this phenomenon appearing in the 1970s; before this, such expenditures were roughly the same. Further, Peltzman's approach does not give us any clues as to why public expenditures in the East started to rise in the 1970s.

Trying to combine the supply and demand approaches toward public expenditures gives us very few theoretical guideposts to tell us whether such expenditures will be higher in the East or West. The only relevant data presented in this essay that concerns this issue are the series on welfare, where it seems likely that there is a redistribution of income between the rich and poor. Although it appears from the regression experiments in Tables 5 and 6 that such welfare expenditures are relatively lower and are increasing less quickly in Eastern than in Western Europe, the sample is small and we can not be completely sure on this. Further, the experiment is not completely "clean" because the really important redistributional element in such welfare expenditures is from the middle aged to the old.

IV. SOME REFLECTIONS

A number of questions have been raised in this essay. To explore them empirically, it would be useful to employ a complicated multiequation model that can bring in many of the factors discussed. But the data do not permit us this luxury.

Although firm analytical conclusions can not be drawn, it appears that demand elements play the most important role in the increase in public expenditures in both East and West. With the exception of a variable indicating length of existence of the social insurance system, no supply variables appeared important in the regression analyses. Even the "relative productivity effect" does not seem very important, at least in the recent past.

The role of the systems variable is complicated. It does not appear significant in the cross-sectional regressions of expenditure levels except, perhaps, at the most disaggregated level for welfare expenditures where the centrally administered economies have a lower share of such expenditures in their GDP. However, in the cross-sectional regressions of changes in expenditures over time, it appears that for expenditures defined in the most aggregated manner, such

total public consumption expenditures increased more slowly as a share of GDP in the centrally administered economies than in the market economies. However, on a disaggregated level this does not appear to be the case for certain types of expenditures such as for welfare. Together, such results suggest that in the future, for all levels of expenditures, the centrally administered economies will have a lower share of adjusted budgetary expenditures.

Certain empirical questions are even more difficult to answer. For instance, when will the share of public expenditures in the GDP stop rising, a pressing question that has been discussed both on the political level in various electoral campaigns throughout the world, as well as on a theoretical level (see, for example, the views of economists in a large number of nations in Recktenwald 1978). To help us answer this question, several conflicting factors need to be taken into account.

First, for the fastest growing components of adjusted budgetary expenditures, namely, health, education, and welfare (and for social welfare alone), the rapidity of growth is inversely proportional to the share of these expenditures in the initial period (Table 6). This suggests a slowing down of growth in the future.

Second, although many of the demand influences underlying past increases of public expenditures show no signs of abating, we can not be completely sure that these will continue to play an important causal role in the rise in the share of public expenditures. For instance, the aged continue to increase as a share of the population and, therefore, one part of social insurance expenditures might appear to continue to rise. The aged also have greater health needs and, therefore, another part of social insurance expenditures might rise. However, the change in the share of the aged did not appear to influence the change in expenditures directed to them, at least in the twenty year time period under examination.

Third, the demand forces for other types of public expenditures, for example, for education, may increase at a very slow rate or cease entirely. For education, however, offsetting factors influencing public expenditures can be cited: the lower birth rates and a falling share of children in the population make for a decline in the relative share of education; but the increasing complexity of society requires increased education expenditures. For some expenditures it is difficult to say how the major causal elements will change. For instance, for defense expenditures, it is clear that the rising international tensions in the short run will not abate; in the long run, however, the situation may be different, and nations may become more civilized to their neighbors so the need for such expenditures may decrease.

Fourth, many of the existing governmental programs in most developed countries in the West have considerable room for an expansion of the eligibility requirements (OECD 1978, 30-38). The political ability to resist these increases depends crucially on changes in the strength of these governments, and these are difficult to predict. It should be noted that effective national movements to bring about the limitation of government taxation or expenditures (as manifested through such activities as parliamentary action to limit taxes, tax evasion, and reduced work effort) seem far in the future for many countries.

The share of public consumption expenditures in the GDP has been rising in most nations in East and West and, at least in the near future, should continue along this path. Predicting the long-term future of this share is dangerous since the relative strengths of various offsetting factors can not be determined. If pressed, I would bet that a leveling off will occur in the next decade. However, I would not lay much money on such a bet.

FOOTNOTES

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1. The U.S. national accounts data do not include expenditures for construction and equipment by various levels of government in the investment data. These latter expenditures (taken from U.S. Bureau of the Census 1978, 288) were added to the national accounts data to obtain total investment. Data on federal government loans and guarantees comes from Murray L. Weidenbaum (1977).

2. The major corrections for 1962 occurred not in the public expenditures data, but rather in the GNP data for several Eastern European nations. The public expenditures estimations for 1970 and 1977 were too tedious to be reported here. A desription of the methods can be obtained from the author.

3. The per capita GNPs in a common currency for 1970 are reported in Table 1. To calculate such data for other years, the following sources were used for the market economies: OECD 1979; I.B.R.D. 1975; I.B.R.D. (forthcoming). For the centrally administered economies the following sources were utilized: Alton 1977; Alton 1970; Bloch 1979; Greenslade 1976.

4. To demonstrate his theory empirically, Peltzman (1980) used four sets of data: long-time-series data for the U.S.A., the U.K., and Japan; cross-sectional OECD data; data on state and local expenditures in the various U.S. states in different years; and some cross-sectional data for various developing nations. However, such analyses can be criticized on several grounds. First, he used total government expenditures, rather than expenditures related to redistribution as his theory specified. Second, since a narrowing of income differences between the richest and the poorest, and within the poorest, groups appears highly correlated, and since these differences lead to opposite changes in public expenditures, they must be separated. However, only for the data concerning the U.S. states did this appear possible. Third, the results for the U.S. states did not validate

his theory until a cross-product term involving education was added. However, there appeared to be multicollinearity between this term and the other independent variables so that the results can be questioned. Finally, it is possible that his results were due to the causal arrows running in the opposite direction. For instance, a more progressive tax may lead to less investment in human and physical capital which will, in turn, reduce the labor supply for high-income occupations. This will later raise the wages in these groups which, in turn, will lead to a greater gap between the rich and poor. Thus a greater differentiation between rich and poor is associated with a more progressive income tax, but the tax causes the differentiation. Another instance would occur where higher social insurance payouts lead to less labor being offered by older workers which, in turn, means that their monetary income is lower (but they work less) and there is a greater gap between older and poorer workers on one hand, and richer people on the other. Thus a greater differentiation of income between rich and poor is associated with a greater social security payout, but the latter brought about the former.

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