

The Size of Public Employment: An Empirical Study

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Previous empirical studies of government have focused primarily on aggregate financial measures of size. This analysis examines a different measure: the share of public employment in total employment. In empirical tests on OECD countries for 1970 and 1980, the level of public employment is shown to be a clear reflection of voter demand for public goods, electoral support for socialist parties, and political response to the problems of unemployment. In contrast, variables that measure characteristics of the political process, such as degree of government decentralization, strength of interest groups, and voter participation in elections, are not statistically significant. *J. Comp. Econ.*, December 1985, 9(4), pp. 424-437. University of Maryland, College Park, Maryland 20742. © 1985 Academic Press, Inc.

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1. INTRODUCTION

One of the most significant developments in economics in recent years has been the increasing use of the economists' tools in analyzing the decisions of government. Public choice, as this analysis has come to be known, has already led to significant insights into, for example, the timing of macroeconomic policy (Nordhaus, 1975), the growth of government (Meltzer and Richard, 1981), and the setting of tariffs (Pincus, 1975).

The most interesting and most powerful conclusions of public choice are obtained when the analysis is applied to national governments. At this level of government, decisionmakers are faced with fewer constraints than at other levels. Interjurisdictional mobility, a significant factor in local decisions, will be negligible at the national level. Additionally, central-government policies, unlike local ones, are not circumscribed by superior authorities. The inevitable consequence of the fact that higher levels of government are less constrained than lower levels is that the observations that are most likely to give powerful tests of public-choice hypotheses are those on national governments. The testing of public-choice propositions, then, naturally leads to the marriage of two disciplines of economics: comparative economic systems and public

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choice. In the present paper, these two disciplines combine in an empirical analysis of one particular measure of governmental activity—the level of public employment.

In recent years, academic interest in the determinants of government size has increased (see Meltzer and Richard, 1983; Peltzman, 1980; and Mueller and Murrell, 1985). In each of these studies, a financial measure of the size of government is taken as the dependent variable in testing whether some particular theory, for example, median-voter redistribution, is consistent with empirical evidence. A significant problem in such analyses is one with which comparative economists are all too familiar: paucity of data points.¹ Some may conclude that empirical analysis is pointless in the presence of such a problem. The viewpoint in this paper, however, is that the subject of study is too important to ignore, despite the data problems. Rather, as each study must be less than fully convincing due to the lack of data points, the appropriate conclusion is that tests of the same basic theories must be carried out in as wide a variety of contexts as possible. Then, by bringing to bear a cumulation of evidence from different studies, one can compensate for the lack of power inherent in tests that employ only a small amount of data. Herein, therefore, is the rationale for the present study: it is one piece of evidence in the examination of a problem so important that it cannot be ignored, despite the difficulties of testing inherent in cross-national analyses.

Previous studies of government size have focused primarily on aggregate financial measures of size. One way in which such studies can be extended, and the strength of their results checked, is to examine different measures of a government's command over economic resources. One such measure, the share of public employment in total employment, is the focus of this study.²

Analyzing the employment size of government adds significantly to previous results in two ways. First, it can be argued that one reason for the concern with the growing size of government is that resources are withdrawn from the market sector. If one believes that it is the competitive market sector that gives an economy its dynamism, then the employment size of government may be the best measure of the effect of the government on aggregate economic performance. Transfers and government purchases from the market sector do not measure the degree to which a society is forsaking its commitment to the market.

¹ Meltzer and Richard (1983) partially solve this problem by using a time series for the United States. However, such an approach is highly limited because significant variables, such as the political system, do not vary enough to be tested within their framework.

² Martin (1982) and Heller and Tait (1984) have also explored the determinants of public employment. Both of these studies examine a narrower range of determinants than are used here. However, Heller and Tait's sample size is much larger. In cross-national research, there is an obvious trade-off between number of independent variables and number of observations (see Mueller and Murrell, 1985).

The examination of public employment also adds a new dimension to previous analyses because certain determinants of government behavior may have a stronger effect on employment decisions than on other components of that behavior. For example, bureaucratic aggrandizement is more likely to produce an increase in employment than in pure transfers. Or, an ideology emphasizing public production is more likely to affect employment than to raise government purchases. Thus, in using public employment as the dependent variable, one can possibly capture the effects of variables whose influences on aggregate financial measures are weaker.

The outlook of the present paper is purely empirical. The main aim is to find the determinants of public employment that are statistically significant. However, each determinant tested is derived from a sound theory and for completeness it is necessary to provide a brief summary of each theory. Section 2 contains these summaries. In Section 3, the data used in the tests are described and estimating procedures are briefly discussed. In the concluding section, the results are presented and their significance examined.

2. RELEVANT THEORIES

The analysis seeks to explain public employment as a proportion of total employment. The size of this variable is a function of a large number of decisions made within a complicated political process. At the present level of analysis, one cannot hope to model that process fully. Rather, the best that can be hoped is to find a reduced-form equation that includes as independent variables measures both describing the political process and summarizing the factors that affect the functioning of that process. In order to find such measures, let us turn to the most important implications of some existing theoretical models.

2a. *The Demand for Public Goods*

The prevailing view in economic models of political decisionmaking is that individual demands for the services of the public sector will be filtered through a political process. In these models, political decisions are a function of individual demands, with the form of the function reflecting the way in which the political process is modeled. For example, the median-voter model makes the demands of the one "representative" voter all important. (See Meltzer and Richard, 1981 and 1983, for a use of median-voter models relevant to the present context.) In contrast, Coughlin and Nitzan (1981) and Ledyard (1984), by introducing probabilistic elements into the voting process, show politicians taking into account the preferences of all voters. Even after interest groups are introduced into the model, individual demands remain important because the role of these groups is to convey those demands (Becker, 1984; Coughlin, Mueller, and Murrell, 1985).

Existing models of the political process, then, rest on the assumption that politicians have an incentive to be responsive to some, or all, constituents. Such responsiveness would ensure that political decisions are a function of individual demands. Demand theory then suggests that one should include price and income concepts in modeling public good decisions.

For over a century, the assumption has been maintained that the demand for public goods rises more than proportionately with per capita income (see Pryor, 1968, pp. 451-454). With one purpose of public employment being the production of public goods, one can formulate the following:

Hypothesis 1: Public employment as a share of total employment rises with per capita income.^{3,4}

By definition, pure public goods have scale economy attributes. Therefore, price per capita will fall as population increases. Under the assumption that the demand for such goods is relatively price-inelastic, one can hypothesize the following:

Hypothesis 2: Public employment as a share of total employment is inversely related to population.⁵

2b. *Leviathan*

Brennan and Buchanan (1980) have hypothesized that an unconstrained government will use its power to maximize tax revenues. Once one considers the motives for undertaking such a policy, it is evident that public-employment figures may be the ideal data with which to test this "Leviathan" theory. Politicians and bureaucrats will maximize revenues in order to increase their power and prestige and there is no surer way of doing so than directly controlling a large proportion of the labor force. For example, Brennan and Buchanan (p. 28) cite the existence of a welfare bureaucracy, rather than welfare payments, as a prediction of their theory.

Brennan and Buchanan's theory, as stated above, cannot be tested with the present data. Nevertheless, as Oates (1985) has shown for financial measures of government size, there is a direct implication that can be tested. Arguing that interjurisdictional mobility imposes constraints on a govern-

³ In statements of hypotheses, the appropriate *ceteris paribus* clauses are omitted for the sake of brevity.

⁴ The concept of income is deliberately left vague. The view here is that since the political process is a mixture of many elements, many concepts would be needed in a full model. Since these concepts will be highly colinear and because data availability essentially dictates the choice to be used, nothing would be gained from an extensive discussion of which is the most appropriate concept.

⁵ A further price element has been ignored—the price of private versus public goods. Since no relevant data could be found, discussion of this issue is omitted.

ment's power, Brennan and Buchanan (1980, p. 185) conclude that "Total government intrusion into the economy should be smaller, *ceteris paribus*, the greater the extent to which taxes and expenditures are decentralized. . . . Hence, one can test the "Leviathan" theory by examining the following hypothesis:

Hypothesis 3: The share of public employment in total employment is lower the more decentralized is government activity.

2c. Interest Groups

Coughlin, Mueller, and Murrell (1985) have developed a model of the political process in which organized interest groups are able to influence chosen policies. They show that, if rigidities in the political system cause tax reductions to be more difficult than the introduction of new goods and transfers into the budget, increasing interest-group influence will raise the size of the government budget. One would expect that most of the effect of interest-group influence will appear in either transfers or government purchases. Mueller and Murrell (1985) show that such an effect is significant in a empirical model estimated for developed market economies. However, on the assumption that some of the interest-group-generated activity leads to extra government employment, the following hypothesis may be correct:

Hypothesis 4: The larger the role of interest groups the higher is the level of public employment.

2d. Median-Voter Redistribution

Meltzer and Richard (1981) argue that the more redistribution that takes place the lower is the income of the median voter relative to average income. A direct test of this hypothesis using cross-national data is difficult because of the lack of reliable data on median income.⁶ However, an implication of the theory is testable (Mueller and Murrell, 1985). The proportion of the populace that votes varies a great deal between countries. When that proportion falls, lower income groups disproportionately abstain or are excluded from voting. In such a case, median-voter income increases relative to average income and pressure for redistribution will lessen. As in the case of the interest-group theory, public-employment data are not necessarily the best to use in testing this hypothesis. Nevertheless, given that public employment has a considerable transfer aspect, one can formulate the following:

Hypothesis 5: Public employment increases with the proportion of the population voting in elections.

⁶ But see Meltzer and Richard (1983) for a time-series analysis of U. S. data.

2e. Ideology

Many of the previous studies of the size of government by economists have a curious omission: they ignore the role of ideology.⁷ This lacuna seems especially strange when one considers the emphasis placed on ideology in public discussion of policy issues. The absence of mention of ideology may reflect Stigler and Becker's (1977) methodological principle that differences in tastes should not be used to explain economic phenomena. Ideology can be viewed as a pure taste variable. In this paper, I break with past practice and with that methodological principle in order to test whether ideology affects decisions on employment size.

The models mentioned in Section 2a would in fact argue for the inclusion of a variable measuring ideology. These models predict that political decisions will reflect individual demands. If the preference for a particular government policy (i.e., ideology) varies between countries, then so will demand for that policy. Here, the focus is on the preference for public employment.

The present study uses an ideal data set for an examination of the influence of ideology. In most democratic countries, one of the clearest ideological distinctions is between socialist and nonsocialist political philosophy. An essential part of that distinction is the emphasis placed on the role of public employment in socialist ideology. If a significant proportion of the electorate supports such an ideology, then public policy will be affected in a manner summarized by the following:

Hypothesis 6: The larger the electoral support for socialist parties and policies, the larger will be the level of public employment.

2f. Unemployment

The final hypothesis builds upon the public-choice analysis of the determinants of macroeconomic policy. Frey and Schneider (1978b, p. 244) succinctly summarize the rudiments of that analysis:

The basic hypothesis advanced is that the governing party aims to stay in power and therefore seeks to increase its popularity with the electorate when its (perceived) reelection chances are low. For this purpose it undertakes an expansionary policy expected to lead to a popularity increase and an improvement in its election prospects. On the other hand, when it is confident of winning the forthcoming general election, it can afford to undertake a policy in accordance with its ideology.

Implicit in this hypothesis is the assumption that the inflationary consequences of a government action are not so costly, in terms of votes lost, as to outweigh the electoral benefits of reduced unemployment. Evidence supporting this assumption has been found in a number of studies conducted for a variety

⁷ An exception is the study of Heller and Tait (1984).

of countries (Frey and Schneider, 1978a, 1978b; Fair, 1978; Jonung and Wadensjö, 1979; Abrams, Froyen, and Waud, 1983).

The public-choice analysis leads to the conclusion that voter pressure will cause public officials to implement programs that aim to reduce unemployment when it is perceived to be high.⁸ Therefore, when structural factors cause higher unemployment levels, a country will exhibit a greater number of such programs. The most obvious of such policies being public employment, one would expect to observe a positive relationship between unemployment and public employment. Despite the simplicity of this argument, there has been no attempt, to the author's knowledge, to use it to help explain the size of government. Thus, valuable new lessons could be learned by testing the following:

Hypothesis 7: Countries that experience higher levels of unemployment will have higher levels of public employment.

3. THE DATA AND ESTIMATION

Precise description of the data is reserved for the Appendix. Here, sufficient information is given to allow the reader to follow the summary of results without the loss of continuity that would result from a more detailed description of each variable.

Before describing the variables, note must be made of the sample of countries used. The hypotheses above are most relevant for modern industrial countries with open political systems. Only a small number of countries meet these criteria. The constraints arising from data availability and comparability place further limitations on sample size. Given these requirements, the member countries of the OECD constitute a natural sample.

There are only 24 OECD countries and the relevant data could be found for only 19 of these.⁹ As this sample size is rather small, data for two different years, a decade apart, were used. However, one runs the risk of spuriously increasing sample size when using two years' data, since there is much temporal stability in the values of the variables used in the analysis. Sample size doubles, but perhaps little new information is introduced. In order to avoid the worst pitfalls of increasing the sample size in this manner, two years with very different characteristics were chosen. Between 1970 and 1980, government

⁸ This argument is not dependent on assuming that an increase in public employment *does* lower unemployment rates; rather, it is dependent on the assumption that voters *believe* that such is the case.

⁹ The small sample size is inherent in such work. After having undertaken the most complete attempt to obtain cross-national information on public employment, Heller and Tait (1984, p. 2) remark that "... it is extraordinary how impoverished the data base is." The present study, given the independent variables needed and the criteria for including a country in the sample, could not make use of the Heller-Tait data.

size grew in all OECD countries, macroeconomic conditions worsened a great deal, the underlying theory of macroeconomic policy evidenced a dramatic shift, and attitudes concerning the appropriate role of government changed considerably. Therefore, use of data for these two years may be a reasonable way to increase sample size.¹⁰ Nevertheless, for those still skeptical about this approach, results have also been presented for each year individually.

The dependent variable in the analysis, PUEM, measures the share of public employment in total employment. The data source used for the analysis excludes public employees working in government corporations. Since such corporations are usually, at least in principle, self-financing through sales revenues, the dependent variable measures that element of public employment which produces nonmarketed output.

The nature of several of the variables used is self-explanatory: POP measures population, PCIN is per capita gross domestic product, and VPOP is the proportion of the adult population voting in general elections. DCNT measures the proportion of total tax revenues collected outside the central government. Oates (1972) discusses the use of such a measure as a proxy for decentralization of governmental power. INTG is simply a count of the number of interest groups existing in a country and is the variable used to measure interest-group strength in Mueller and Murrell (1985) and Murrell (1984). Its properties as a measure of such strength are discussed in those two papers and will not be elaborated here. While this measure has many disadvantages (e.g., all groups are effectively assumed to be of equal strength), it is, to this author's knowledge, the best measure available.¹¹

SOCV measures the legislative strength of socialist parties, where "socialist" is defined as membership in the Socialist International. In using this variable, it is assumed that voter support of an ideology will affect policy decisions to the extent that this support is translated into legislative strength. Thus, it is assumed that, even if the socialist party is not in power, the presence of voter support for that party will cause the government to change its policies in order to maintain itself in power.

Two problems are encountered when choosing an appropriate measure of unemployment. First, there are obvious problems of simultaneity in estimation: if government policy is effective, one would expect unemployment to be lower in countries with a high level of public employment. Second, transitory increases in public employment in a recession are much less significant than permanent increases caused by political pressures resultant from

¹⁰ The data are for years as close to 1970 and 1980 as possible. See the Appendix for details.

¹¹ It has been suggested that a per capita measure may be more appropriate. Despite the intuitive appeal of that suggestion, it is not necessarily correct. Some adjustment for country size may be appropriate, but not necessarily full adjustment (Murrell, 1984). Since POP is in the equation, partial adjustment is provided if one views the equation as a Taylor-series approximation of a more complicated functional form.

a country's chronic tendency toward high unemployment. The latter increases are the ones on which a study of the long-term determinants of the size of government must focus.

Since there is no best way to solve the aforementioned problems, three alternative approaches are taken. First, when unemployment is measured by current unemployment, UNC, an instrumental variables estimation procedure is used. Four variables that help to explain the level of structural and frictional unemployment in a country are used as instruments in the estimating equation. CONP, concentration of population, and AREA, the geographic size of a country, both help to explain structural unemployment due to regional dispersion of population.¹² FELF, the percentage of females in the labor force, is also used as an instrument. To the extent that females have higher turnover rates, this variable can explain permanent increases in the level of unemployment due to frictional factors. The last instrument was agricultural employment as a percentage of the labor force, AGG. This variable is used on the assumption that the problem of structural unemployment grows with the rise of the modern urban-industrial sector of the economy.¹³

A different approach involves the use of lagged values of unemployment. UNL is the average value of unemployment in a five-year period ending five years before the year in which the rest of the data are measured. The use of UNL produces estimates of the effects of permanent rather than transitory unemployment both because it is lagged and because it is an average over a five-year period. The simultaneity problem is reduced because UNL is a lagged value. A third set of estimates involves using UNL in an instrumental-variables framework. Thus, both precautions against simultaneity problems are employed: the lagged value of the independent variable is used and a simultaneous-equations estimation procedure is employed.

4. RESULTS AND CONCLUSIONS

The results are presented in two accompanying tables, which are largely self-explanatory. Table 1 contains the results obtained when all hypotheses are tested simultaneously within one equation. VPOP and INTG are insignificant, at the 95% level, in all three equations. Omitting these variables increases the number of degrees of freedom by both increasing the number of available observations and decreasing the number of independent variables. Table 2 contains reestimated equations with VPOP and INTG omitted.

¹² Since POP is already in the estimating equation, using AREA as an instrument means that one is explaining unemployment by a linearization of density of population.

¹³ One may object to the choice of instruments because they, together, constitute a weak explanation of the causes of structural unemployment. However, to go further with such an explanation is beyond the scope of this paper. To the extent that the instruments are weak, tests are reduced in power but not biased.

TABLE 1
RESULTS OF REGRESSIONS WITH PUEM AS THE DEPENDENT VARIABLE

Tech- nique/ Time obs- er- vations	Time period	R ²	Intercept	POP	PCIN	DCNT	INTG	VPOP	SOCV	UNC	UNL
OLS	1970	0.90	-11.5** (-3.0)	-0.35* (-2.37)	0.24** (4.87)	-0.09* (-1.85)	0.07 (1.21)	0.03 (0.75)	0.19** (3.68)		1.89** (4.46)
INST	1970	0.85	-13.99 (-1.22)	-0.28 (-1.34)	0.25** (3.69)	-0.11 (-1.59)	0.04 (0.50)	0.02 (0.17)	0.25** (2.94)		2.58* (2.77)
INST	1970	0.87	-15.95** (-3.44)	-0.24 (-1.37)	0.22** (4.12)	-0.03 (-0.50)	0.03 (0.39)	0.04 (1.03)	0.26** (3.41)	2.30** (3.62)	
OLS	1980	0.60	-22.24 (-1.76)	-0.50 (-1.40)	0.27* (2.45)	0.01 (0.06)	0.05 (0.27)	0.12 (0.80)	0.23 (1.41)		1.83 (1.43)
INST	1980	0.57	-20.76 (-1.55)	-0.53 (-1.41)	0.25* (2.05)	0.02 (0.16)	0.12 (0.56)	0.20 (0.96)	0.09 (0.33)		0.52 (0.20)
INST	1980	0.55	-21.56 (-1.60)	-0.45 (-1.13)	0.23* (2.03)	0.07 (0.54)	0.07 (0.38)	0.17 (1.09)	0.12 (0.86)	0.84 (0.82)	
OLS	BOTH	0.69	-17.40** (-3.35)	-0.46* (-2.43)	0.26** (4.52)	-0.03 (-0.51)	0.06 (0.80)	0.08 (1.43)	0.19** (2.71)		1.73** (3.05)
INST	BOTH	0.66	-18.45** (-2.66)	-0.43* (-2.14)	0.26** (4.37)	-0.04 (-0.58)	0.04 (0.42)	0.07 (0.67)	0.24* (1.77)		2.18 (1.68)
INST	BOTH	0.63	-14.90** (-2.63)	-0.43* (-2.04)	0.22** (3.38)	0.03 (0.41)	0.08 (0.93)	0.10 (1.35)	0.14* (1.77)	1.06* (1.83)	

* Significant at the 95% level in a one-sided test.

** Significant at the 99% level in a one-sided test.

The first comment that can be made is that the signs of all coefficients (except those of DCNT) are consistent with those predicted by the hypotheses of Section 2. Given the nature of the data and the small sample size, it is not surprising that some coefficients are insignificant. Perhaps the best general summary of the tables, therefore, is that none of the results is inconsistent with the hypotheses (except for DCNT), but that several do not pass tests of statistical significance. The nonsignificance of VPOP and INTG is not surprising because the theories behind both of these variables focus on financial aspects of government decisions.

Focusing now on Table 2, the least successful variables are POP and DCNT. The sign of the latter varies between equations. The nonsupport for the Leviathan hypothesis matches that of Oates (1985). The performance of POP indicates a weak scale-economy effect for public goods. However, the strong performance of PCIN generally supports the hypothesis that the demand for public goods has a significant effect on government employment decisions.

TABLE 2
RESULTS OF REGRESSIONS WITH PUEM AS THE DEPENDENT VARIABLE

Technique/ observations	Time period	R ²	Intercept	POP	PCIN	DCNT	SOCV	UNC	UNL
OLS 19	1970	0.78	-12.44** (-3.0)	-0.17 (-1.13)	0.23** (3.85)	-0.08 (-1.32)	0.27** (4.71)		2.50** (5.17)
INST 18	1970	0.56	-21.44* (-2.57)	-0.17 (-0.80)	0.26** (3.02)	-0.15 (-1.43)	0.42** (3.35)		4.31** (3.20)
INST 19	1970	0.63	-19.98** (-3.10)	-0.17 (-0.87)	0.20** (2.67)	-0.01 (-0.11)	0.44** (4.29)	3.78** (4.18)	
OLS 19	1980	0.58	-15.79* (-1.75)	-0.52* (-2.15)	0.27** (2.72)	-0.03 (-0.31)	0.31* (2.61)		2.39* (2.50)
INST 19	1980	0.58	-14.58 (-1.24)	-0.51* (-2.08)	0.27** (2.67)	-0.03 (-0.33)	0.29* (1.89)		2.20 (1.47)
INST 19	1980	0.47	-11.88 (-1.20)	-0.43 (-1.61)	0.22* (2.00)	0.06 (0.43)	0.21* (1.87)	1.41 (1.75)	
OLS 38	BOTH	0.65	-14.08** (-3.37)	-0.36** (-2.63)	0.25** (4.61)	-0.05 (-0.86)	0.28** (4.81)		2.39** (5.17)
INST 37	BOTH	0.60	-18.07** (-2.94)	-0.39** (-2.63)	0.26** (4.32)	-0.05 (-0.73)	0.34** (3.88)		3.16** (3.51)
INST 38	BOTH	0.51	-10.89* (-2.29)	-0.29* (-1.78)	0.20** (2.98)	0.04 (0.51)	0.24** (3.56)	1.69** (3.71)	

* Significant at the 95% level in a one-sided test

** Significant at the 99% level in a one-sided test

The most interesting results to emerge from the present study derive from the consistent importance of SOCV and UNC (or UNL). These variables are the ones upon which economists have not previously focused in examining the determinants of government size, yet their importance in the present estimates is indubitable. Furthermore, their quantitative effect, which cannot be judged from information in the table alone, will be large. For example, using the first equation in Table 1 and making calculations at sample means, if 1% of the nonsocialist members of a legislature are replaced by socialist members then 0.25% of employees will be transferred from the private to the public sector. Similarly, if 1% of the labor force became unemployed, there would then be a transfer of 2.5% of the labor force to the public sector. The magnitude of these effects is such that they cannot be ignored in any further discussion of government size.

It is worthy of comment that the justification for the inclusion in the equation of the two most significant variables rests on an analysis that the preferences of voters are directly transmitted by the political process. Unemployment

ment leads to an increase in public employment because voters believe that such a policy will reduce unemployment. SOCV increases public employment because voters have a taste for public-sector employment. Thus, the most important results do not necessarily rest on inadequacies in the political process or on the venality of politicians, but rather indicate that the choice of the size of government is a reflection of voters' demands.

Although, given the small sample size, one must not attach too much significance to the results for individual years, the difference between the regressions for 1970 and 1980 is noteworthy. In 1980 the explanatory power of the regressions is less than in 1970. This decline is most evident in the lower statistical significance of the unemployment variable. The weakened explanatory power can, therefore, possibly be explained by the change during the 1970s of attitudes on the appropriate macroeconomic role of government.

After stating the conclusions somewhat forcefully, it is perhaps appropriate to end on a note of caution. The results in this paper are based on data for a small number of countries, albeit the largest number available given the requirement of comparability of the data. The conclusions must, therefore, be regarded as tentative. Firm conclusions can only be drawn if this study's results are found to be consistent with those of other studies, both published and yet to be produced. However, the significance of the topic at hand, the size of the public sector, means that such studies must be carried out despite the data problems inherent in them.

APPENDIX: THE DATA

PUEM The percentage of the public sector in total employment. Public-sector employment excludes employment in public corporations (OECD 1982, OECD *Historical Statistics*).

POP Population in millions (United Nations, *Demographic Yearbook*).

PCIN Per capita GDP as a percentage of U. S. GDP (Summers and Heston, 1984).

VPOP The proportion of the adult population that votes in general elections. The data refer to points in the 1960s (for 1970 observations) and points in the 1970s (for 1980 observations). (Taylor and Hudson, 1972; and Taylor and Jodice, 1983).

INTG The number of interest groups (in 100s) listed for a country in *Internationales Verzeichnis der Wirtschaftsverbände* (1973). Groups are primarily industry and trade associations, labor unions, and chambers of commerce. For lack of suitable alternatives, the same data were used for 1970 and 1980.

DCNT Tax revenues collected at the state and local level as a percentage of total tax revenues. The 1970 data are for 1973, the year

nearest to 1970 for which data were available (OECD *Revenue Statistics*).

SOCV

Percentage of seats in legislature held by socialist parties from 1945 to 1965 (for 1970 observations) and from 1960 to 1975 (for 1980 observations). (Earlier data from Hewitt, 1977; later data compiled by the author from Mackie and Rose, 1981.)

UNC, UNL

Unemployment as a percentage of labor force: 1970 and 1980 values for UNC; 1960-1964 and 1970-1975 averages for UNL (OECD *Historical Statistics*). As is well-known, the comparability of these measures may be questioned. To the extent that they are noncomparable, the power of the tests will be reduced but not invalidated. Comparable measures are available but not for a sufficient number of countries.

FELF

Female workers as a percentage of the labor force (OECD *Historical Statistics*). The time periods correspond to those for the unemployment variable.

CONP

The percentage of population living in cities of 100,000 or more (Taylor and Hudson 1972). The same data are used for both time periods.

AREA

Area in 1000 km². (United Nations, *Demographic Yearbook*).

AGG

Agricultural workers as a percentage of the labor force (OECD *Historical Statistics*). The time periods correspond to those for the unemployment variable.

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