

WAGNER'S "LAW" AND THE DEVELOPING COUNTRIES

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INTRODUCTION

ALTHOUGH THERE is widespread agreement in developing countries that the government's role is crucial for development, there appears little consensus about the optimal level of public intervention in the economy. More than a century ago, Adolph Wagner, one of the leading German economists of the time, propounded an interesting development thesis. Loosely framed, he proposed that as a nation develops its public sector (and consequently public spending) will grow in relative importance.¹ Wagner's "law" of over-increasing state expansion was derived from the historical experience of continental Europe, principally Germany, at the early stages of industrialization. From this perspective, Wagner saw three factors which would cause state activity to grow proportionately faster than other sectors of the economy. First, he projected an expansion of the government's traditional role in providing administration, law and order as the economy became more specialized and social and economic life more atomized as a consequence of the increased division of labor. Secondly, he foresaw an increase in the provision of "cultural and welfare" expenditures, most particularly education. His reasons for this expectation were not altogether clear, although it may do him little injustice to say he thought they behaved as superior goods with an income elasticity of demand greater than unity. Thirdly, he saw that the increasing scale of technologically efficient production would cause the government to undertake certain economic services of which the private sector would be no longer capable. In this he had in mind the heavy investments associated with railroad construction.

Surprisingly, when other advanced countries were examined and when a longer time period was taken, Wagner's thesis seemed to be borne out. Subsequent empirical research using time series data has amassed considerable evidence to support the contention that the relative size of the public sector has increased over time, in almost all of the currently advanced countries.² But what of the LDCs? Obviously, time series data for such economies is limited in availability and quality. What is available, however, is a body of cross-section data for countries at different stages of development. What light does such evidence throw on Wagner's "law"? Can we explain the relative share of the public sector in an economy by its level or type of development? What are the major

¹ The most easily accessible source is found in [26]. For a more detailed account see [38] [39]. A critical review of his thesis is contained in [4] [36].

² See, for example, [1] [3] [5] [11] [18] [23] [28] [30] [32] [33] [37] [42].

causal influences, and how can we account for geographical differences? What are the implications of this evidence for development policy? This article attempts a preliminary exploration of such questions.

I. THE EVIDENCE FOR WAGNER'S "LAW"

Ideally one would prefer to examine the same country at different levels of development and examine changes in the relative size of the public sector over time. Unfortunately, this approach encounters a number of practical problems. First and foremost, data are simply not available for many developing countries to cover an adequate period of their economic development.³ Using available statistics would thus tend to bias the survey to the most developed of the LDCs who tend to have better data. In the absence of adequate time series we are forced to rely on cross-section data, and look at the relationship between some indicator of economic development and an indicator of the relative size of the public sector at a particular point in time. In this more static context, differences in income levels may be regarded as a proxy for differences in the degree of development since this indicator is likely to be closely associated with the complex differences in economic, social, and (sometimes) political structure that characterizes development. Unfortunately, in constructing such a test the researcher faces several other difficult statistical as well as conceptual problems.

In devising a statistical indicator of the relative size of the public sector, as reflected in the public accounts, the usual procedure is to take some ratio of public spending to national income, G/Y . However, there are some doubts about which statistical measure of public spending or income to employ. The major doubt about the numerator is whether transfer payments should be included. Some would argue that if one concentrates on the public sector's role as a consumer of resources then transfers should be excluded. However, there is no doubt that the distributive function of the government is an important source of public sector intervention in the economy. Further, such transfers are usually financed by taxes, and as such are subject to the same kind of fiscal decision process as that involving the consumption of resources. More difficult data problems are posed by the different levels of government and the varying constitutional structure of countries. Although the definition of public spending should be as comprehensive as possible, including local governments (or in the federal case, regional governments) as well as public agencies such as social security funds, there are obvious data limitations involved in such a strategy. Given this lack of data and the wide differences in government structure, the definition adopted in this study excludes that fraction of local government expenditure which is financed by revenue raised by local government itself.

As for the denominator of the G/Y ratio, several options are available. For example, should we concentrate on GNP or GDP, and exclude net factor in-

³ For an exception, see [12], although his empirical conclusions are limited by the shortness of the time period covered.

comes from abroad? And should the chosen national income aggregate be measured at market prices or factor cost? For the LDCs due to the importance of foreign ownership of factors of production, and in some sectors the employment of nonnationals, perhaps income to nationals is the more relevant aggregate. However, since governments have the power to tax incomes, and given the "openness" of many LDCs, it has been the convention to concentrate on gross domestic product rather than GNP. In valuing GDP it seems more logically consistent to measure income at market prices rather than at factor cost, since government purchases are made at market prices. The subtraction of indirect taxes (minus subsidies) from GNP would involve some doubtful assumptions as to the shiftability of these taxes. Also, since available government expenditure data is typically measured gross of depreciation of the public stock, it seems consistent to choose a measure of national production which is also gross of capital depreciation.

The most widely used indicator of development is that of per capita income. Leaving aside for the moment a discussion of its adequacy as an indicator of development, there are a number of statistical problems involved in using this in international comparisons. There is no need to reiterate in great detail the many empirical problems encountered. For example, national income estimates of different countries measured in domestic units of currency have to be converted into a single currency by use of exchange rates. This proves inadequate with exchange rate instability, exchange controls and multiple exchange rates. Moreover, foreign exchange rates tend to reflect the relative prices of those goods and services entering foreign trade, and are not typical of relative prices within countries. On the whole, the level of income of low income countries tend to be understated relative to high income countries.⁴ Apart from these special problems of international comparison, there are, of course, the problems encountered when using national income statistics which are also encountered in time series studies. For example, the problem of choice of weights or prices in which output is to be measured will vary between countries. Differences in taste, need, technology, and quality, also present conceptual difficulties. Despite these numerous problems, for practical purposes a choice of development indicator has to be made. Although international comparisons of income levels are undeniably suspect, there is no guarantee another indicator will be less reliable. In any case, employing per capita income as a proxy index of development also appears valid, at least as a first approximation, since the many socioeconomic variables associated with development are likely to be highly correlated with this variable.

The above statistical difficulties may explain why, while the evidence from time series is almost wholly affirmative, cross-sectional studies have led to conflicting conclusions. Some appear to support Wagner's "law": "Thus when we use current expenditure and total revenue as measures of the public share in gross national product, there is a definite positive correlation between per capita income and the government share" [40, p. 49]. Or, expressed differently: "Gov-

⁴ A conclusion also reached by [13].

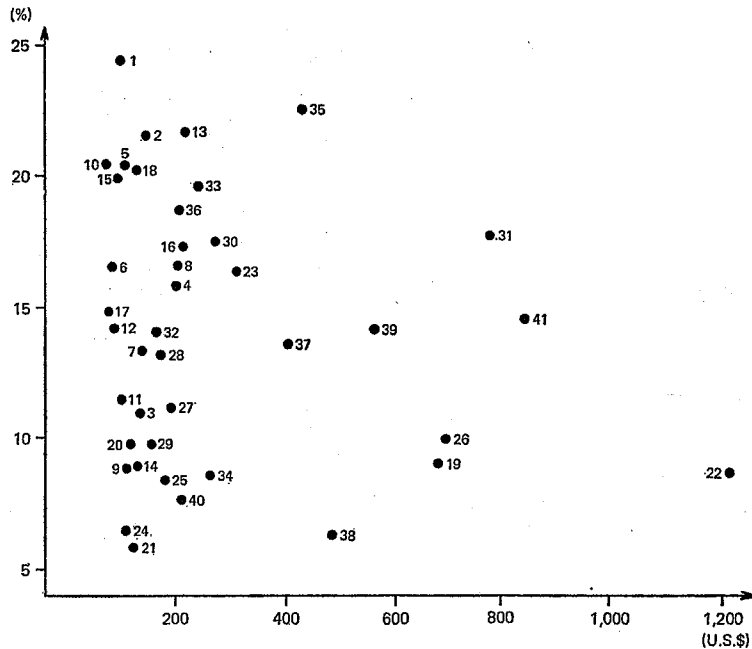
ernment expenditures tend to rise at a faster rate than national product as *per capita* national product increases" [35, p. 23]. However, other studies appear to negate Wagner's "law." For example, Musgrave when examining the ratio of current public expenditures to GNP notes that the positive relationship with per capita income disappears if countries are divided into high and low income groups and "break down for the low (per capita income below U.S.\$300) and high (per capita income above U.S.\$600) groups taken by themselves" [25, p. 120]. A similar conclusion was reached by two other important studies [16] [24]. In part, as has been suggested by V. P. Gandhi, this latter result could be caused by combining two heterogeneous samples of developed and less developed countries [13]. For our purposes, we propose to concentrate on a comprehensive sample of forty-one developing countries. However, since there is no one simple "average" developing country or group of LDCs, and since their individual problems are so profuse and their structural characteristics so diversified, it would also seem better to look more closely at not too heterogeneous groups of countries rather than finding useful common denominators among all the LDCs. For this reason, we experimented with smaller subsamples based on geographical proximity.

The data used are derived from local sources and published by the World Bank, where every care has been taken to correct some of the more obvious difficulties of inter-country data and provide a consistent series.⁵ This set of per capita income figures, as in the case for all such data, is far from perfect, but may well be the best available. Public expenditures are defined to include expenditure of central government, states and provinces, municipalities and cities. It also includes spending by other agencies than the government if they collect taxes or are financed by government subsidies (the most important of these being the social security agencies). The data differs from those used by previous investigators since not only do we take a more comprehensive sample of developing countries but we use averages for a number of years which reduces the influence of anomalies caused by unrepresentative years. Averages for the 1961-69 period were used since the period of the 1960s was generally a period of "relative peace" without severe depression or boom. Later years are more likely to be disturbed by the recent world recession and oil crisis, and also more prone to updating errors. The scatter diagram showing the relationship between the G/Y ratio and per capita income is shown in Figure 1.

It is evident that there is no simple relationship between per capita income and the share of public spending in GNP. The forty-one country model was divided into three geographical subgroups for comparison: Africa, Asia, and South and Central America. Upon examination of individual scatter diagrams, there was every indication that the fit was not much improved by disaggregation and a linear function was used for simple regression analysis to verify this. As a further check of the result, a double logarithmic function of the form $\log G/Y = \log a + b \log (Y/N)$, was employed but this did not alter the con-

⁵ A detailed account of these statistics and their sources is contained in the Appendix to this paper.

Fig. 1. The Relationship between Per Capita Income and the Ratio of Total Public Spending to GDP (Average for 1961-69)



Country Codes:

- | | | |
|--|--|---|
| <p>A. Africa:</p> <ol style="list-style-type: none"> 1. Botswana 2. Egypt 3. Kenya 4. Liberia 5. Malagasy 6. Malawi 7. Mauritania 8. Morocco 9. Nigeria 10. Somalia 11. Sudan 12. Tanzania 13. Tunisia 14. Uganda 15. Zaire 16. Zambia | <p>B. Asia:</p> <ol style="list-style-type: none"> 17. Burma 18. Cambodia 19. Hong Kong 20. India 21. Indonesia 22. Japan 23. Malaysia 24. Pakistan 25. Philippines 26. Singapore 27. S. Korea 28. Sri Lanka 29. Thailand 30. Taiwan | <p>C. Central and South America:</p> <ol style="list-style-type: none"> 31. Argentina 32. Bolivia 33. Brazil 34. Columbia 35. Chile 36. Ecuador 37. Jamaica 38. Mexico 39. Panama 40. Paraguay 41. Venezuela |
|--|--|---|

clusions. The results using this functional form are shown in Table I. Henceforth, for both simple and multiple regressions the double logarithm form was used, this having the advantage that the coefficients measure the partial elasticities of the dependent variable with respect to the independent variables.

Equation 1 in Table I shows that there is little relationship between the ratio of total public spending to GDP and per capita income, and this conclusion is little altered whether one takes the total sample or divides the sample into

TABLE I
THE RELATION BETWEEN PUBLIC EXPENDITURE RATIO AND PER CAPITA INCOME

Sample	Sample Size	Average Per Capita Income (U.S. \$)	Equation 1			Equation 2		
			$\ln(G/Y) = \ln a + b \ln Y p.c.$			$\ln(GC/Y) = \ln a + b \ln Y p.c.$		
			Constant	b	R^2	Constant	b	R^2
1. All	41	286	2.6642 (8.0769)	0.0039 (0.0643)	0.001	1.9606 (4.8399)	0.0880 (1.1709)	0.03
2. Africa	16	114	2.6884 (5.2630)	-0.0226 (0.2388)	0.005	0.3953 (0.3614)	0.4625 (1.9728)	0.22
3. Asia	14	301	2.2268 (1.6313)	0.0620 (0.2681)	0.008	1.8544 (1.2598)	0.1037 (0.4153)	0.02
4. South and Central America	11	412	2.2857 (2.7627)	0.1022 (0.5761)	0.023	1.8722 (3.0284)	0.0748 (0.6518)	0.04

Note: Figures in parentheses are t statistics.

regional groups. In all cases, the R^2 is negligible and not only is the slope insignificant but changes in sign between samples. On the whole, these results support V. P. Gandhi's contention that while using a combination of developed and developing countries it is possible to get a positive relationship between the expenditure ratio and income level, this is merely due to the difference in average levels at the two ends of the scale. When one concentrates on the developed or the developing countries individually, no firm relationship can be discerned (a conclusion also reached by [20] [25]).

Further experimentation with different samples of countries (for example, divided by income level into high, intermediate, and low) offered no improvement in the results. However, using different aggregates of public spending when calculating the expenditure ratio did alter these negative conclusions. In particular, when total civilian expenditures were taken (i.e., total spending minus spending for defence purposes), there was some improvement in the overall fit and the slope coefficient was almost significant at the 10 per cent level (see equation 2 in Table I). When the total sample was broken down by regional groups a consistent positive relationship was established and surprisingly a reasonable fit was obtained for the African countries ($R^2=0.22$ and slope significant at the 5 per cent level). However, the other two regions showed marked differences in slope and exhibited a poor overall fit. Given that the African countries on average are at the lowest level of development, this result could suggest that when the influence of war is excluded from consideration, then, Wagner's "law" holds for countries at the early stages of development when the economy is in the initial stages of industrialization. It should not be forgotten that Wagner was generalizing from Germany's transition from a rural-agricultural economy to an urban-industrial one.

II. DETERMINANTS OF PUBLIC SECTOR EXPANSION

From the cross-sectional evidence presented above, the existence of Wagner's "law" seems dubious. However, this could be due to inadequacies in our test

procedure. One obvious problem arises from the cross-section approach. It requires a number of restrictive assumptions to test Wagner's thesis which is a dynamic "law" describing changes over time within a country with cross-section evidence which compares differences in levels between countries at a point of time. Unfortunately, it is difficult to adopt a time-series approach due to the non-availability of data. Secondly, these inconclusive results may reflect the fact that per capita income is not a good indicator of development. After all, the process of development involves structural changes within a country which is reflected in a multi-dimensional fashion—not only in its economic but in its demographic, social, and political characteristics. Our results may merely confirm the necessity of inquiring more carefully into other cultural and economic dimensions that are not adequately reflected in simple figures of per capita income, but which doubtless affect the share of government in the economy.

Thus, we must face the fact that Wagner's "law" is not simply one of economics. After all, Wagner framed his "law" in general terms, encompassing institutional changes, industrialization, democratization, etc. Of course, being in the nature of a sweeping generalization, the very breadth with which it is framed makes his thesis very difficult to test statistically. Thus, even if a good statistical "fit" was obtained between public sector size and the level of per capita income, this is not to say that per capita income could be the sole explanation of budgetary policy. Other influences of a demographic, social, and political nature are sure to be important, but may be difficult to separate from the economic variable. Thus, a major disadvantage of trying to derive an empirical relationship between some measure of G/Y and per capita income is the obvious limitation in trying to interpret the relationship in causal terms. Apart from the disadvantages of using per capita income as an indicator of development, the fact remains that all other possible causal influences are likely to be highly correlated with this variable. Thus any significant relationship between G/Y and income per capita may merely reflect the joint influence of other causal variables. Furthermore, even if the causal nexus between public sector expansion and per capita income is taken as direct, we still face a critical problem. If we take the view that the relative size of the public sector is predominantly demand determined, the influence of per capita income is that derived from demand theory. However, obviously we have an under-identified relationship.⁶ Income could just as well determine public sector expansion from the supply side since it is likely to be a prime determinant of tax revenues.

For all these reasons it is as well to look at other possible determinants of public sector size. Two broad approaches are possible: one which views the rise in public spending as a response to demand influences, the other which views the availability of finance as crucial. Wagner seemed to have no doubts that the development of the public sector was primarily demand-determined, merely reflecting the underlying changes in the structure and stage of economic development. For him, public expenditures were the principal determinant of the level of revenues, for "in the long run the desire for development of a progressive

⁶ This possibility is explored further in [41].

people will always overcome these financial difficulties" [26, p. 16]. Thus Wagner had no doubt about causation: demand for public services is the propelling force in determining the level of finance to be raised, rather than the availability of revenues determining spending. However, it should never be forgotten that Wagner was generalizing from a particular historical situation. For the developing countries of today, it is difficult to accept his optimism about the availability of finance.

The alternative proposition of tax-led budgetary expansion has received much attention recently, and there has been a growing body of research on the determinants of tax revenues in LDCs. For example, Lotz and Morss have maintained that for developing countries it is necessary to focus on the tax side because expenditures are held far below their optimal level by administrative bottlenecks associated with the mobilization of domestic resources [22]. In analyzing the determinants of tax revenues use has been made of per capita income, again as a proxy for the level of economic development. Of course, it is not unreasonable to suppose taxable capacity would be greater the higher the per capita income because a smaller proportion of total income would be required for subsistence needs and more would be available for other purposes, including taxation [29]. However, apart from the general level of prosperity, other variables have been employed to explain the growth in tax revenues. For example, in the course of development, there is the observed tendency for the proportion of tax revenues raised by direct taxes to grow. These tend to be the taxes with a broad enough base and high enough income elasticity to adequately finance expenditure growing faster than GNP. Thus the structure of taxation, most particularly the ratio of direct to indirect taxes, can be considered a determinant of the total revenues raised.

Another characteristic of the tax structure in LDCs has also received emphasis. Restrictions imposed by other development objectives and the narrowness of the base of some of the more income elastic direct taxes, has meant that for most LDCs indirect taxes comprise the highest proportion of tax revenues. In turn, taxes on foreign trade tend to form a high proportion of indirect taxes, not merely because of administrative ease of collection but levying import duties does not usually present any great political problem because of their hidden nature [21]. Consequently, it has been argued that a major determinant of tax revenues in LDCs has been the degree of "openness" of the economy as measured, say, by the proportion of trade to national income. Other institutional characteristics are also liable to affect the collection of tax revenue. For example, the degree to which the subsistence sector dominates the economy, or the degree of monetization of the economy, will affect the possibilities of levying taxes and the administrative ease in collecting them. Of course, the relative size of the foreign trade sector in a developing economy is also likely to be highly correlated with the degree of monetization in the economy (for example, the importance of cash crops rather than subsistence agriculture) and of the importance of production units more amenable to taxation (such as large, often foreign, extractive operations).

Apart from purely economic explanations, unique historical circumstances have always been used to supplement purely economic explanations. Other institutional characteristics which have been mentioned as influencing the revenues raised is the administrative efficiency of the tax system which in turn is felt to be influenced by the country's colonial heritage. In particular, using data for the 1960s Richard Thorn postulated that an important influence on the size of the public budget was due to the maintenance of British colonial norms of expenditure and taxation [35]. Hinrichs when looking at the tax structures of a wider range of countries talks of the "cultural style" of their tax systems accenting either direct or indirect taxation. He differentiates between two predominating tax systems: the "Northwest European system" imbedded in the English-speaking world and stressing direct taxation; and the Mediterranean system, imbedded in the Latin world, inclined towards indirect taxation [17].

In complete contrast to explanations of public sector expansion which rely on the availability of revenues, there are those which stress demand factors. An obvious demand influence which has been singled out for study is that of demographic characteristics. The importance of population size has long been appreciated, hence income and public expenditures have been deflated into per capita terms for comparative purposes. However, for many of the LDCs, apart from its size, the rapidity of increase, the age structure, and the geographical concentration of population have all been mentioned as possible explanations of the relative growth in the public sector. For example, Goffman and Mahar consider the age structure of the population to have been an important factor in public expenditure growth in six Caribbean countries during the postwar period [14]. High growth rates have the effect of shifting the population composition in favor of youth, thus putting increased demands on the public sector in such areas as education. The consequences of urbanization have also been stressed in various studies [10] [35] [40].

Taking a demand interpretation of expenditure growth has led several writers to emphasize changes in various community needs as development progresses. For example, expenditure on education has displayed a particularly rapid growth. Some writers explain this by increasing technological requirements demanded of the labor force [31, Appendix E7], others by a change in social values and individual preferences [25, p. 85]. Interpretation depends on whether spending on education is regarded as consumption or investment, and because of this there may be marked differences between the developed and developing countries. Another rapidly growing component of public expenditure has been in the area of health and social services. Again this has been the subject of a number of interpretations. Some see this development as a consequence of the change in economic, social, and political organization requiring greater state protection of the individual; others as a consequence of a change in ideology with a substitution of collective for individual responsibility [1] [24]. For example, Williamson would argue that along with urbanization has gone the submergence of the informal security of the village and extended family and the emergence of formal state security [40]. Thorn has suggested that the growing political strength of

urban workers as capable of exacting higher per capita public social expenditures than the more dispersed less politically powerful rural population [35]. In contrast, Andic and Veverka see the crucial change in economic organization as consisting of the secular decline in the size of the consumption unit, so that "as economic growth tends to reduce its size and dissolve many collective organizations interposed between the consumption unit and the State, this leads to a general demand on the public authorities to protect the economic status of the individual members of the community" [1, p. 219].

Parallel to this argument, again stemming from Wagner's seminal work, several writers have proposed that as society develops, the cause and consequence of a greater division of labor, the concomitant increase in the complexity of social relationships generates increasing social friction. Musgrave suggests that due to this increasing interdependence, externalities have increased and with them the need for greater social control [25, p. 79]. The requirement for greater regulation, law and administration, and the provision and maintenance of such services and institutions would be manifested by increased expenditure.⁷ Further, the profound impact of industrialization and technological change on the structure of the economy and its social organization implies at least an indirect impact on the growth of public spending. For example, it has been suggested that modern technology has increased the efficient scale of production, not only in private industry but perhaps even in services like those provided by the public sector [15]. Also industrialization affects the structure of production in an economy such that as the economy develops the greater division and regional integration creates demand on the service sector to provide this increased interconnectedness.

From this survey it is apparent that there are many possible explanations for the growing share of the public sector in national income. For expository convenience we have separated those explanations which stress the possibilities of raising revenues and the ease of administration from those which concentrate on the consequences of industrialization, urbanization, specialization, and income changes in creating demands for increased public spending. It should be recognized, however, that these factors, even in combination, are unlikely to yield a total explanation for the observed differences between countries in the share of government in their national income. It is impossible to ignore the differences in the ideological stance of the country's leadership. Thus, while we have concentrated on those "structural" factors which work towards a larger public sector as a consequence of development, the end result is most likely to be determined by ideological commitments. Martin and Lewis, for example, have argued that it is not the level of development which is the prime determinant but rather a nation's prevailing conception of the role of the state [24]. Likewise, Musgrave points out: "Low income countries today do not operate under the same technical, political, and value conditions as prevailed in the past when the now

⁷ While recognizing this argument, Williamson doubts whether administrative and similar economic expenditures as a percentage of national product do rise as fast as social expenditures [40, p. 26].

developed countries were at similar low levels of income. Attitudes toward growth, changed communication, the demonstration effect of affluence and welfare measures taken abroad, the conflict of political ideologies, all make for differences in the historical setting" [25, p. 72]. Given this admittedly restricting qualification, an attempt was made to empirically investigate the relative importance of the above "structural" factors in explaining inter-country differences in expenditure-income ratios. For this purpose, data was collected on twelve variables for each of the LDCs of the sample, which are listed in the Appendix:

III. DETERMINANTS OF STATE EXPANSION: SOME EMPIRICAL EVIDENCE

In economic analysis, and especially in international comparison, the constraint placed on the method and results by the nature of the data is a serious problem. The job of statistical collection and comparison is so fraught with difficulties that no one should take these figures to be precise reflections of reality but more as rough approximations. For example, it should always be remembered that we are dealing with average figures for the 1960s and methods and meanings both change over time and differ between countries. However, such admittedly rough statistics have their uses in generalizing about the real world when significant common influences are indicated in the regression analysis for many countries. For this reason we have included some elementary statistical tests as an aid in interpreting our regression equations and for deciding on the order of magnitude of the reliability of our tentative generalizations. Table II summarizes these results. Basically, three different experiments were attempted using data for all LDCs, and then separately for our three regional groupings. First, only "demand" variables were used to try and explain the differences in expenditure ratios between countries (equations 1-4); then only "supply" variables were employed (equations 5-8); lastly, combinations of both types of variables were used (equations 9-12). Following precedential traditions, we chose to include per capita income as a demand variable, but this was only introduced as a last

TABLE II
DETERMINANTS OF THE PUBLIC EXPENDITURE RATIO: EMPIRICAL RESULTS
A. Demand Influences

Equation	Sample	Independent Variables						R ²
		CN	POP.	D. POP.	U	MAN	Y _{p.c.}	
1.	All	1.9809 (4.7710)	-0.1015† (0.8118)	—	0.0645** (1.9031)	0.0595** (1.9211)	0.1725* (1.4325)	0.17
2.	Africa	2.7567 (1.9397)	0.5388 (0.8308)	0.2385 (0.5016)	0.1517* (1.3454)	0.0342* (1.3353)	—	0.28
3.	Asia	1.3856 (1.9046)	0.1592 (0.4960)	—	0.6985** (2.4453)	0.2864* (1.5572)	0.6883** (2.7720)	0.53
4.	South and Central America	3.2036 (4.8360)	-0.092† (0.5102)	0.1227 (0.5882)	0.4180* (1.8724)	0.0434* (1.5640)	—	0.37

B. Supply Influences

Equation	Sample	Independent Variables					R^2	
		CN	F/Y	DT/R	CG/R	ΔM		D
5.	All	2.8077 (7.7683)	-0.0010† (0.0593)	-0.0171† (0.1899)	0.0097* (1.7732)	0.1556** (1.7732)	0.0161* (1.5872)	0.13
6.	Africa	0.4377 (0.3565)	0.0494 (1.2419)	0.5344** (2.1785)	0.0185 (1.2459)	0.0305* (1.4053)	—	0.45
7.	Asia	4.4416 (5.8527)	0.0490* (1.8436)	0.3458* (1.7314)	-0.0006 (0.0567)	0.5285** (2.7493)	0.0479** (2.0745)	0.60
8.	South and Central America	1.7706 (0.5982)	0.2992 (1.0307)	0.1145 (0.1943)	0.2266 (0.4616)	0.1714 (0.7288)	—	0.35

C. Combined Influences

Equation	Sample	Independent Variables		
		CN	U	ΔMAN
9.	All	2.0043 (4.3693)	0.0638 (0.4892)	0.0703** (2.2097)
10.	Africa	0.1759 (0.1361)	-0.0123† (0.0679)	0.0211 (0.9980)
11.	Asia	2.4271 (3.7300)	0.4736* (1.7916)	0.2719* (1.6795)
12.	South and Central America	1.6439 (2.8286)	0.6461** (2.2588)	0.2514 (1.3226)

Equation	Sample	Independent Variables					R^2
		F/Y	DT/R	ΔM	D	$Y_{p.c.}$	
9.	All	0.0106 (0.5419)	—	0.1389* (1.4372)	—	0.1977* (1.6058)	0.16
10.	Africa	—	0.0706* (1.8115)	0.1614 (0.8647)	—	0.6195** (2.0047)	0.44
11.	Asia	0.2996 (1.6513)	—	—	0.4856** (2.2833)	—	0.67
12.	South and Central America	0.0037 (0.5662)	—	—	—	0.6276** (2.6950)	0.54

* Significant at 10 per cent level.

** Significant at 5 per cent level.

† Wrong sign.

resort when it afforded a greater degree of explanatory power than other demand variables.

The first important feature of these empirical results is the degree to which the total sample of LDCs requires disaggregation in order to derive meaningful results. In all cases, whether one examines demand or supply factors, or a combination of both, the degree of overall fit is improved by breaking down the total sample by geographical groupings. Further, in many cases where the same variables remain significant between regions, the magnitude of the coefficients are substantially different, again stressing the diversified experience of LDCs as

a group. We can thus conclude that in research of this kind, an important problem still remains to be faced in deciding on the optimal scheme of disaggregation to employ in empirical research. Although it is interesting, as here, to compare the results by geographical groups given the possibility of intra-regional demonstration effects, it must be admitted that many other schemes of disaggregation are possible.

As to the specific influences on expenditure ratios, notwithstanding the emphasis they have received in the literature, demand factors did not offer a comprehensive explanation of inter-country expenditure ratios. Perhaps the most notable failure was the role of demographic influences: for all LDCs as a group, and for individual regions, the growth rate of population and the size of the dependent population was never significant at the 5 per cent level. This finding could suggest that there is some revenue constraint in those countries where the need for public spending per capita rises slower than in those countries where demographic pressures are less intense. In contrast, the variable measuring the degree of urbanization was always significant at least at the 10 per cent level, its influence being strongest for Asia. Our indicator of the speed of industrialization (the growth in manufacturing) also appeared to exert a significant influence, and seems to confirm the increased pressure for public intervention in the process of industrialization. As can be seen from equation 1, per capita income appears a significant variable for the total sample of LDCs, but examination by region revealed that this was primarily due to the strong association in Asian countries (equation 3).

Supply influences seemed to offer a better explanation of expenditure ratios in the African and Asian regions. Remembering that these regions contain countries with very low income levels, this would seem to suggest that for the poorer developing regions the ability to raise finance is crucial in determining the level of public spending. As can be seen in equation 8, for the richer countries of South and Central America supply factors by themselves afforded little explanation of the differences in expenditure ratio, it being easier to isolate the influence of demand factors.

Given the lengthy discussion of the degree of "openness" of an economy as a prime determinant of revenues, the relative unimportance of this variable in explaining expenditure ratios seems remarkable. Only in the Asian region is it possible to detect some influence for this variable. In contrast, the growth in means of payment variable, defined to include money in circulation as well as quasi-money, has a marked influence on the expenditure ratios in Africa and Asia. However, although the generic nature of this variable makes interpretation difficult, it may be felt to represent the importance, for example, of cash crops, and other production activity organized on a wage basis and hence amenable to taxation. As was previously suggested, this variable is likely to be highly correlated with the degree of "openness" of the economy and a simple correlation test did indeed reveal a positive association. One may speculate, therefore, that the relative failure of the degree of "openness" variable may in part be caused by including the monetization variable in the same equation which cap-

tures their joint influence. However, there is no reason to reject the proposition that the degree of monetization rather than the "openness" of an economy is the more important influence on expenditure ratios.

As for the other supply variables, the ratio of direct taxes to total revenues which is taken as an indicator of the degree of elasticity of the tax system seemed an important influence in African countries, again supporting the idea that in these countries spending is supply constrained. The degree of centralization of budgetary decisions offers little explanation of differences in expenditure ratios, which would lead one to conclude that this factor is not a good index of the government's ability to raise revenues and increase spending in relation to income. The influence of colonial heritage gives conflicting results between regions. It is most significant for the Asian region, confirming the conclusion reached by Thorn that countries which were previously British colonies tend to have higher spending ratios. Again, however, this result stresses the danger of generalization from a heterogeneous sample: while this variable also appears significant for the total sample, this is almost certainly due to the individual influence of the Asian countries.

As a final attempt to try and improve the overall level of "fit," supply and demand variables were combined and in each case per capita income was introduced to see if its influence could be detected. On the whole, the overall regression results were not much improved by the income variable, as is evident from the size of the R^2 . For Africa, however, per capita income did appear significant, and confirms the result presented in Table I, equation 2. Surprisingly, this variable also added to the explanation of the variation in expenditure ratio in South and Central American countries. For each region the relative contribution of supply and demand factors was reemphasized: for Africa, the importance of the elasticity of the tax system was notable; for Asia, the degree of "openness" and colonial heritage remained significant; for South and Central America, demand factors dominated.

What then of the general tenor of Wagner's "law" as a thesis of demand-led budgetary expansion? Our results suggest his basic presumption that the relative size of the public sector is determined by "structural" factors without any constraints from the revenue side is not universally valid for the currently developing countries. Although one should not be lured by the false precision of the regression results, their order of magnitude does not contradict the idea that supply influences predominate in the poorer (particularly African) countries and demand influences are more important in the richer countries (e.g., of South and Central America). Certainly it should be stressed that apart from the "structural" influences examined here, the spending policy in each country will be influenced by political preferences and circumstances which are likely to account for a great deal of the "unexplained" variation in expenditure ratios between countries.

IV. STATE EXPANSION AND ECONOMIC GROWTH

For the advanced countries, public spending and the relative size of the govern-

ment sector have expanded at an increasing rate for many years. This growth was based on an underlying philosophy which contended that greater direct government activity was the best way, if not the only way, to achieve certain economic and social goals. In recent years, many countries have questioned the validity of this philosophy. Not only has there been growing skepticism about the achievements of increased public spending, but also some have wondered whether undesirable "side effects" have seriously undermined the desirability of such policies. In the LDCs, the task of reorganizing the economic structure of their economies and promoting faster growth has led to programs of higher and higher public spending and greater state intervention. As yet the full implications of these developments has not received careful appraisal. For this reason it is interesting to reverse Wagner's chain of causation. Instead of enquiring into the impact of development on the expenditure ratio, let us examine the question whether the relative size of public sector has had a significant impact on the rate of development, or the type of development experienced.

In the literature it is possible to detect two opposing views about the impact of public sector expansion on economic growth. There is the opinion, which finds currency in the majority of LDCs, that the growth rate will be raised. On the other hand, there is the argument often expressed in the advanced countries, that the growth rate will be slowed down. Let us examine the first position.

It has almost become axiomatic in the discussion of developing countries that government intervention is one of the most important factors promoting economic growth. It is frequently argued that the state has played an indispensable role in providing various forms of economic and social overhead capital which has contributed to growth, even when this capital has long gone underutilized. The great importance of public policies for the introduction of advanced technology and the training of unskilled labor forces is difficult to dispute. In many of these countries, a major part of public spending is viewed as simply another input of specialized services in a generally technologically determined production function.⁸ Parenthetically, it is worth remembering a rather dated controversy among early designers of social accounting frameworks concerning the question whether public expenditure represented an intermediate or a final output. In this controversy, Kuznets took the former position and argued that "national income is a measure of the net output of economic activity *within* the given social framework, not of what it would be in a hypothetical absence of the latter. The maintenance and modifications of this framework, even though it employs scarce resources that can be secured on business markets, cannot in itself constitute part of the final product of economic activity. . ." [19]. Kuznets implied, therefore, that a large part of public spending can be regarded as an input to the economic system. But can all public spending be seen in this light, as positively affecting economic productivity? Although for the advanced countries where there is greater emphasis on public spending of a "consumption" nature—social security, social expenditures of all kinds associated with the maintenance of the welfare state—for the LDCs, distinctions between economic and social

⁸ For a strict application of this view, see [27].

policies, or investment and consumption spending, become blurred. A government health program is an instance of "social policy," but its impact on actual or potential economic growth of society may be far-reaching. Similarly transfer payments in a society where poverty and malnutrition are prevalent may have a considerable impact on productivity. But even in advanced countries as Shoup has noted: "most government activity is a producers' good rather than a consumers' good since it reduces the cost of doing business" [34, p. 494].

In complete contrast, to this view, there is a large body of opinion, especially in the more advanced countries, that argues that increased public spending has been deleterious to economic growth. In general, two different types of argument have been forwarded. There is the view that the public sector lags behind other sectors in productivity. For example, many commentators see a possible explanation for the rising government share in national income as caused by differential productivity: that, the labor-intensive public sector being relatively less productive and less amenable to technological innovation implies a rising proportion of resources must flow into the public sector in order to maintain constant public services per unit of growing output [2]. The indirect consequence of a growing public sector is thus to deprive high productivity sectors of resources. Hence stating the argument differently, this implies the greater the share of resources absorbed by the public sector, the lower will be the aggregate level of productivity in the economy and growth will suffer. A second type of argument concentrates on the need to finance public spending increasing faster than income, which may have important disincentive effects. This argument has been associated with the "critical-limits" hypothesis of Colin Clark who maintains that increasing the tax burden, especially at high levels of taxation, discourages productive effort on the part both of labor and capitalists [8] [9]. Further, taxation tends to lead to inefficiency and rising costs as industrialists discover that out of any increase in costs a larger proportion will in fact be paid by the public sector in reduced tax burden. However, such arguments rely heavily on the importance of direct taxes in the tax system, and taxes falling on the productive members of society—assumptions which may not be applicable in many LDCs.

Given these conflicting hypotheses concerning the impact of public sector expansion on economic growth, it seems important to examine the empirical evidence for each viewpoint. As a first experiment, the average growth rates of the different LDCs for the 1960s were employed as a dependent variable and regressed on the ratio of total public spending to GDP. For the total sample a strong negative relationship was discovered, as can be seen from equation A1 and Table III. Given the nature of our inquiry, one should disregard the size of the R^2 as of secondary importance and concentrate on the significance of the slope of our regression line. As indicated by the t statistic in parenthesis, this is significant at the 5 per cent level. However, this significant relationship breaks down for our geographical groupings (equations A2–A4), which may throw doubt on the usefulness of our scheme for disaggregating the total sample. At the same time, the sign is always negative, never positive, which suggests that

TABLE III
THE INFLUENCE OF PUBLIC EXPENDITURE ON ECONOMIC GROWTH

$$A. \ln(g/r) = \ln a + b \ln(G/Y)$$

Equation	Sample	N	a	b	R ²
1.	All	41	2.2370 (7.1995)	-0.2649 (2.1032)	0.08
2.	Africa	16	2.1349 (4.8928)	-0.2016 (1.2510)	0.10
3.	Asia	14	2.2865 (2.3475)	-0.2653 (0.6251)	0.03
4.	South and Central America	11	2.1735 (4.0510)	-0.2271 (1.1090)	0.12

$$B. \ln(x/y) = \ln a + b \ln(G/Y)$$

Equation	Sample	N	a	b	R ²
1.	All	41	-1.6367 (0.5127)	1.4901 (1.2637)	0.04
2.	Africa	16	8.6069 (1.1217)	-2.4207 (0.8465)	0.05
3.	Asia	14	-6.4356 (0.6138)	3.0892 (0.7611)	0.05
4.	South and Central America	11	0.6744 (0.3135)	1.0030 (1.0830)	0.09

$$C. \ln(I) = \ln a + b \ln(G/Y)$$

Equation	Sample	N	a	b	R ²
1.	All	41	2.6447 (10.4005)	0.1099 (1.066)	0.04
2.	Africa	16	2.2213 (4.9073)	0.2328 (1.3279)	0.11
3.	Asia	14	2.6152 (3.2207)	0.1489 (0.4479)	0.02
4.	South and Central America	11	2.8072 (3.6921)	0.0495 (0.5110)	0.03

$$D. \ln(S) = \ln a + b \ln(G/Y)$$

Equation	Sample	N	a	b	R ²
1.	All	41	8.7126 (2.9976)	-2.6889 (2.3605)	0.10
2.	Africa	16	7.4324 (0.9772)	-2.4260 (0.8559)	0.04
3.	Asia	14	3.6501 (1.5502)	-0.7147 (0.7489)	0.03
4.	South and Central America	11	7.0257 (2.2303)	-1.9039 (1.6361)	0.05

there is indeed a tendency for the growth rate in an economy to be inversely related to the size of the public sector. Of course, there is always the possibility in correlation analysis that the direction of causation can be reversed: a low growth rate in an economy may indicate the need for greater public intervention to raise it and consequently a high expenditure ratio. However, this being the case and remembering that our data depict averages for a number of years, this negative association would lead one to conclude that such public intervention had not been successful.

To investigate this possibility, it is necessary to reexamine the reasons for postulating a negative relationship between economic growth and the extent of the public sector in the economy. It will be remembered that two main arguments have been advanced for this effect: a "productivity lag" on the part of the public sector and the disincentive effects on the rest of the economy as a consequence of financing an increased expenditure ratio. Obviously, these hypotheses are difficult to test empirically. The productivity lag hypothesis presents particularly intractable problems given the nature of most public services which are not sold on markets, which cannot easily be priced and the derived benefits are difficult to assign individually. Due to this difficulty in defining units of output in the public sector, there are few reliable measures of public sector productivity changes and consequently the belief that the public sector's technology is relatively unprogressive has not been empirically verified even in the advanced countries.⁹ For the LDCs data limitations are an even severer constraint on such testing. As for disincentive effects, it is interesting to investigate whether the relative size of the public sector has exerted any influence on broad categories of economic activity which one might expect to be crucial to economic growth.

To this end, three further regression equations were estimated. Given the importance of the foreign exchange gap as a constraint on the growth of many LDCs, in equation B1 of Table III the ratio of exports to national income was regressed on the expenditure ratio. For all developing countries as a group a positive relationship was established which was significant at the 10 per cent level. However, on disaggregation, it was discovered that this result was almost entirely due to the effect of the more advanced South and Central American and Asian countries while for the poorer African countries the relationship appeared negative. One might offer the tentative suggestion that this reflects the priority given to export promotion in the former regions. A similar regression equation was then estimated to show the relationship between the expenditure ratio and the ratio of domestic investment to GNP. The results displayed by equation C Table III are inconclusive. For all LDCs as a group there is a non-significant positive relationship. Disaggregation revealed that for all geographical groups the relationship remained positive, but with exception of the African countries this was not significant at the 10 per cent level. Of course, it is not surprising that one should obtain this positive relationship since for most LDCs public investment forms a large part of total domestic investment. Our result

⁹ However, see [6] [7].

may well hide the fact that public investment has been at the expense of, or substitute for, private investment. To investigate the effects on the private sector, private sector savings (comprising the saving of private corporations, unincorporated enterprises, households and private nonprofit institutions) was taken as the dependent variable and a strong negative relationship with respect to expenditure ratio was discovered (see equation D). Disaggregation revealed the relationship was negative for all geographical groups but especially strong for the Asian and South and Central American countries. Inevitably, interpretation of these results is speculative. However, one might hazard the guess that the latter regions contain the more advanced of the developing countries which have more highly developed tax systems with greater emphasis on direct taxation and face a higher potential for disincentive effects.

On the whole, our results are not conclusive nor would one expect them to be given the obvious limitations of the data employed. However, remembering the divergent hypotheses encountered in the literature, some survey of the empirical evidence seems desirable. For our sample of forty-one LDCs, these findings would lead one to place emphasis on a negative rather than positive relationship between the relative size of the public sector in the economy and the rate of economic growth. We would also be led to speculate that this negative relationship was brought about by the disincentive effects on domestic savings and a possible "productivity lag" in the public sector, rather than in any discouragement to aggregate investment or exports. Obviously, this has been a preliminary analysis and much more work needs to be undertaken. For some regions the fits were quite poor (e.g., Africa) and this may indicate a need for further disaggregation (e.g., into countries north and south of the Sahara) or the adoption of a different scheme of disaggregation (e.g., grouping by income level). Another obvious direction for future research is to inquire into the relationship of different functional categories of public expenditure with economic growth. However, in this paper our concern has been to illuminate some of the implications of Wagner's "law" for economic development and development policy, hence we have concentrated on aggregate public spending.

CONCLUSIONS

In this analysis we have attempted to delineate empirical regularities and single out potentially interesting relationships concerning the relative size of the public sector which have tended to be discussed in a descriptive fashion. It is hoped the difficulties encountered in trying to reconcile previously maintained specific hypotheses with the discovered empirical relationships will be of use to subsequent researchers. Unfortunately, such analysis should be considered no more than a preliminary "ground-clearing" operation. Inevitably, in making this attempt, we continually come up against the great disadvantage of grand speculations like Wagner's "law": the impossibility of subjecting them to precise empirical testing. Essentially, Wagner's is not really a "law" or a theory, but rather a philosophizing about development based on the underlying idea that

this process is fundamentally similar in different countries at different historical periods. From our empirical results, there is every indication that such a presumption is unjustified—not only are there marked discrepancies between regions but also within regions which account for the pooriness of “fit” in the individual regression equations. Thus, while it is possible to isolate influences which are common for all countries, especially within regions, at the same time one cannot ignore the obvious fact that the spending policy in each country is influenced by political preferences and ideological commitments which cannot be explained by our empirical analysis. Because of this Wagner’s thesis is too “deterministic” to afford an adequate explanation of the relative size of the public sector in currently developing countries.

While there is widespread agreement that the government’s role is important, if not critical, in development, there has been little analysis of the impact of increased public spending on the overall performance of developing economies. In this paper we have considered the empirical evidence concerning the impact of a rising public expenditure share on economic growth for forty-one developing countries. On the whole, the relationship was discovered to be negative. Unfortunately, data limitations prevented us from a rigorous investigation of the reasons for this inverse relationship. Our attempts to relate the expenditure ratio to certain magnitudes generally accepted as crucial to economic growth were inevitably crude and hence causal interpretation was of necessity speculative. Accepting these qualifications, the picture presented was that on average development policies while increasing the relative scale of public intervention in the economy had maintained if not increased the level of exports and aggregate investment. However, the need to increase taxation to finance this spending may have had some disincentive effects on private saving, specially in the richer countries. At the same time, the probable relative productivity backwardness of the public sector may also have contributed to a slowing down of economic growth. Certainly the inverse relationship between public spending and economic growth in the developing economies is food for thought, questioning as it does the conventional wisdom of the necessity of increased public intervention to stimulate growth. Unfortunately, at best these results merely indicate empirical association and to have confidence in our causal interpretation necessitates detailed understanding about the mechanism by which public spending operates on the economy. Unfortunately, the theory of public expenditure growth is still in its infancy and, it is not too pessimistic to conclude given the nature of the subject matter, it is destined to remain a fascinating although elusive problem.

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APPENDIX

THE DATA AND SOURCES

Variable Name	Description	Source
<i>Y p.c.</i>	Per capita gross domestic product. GDP based wherever possible on estimates at constant market prices. Where such estimates were not available, values at constant factor cost were used.	A, B, C, D
<i>POP.</i>	Population.	F, B
<i>G</i>	Total spending of general government. Where information on general government was not available, central government data is used.	A
<i>GC</i>	Total public spending minus defence spending. Defence spending excludes internal security.	A, G
<i>ΔPOP.</i>	Growth rate of population. An average of the rates including initial and terminal years.	F
<i>D.POP.</i>	Dependent population, defined as those below eighteen years of age and above sixty years of age. Derived from labor force statistics with unemployed persons and unpaid family workers excluded.	F

<i>U</i>	Degree of urbanization as indicated by the percentage of population living in urban areas. The definition of urban population is not uniform for all countries. However, the data do provide an indication of the concentration of clearly non-rural population.	F
<i>ΔMAN.</i>	Growth rate of manufacturing industry. These have generally been computed on the basis of the country indices of manufacturing production published by the U.N. Statistical Office or the statistical services of the various countries. Where such indices were not available, use has been made of indices compiled by the U.S. Agency of International Development or of the value added at constant prices.	B
<i>F/Y</i>	Exports plus imports as a percentage of GDP. Based on current U.S. dollar values, defined to exclude factor and transfer payments to and from abroad.	H
<i>DT/R</i>	Direct taxes as a percentage of total government revenue. Direct taxes comprise all taxes and surtaxes levied as a charge on the income of households and private nonprofit institutions, corporate income and excess profits taxes; taxes on undistributed profits or on capital stock which are levied at regular intervals.	A
<i>CG/R</i>	Share of central government in total current revenue. For the purposes of computing these ratios, central government current transfers to and from non-central government agencies and to and from the rest of the world.	A
<i>ΔM</i>	Growth in the means of payment. Defined to include the money supply (money in circulation outside the banking system and demand deposits held by the nongovernment sector) and quasi-money (time, savings deposits, etc. held by the nongovernment sector). Growth rates are averages based on domestic currency values.	E
<i>D</i>	Dummy variable indicating colonial heritage, =1 for former British colony; =0 for others	
<i>g/r</i>	Growth rate of GDP. These are average compounded rates of growth between initial and terminal years, for most countries covering the period 1961-68.	A, B
<i>X/Y</i>	Ratio of exports to GNP. GNP measured at market prices and exports converted at current U.S. dollar values.	A, B, H
<i>I</i>	Domestic investment, based on domestic currency values at current market prices. Average period figures are calculated as simple means for individual years with change in inventories excluded.	A, C
<i>S</i>	Private sector savings, comprising the saving of private corporations, unincorporated enterprises, and households and private nonprofit institutions.	A

Sources: A: *U.N. National Accounts Yearbooks*; B: *U.N. Monthly Bulletin of Statistics*; C: *IBRD Country Reports*; D: *OECD publications*; E: *IMF Financial Statistics*; F: *U.N. Demographic Yearbooks*; G: *U.N. Statistical Yearbooks*; H: *IMF Balance of Payments Yearbooks*.